HUANENG POWER INTERNATIONAL INC
Form 20-F
April 16, 2019

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

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FORM 20-F
(Mark One)

REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE FISCAL YEAR ENDED DECEMBER 31, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Date of event requiring this shell company report
For the transaction period form _____to _____
Commission file number: 1-13314

HUANENG POWER INTERNATIONAL, INC.
(Exact name of Registrant as specified in its charter)
PEOPLE'S REPUBLIC OF CHINA
(Jurisdiction of incorporation or organization)
HUANENG BUILDING
6 FUXINGMENNEI STREET, XICHENG DISTRICT, BEIJING, PEOPLE'S REPUBLIC OF CHINA
(Address of principal executive offices)
Mr. Huang Chaoquan
HUANENG BUILDING,
6 FUXINGMENNEI STREET, XICHENG DISTRICT, BEIJING, PEOPLE'S REPUBLIC OF CHINA
Tel: +86 (10) 6322 6999 Fax: +86 (10) 6322 6888
(Name, Telephone, Email and/or Facsimile number and Address of Company Contact Person)
Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of Each Class	Name of each exchange on which registered
American Depositary Shares Each Representing 40 Overseas Listed Shares	New York Stock Exchange
Overseas Listed Shares with Par Value of RMB1.00 Per Share	New York Stock Exchange*

*Not for trading, but only in connection with the registration of our American Depositary Shares

Securities registered or to be registered pursuant to Section 12(g) of the Act.
NONE
(Title of Class)

_____

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.
NONE
(Title of Class)

_____

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report:

Domestic A Shares with Par Value of RMB1.00 Per Share	10,997,709,919
Overseas Listed Shares with Par Value of RMB1.00 Per Share	4,700,383,440

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes No
If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.
Yes No
Note - Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 from their obligations under those Sections.
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.
Yes No
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).
Yes No
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer" and "emerging growth company" in Rule 12b-2 of the Exchange Act.
Large accelerated filer Accelerated filer
Non-accelerated filer Emerging growth company
(Do not check if a smaller reporting company)
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If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act.

† The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP | International Financial Reporting Standards as issued by the International Accounting Standards Board | Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court.

Yes No

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INTRODUCTION

We maintain our accounts in Renminbi Yuan ("Renminbi" or "RMB"), the lawful currency of the People's Republic of China (the "PRC" or "China"). References herein to "US$" or "U.S. dollars" are to United States Dollars, references to "HK$" are to Hong Kong Dollars, and references to "S$" are to Singapore Dollars. References to ADRs and ADSs are to American Depositary Receipts and American Depositary Shares, respectively. Translations of amounts from Renminbi to U.S. Dollars are solely for the convenience of the reader. Unless otherwise indicated, any translations from Renminbi to U.S. Dollars or from U.S. Dollars to Renminbi were translated at the middle exchange rate announced by the People's Bank of China (the "PBOC Rate") on December 28, 2018 of US$1.00 to RMB6.8632. No representation is made that the Renminbi or U.S. Dollar amounts referred to herein could have been or could be converted into U.S. Dollars or Renminbi, as the case may be, at the PBOC Rate or at all.

References to "A Shares" are to common tradable shares issued to PRC domestic shareholders.

References to the "central government" are to the national government of the PRC and its various ministries, agencies and commissions.

References to the "Company," "we," "our" and "us" include, unless the context requires otherwise, Huaneng Power International, Inc. and the operations of our power plants and our construction projects.

References to "HIPDC" are to Huaneng International Power Development Corporation and, unless the context requires otherwise, include the operations of the Company prior to the formation of the Company on June 30, 1994.

References to "Huaneng Group" are to China Huaneng Group Co., Ltd.

References to "local governments" in the PRC are to governments at all administrative levels below the central government, including provincial governments, governments of municipalities directly under the central government, municipal and city governments, county governments and township governments.

References to "our power plants" are to the power plants that are wholly owned by the Company or to the power plants in which the Company owns majority equity interests.

References to the "PRC Government" include the central government and local governments.

References to "provinces" include provinces, autonomous regions and municipalities directly under the central government.

References to "Singapore" are to the Republic of Singapore.

References to the "State Plan" refer to the plans devised and implemented by the PRC Government in relation to the economic and social development of the PRC.

References to "tons" are to metric tons.

Previously, the Overseas Listed Foreign Shares were also referred to as the "Class N Ordinary Shares" or "N Shares." Since January 21, 1998, the date on which the Overseas Listed Foreign Shares were listed on The Stock Exchange of Hong Kong Limited by way of introduction, the Overseas Listed Foreign Shares have been also referred to as "H Shares."

GLOSSARY

actual generation The total amount of electricity generated by a power plant over a given period of time.

auxiliary power Electricity consumed by a power plant in the course of generation.

availability factor	For any period, the ratio (expressed as a percentage) of a power plant's available hours to the total number of hours in such period.
available hours	For a power plant for any period, the total number of hours in such period less the total number of hours attributable to scheduled maintenance and planned overhauls as well as to forced outages, adjusted for partial capacity outage hours.
capacity factor	The ratio (expressed as a percentage) of the gross amount of electricity generated by a power plant in a given period to the product of (i) the number of hours in the given period multiplied by (ii) the power plant's installed capacity.
demand	For an integrated power system, the amount of power demanded by consumers of energy at any point in time.
dispatch	The schedule of production for all the generating units on a power system, generally varying from moment to moment to match production with power requirements. As a verb, to dispatch a plant means to direct the plant to operate.
GW	Gigawatt. One million kilowatts.
GWh	Gigawatt-hour. One million kilowatt-hours. GWh is typically used as a measure for the annual energy production of large power plants.
installed capacity	The manufacturers' rated power output of a generating unit or a power plant, usually denominated in MW.
kV	Kilovolt. One thousand volts.
kW	Kilowatt. One thousand watts.
kWh	Kilowatt-hour. The standard unit of energy used in the electric power industry. One kilowatt-hour is the amount of energy that would be produced by a generator producing one thousand watts for one hour.
MVA	Million volt-amperes. A unit of measure used to express the capacity of electrical transmission equipment such as transformers.
MW	Megawatt. One million watts. The installed capacity of power plants is generally expressed in MW.
MWh	Megawatt-hour. One thousand kilowatt-hours.
peak load	The maximum demand on a power plant or power system during a specific period of time.
planned generation	An annually determined target gross generation level for each of our operating power plants used as the basis for determining planned output.
total output	The actual amount of electricity sold by a power plant in a particular year, which equals total generation less auxiliary power.
transmission losses	Electric energy that is lost in transmission lines and therefore is unavailable for use.

PART I

ITEM 1 IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

ITEM 2 OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3 KEY INFORMATION

A. Selected financial data

Our consolidated data of financial position as of December 31, 2018 and 2017 and the consolidated income statement and cash flow data for each of the years in the three-year period ended December 31, 2018 are derived from the historical financial statements included herein. Our consolidated data of financial position as of December 31, 2016, 2015 and 2014 and consolidated income statement and cash flow data for each of the years in the two-year period ended December 31, 2015 are derived from the historical financial statements not included herein. The Selected Financial Data should be read in conjunction with the consolidated financial statements and "Item 5 Operating and Financial Reviews and Prospects." The financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board. The Selected Financial Data may not be indicative of future earnings, cash flows or financial position.

	Year Ended December 31,				
	2014	2015	2016	2017	2018
	RMB in thousands, except per share data				
Consolidated Income Statement Data					
Operating revenue	125,406,855	128,904,873	113,814,236	152,459,444	169,550,624
Tax and levies on operations	(932,485)	(1,157,760)	(1,177,818)	(1,376,312)	(1,788,998)
Operating expenses	(99,199,728)	(98,604,187)	(94,258,678)	(141,899,742)	(157,647,361)
Profit from operations	25,274,642	29,142,926	18,377,740	9,183,390	10,114,265
Interest income	159,550	160,723	147,063	198,906	234,604
Financial expenses, net	(7,823,606)	(7,970,070)	(7,067,602)	(9,604,645)	(10,647,311)
Other investment income/(loss)	80,580	115,238	1,070,034	1,742,081	(278,669)
Gain/(loss) on fair value changes of financial assets/liabilities	42,538	(16,742)	(12,986)	856,786	726,843
Share of profits less losses of associates and joint ventures	1,315,876	1,525,975	1,298,889	425,215	1,823,415
Profit before income tax expense	19,049,580	22,958,050	13,813,138	2,801,733	1,973,147
Income tax expense	(5,487,208)	(5,698,943)	(3,465,151)	(1,217,526)	(643,173)
Net profit	13,562,372	17,259,107	10,347,987	1,584,207	1,329,974
Attributable to:					
Equity holders of the Company	10,757,317	13,651,933	8,520,427	1,579,836	734,435
Non-controlling interests	2,805,055	3,607,174	1,827,560	4,371	595,539
Basic earnings per share	0.76	0.94	0.56	0.10	0.03
Diluted earnings per share	0.76	0.94	0.56	0.10	0.03

	As of December 31,				
	2014	2015	2016	2017	2018
	RMB in thousands				
Consolidated Financial Position Data					
Current assets	37,865,284	33,565,403	36,966,616	48,537,710	61,799,069
Property, plant and equipment	188,379,057	219,673,070	223,061,809	284,328,093	282,061,272
Available-for-sale financial assets	4,333,377	5,077,863	3,406,032	1,604,993	—
Other equity instrument investments	—	—	—	—	2,083,419
Investments in associates and joint ventures	17,626,910	19,745,192	19,632,113	19,517,623	19,553,964
Land use rights and other non-current assets	10,636,352	14,384,078	14,524,284	20,900,635	32,535,803
Power generation license	3,720,959	3,679,175	3,849,199	3,916,246	4,014,972

Deferred income tax assets	884,274	1,064,391	1,263,957	2,300,091	2,282,585
Goodwill	11,725,555	11,677,182	12,135,729	15,484,120	15,572,227
Total assets	275,171,768	308,866,354	314,839,739	396,589,511	419,903,311
Current liabilities	(104,846,121)	(123,836,633)	(130,196,251)	(155,950,488)	(138,206,214)

	As of December 31				
	2014	2015	2016	2017	2018
	RMB in thousands				
Consolidated Financial Position Data					
Non-current liabilities	(85,542,941)	(83,336,032)	(82,456,751)	(133,024,419)	(165,575,427)
Total liabilities	(190,389,062)	(207,172,665)	(212,653,002)	(288,974,907)	(303,781,641)
Total equity	(84,782,706)	(101,693,689)	(102,186,737)	(107,614,604)	(116,121,670)

	Year Ended December 31,				
	2014	2015	2016	2017	2018
	RMB in thousands, except per share data				
Consolidated Cash Flow Data					
Purchase of property, plant and equipment	(19,858,216)	(24,191,285)	(20,144,903)	(25,798,009)	(20,613,314)
Net cash provided by operating activities	33,320,067	42,362,708	31,510,824	29,197,363	28,727,978
Net cash used in investing activities	(19,470,813)	(33,015,012)	(17,649,646)	(31,748,825)	(20,375,882)
Net cash (used in)/generated from financing activities	(10,894,180)	(14,140,659)	(13,601,850)	4,013,180	(2,243,070)
Other Company Data					
Dividend declared per share	0.38	0.47	0.29	0.10	0.10
Number of ordinary shares ('000)	14,420,383	15,200,383	15,200,383	15,200,383	15,698,093

Note:

1. As a result of the adoption of IFRS 15, Revenue from contracts with customers, with effect from January 1, 2018, the Company and its subsidiaries have changed its accounting policies in respect of revenue recognition. In accordance with the transitional provisions of the standard, the changes in accounting policies were adopted by way of opening balance adjustments to equity as at January 1, 2018. The adoption of IFRS 15 did not have a material impact on the consolidated financial statements. Figures in years earlier than 2018 are stated in accordance with the policies applicable in those years.

2. The Company and its subsidiaries adopted IFRS 9, Financial instruments, from January 1, 2018. As a result, the Company and its subsidiaries have changed its accounting policies in relation to financial instruments. As allowed by IFRS 9, the Company and its subsidiaries have not restated information relating to prior years. Differences in the carrying amounts of the financial assets resulting from the adoption of IFRS 9 were recognised in reserves at January 1, 2018. There was no difference in the carrying amounts of the financial liabilities. Prior to January 1, 2018, figures were stated in accordance with the policies applicable in those years.

B. Capitalization and indebtedness

Not applicable.

C. Reasons for the offer and use of proceeds

Not applicable.

D. Risk factors

Risks relating to our business and the PRC's power industry

Government regulation of on-grid power tariffs and other aspects of the power industry may adversely affect our business

Similar to electric power companies in other countries, we are subject to governmental and electric grid regulations in virtually all aspects of our operations, including the amount and timing of electricity generations, the setting of on-grid tariffs, the performance of scheduled maintenance, and the compliance with power grid control and dispatch directives as well as environment protection regulations. There can be no assurance that these regulations will not change in the future in a manner which could adversely affect our business.

The on-grid tariffs for our planned output are subject to a review and approval process involving the National Development and Reform Commission ("NDRC") and the relevant provincial government. Since April 2001, the PRC

Government has been implementing an on-grid tariff-setting mechanism based on the operating terms of power plants as well as the average costs of comparable power plants. Pursuant to the NDRC circular issued in June 2004, the on-grid tariffs for our newly built power generating units commencing operation from June 2004 have been set on the basis of the average cost of comparable units adding tax and reasonable return in the regional grid. Any future reductions in our tariffs, or our inability to raise tariffs (for example, to cover any increased costs we may have to incur) as a result of the new on-grid tariff-setting mechanism, may adversely affect our revenue and profits.

In addition, the PRC Government started a program in 1999 to effect power sales through competitive bidding in some of the provinces where we operate our power plants. The on-grid tariffs for power sold through competitive bidding are generally lower than the pre-approved on-grid tariffs for planned output. In the more recent few years, power sales through competitive bidding only accounted for a portion of our overall power sales.

Nevertheless, the PRC Government is seeking to expand the program. Any increased power sales through competitive bidding may reduce our on-grid tariffs and may adversely affect our revenue and profits.

Furthermore, the PRC Government started in 2009 to promote the practice of direct power purchase by large power end-users. Pursuant to the circular jointly issued by NDRC, the State Electricity Regulatory Commission ("SERC") and China National Energy Administration in June 2009, the direct transaction price shall include the direct transaction price, the grid transmitting price and the governmental fund and additional charges, of which the direct transaction price shall be freely determined through negotiation between the power generation company and the large power end-user. The price of direct power purchase shall be subject to the demand in the power market. Furthermore, the scale and mode of the transaction are also subject to the structure and level of development of local economy. In terms of power generation companies engaged in direct power purchase, direct power sales constitute a portion of the total power sales, thus affecting the on-grid power sales of the Company. For the past few years, the PRC Government continued the reform in the area of direct power purchase by large power end-users. In 2013, China National Energy Administration officially launched the direct power purchase program in seven provinces where we have power plants and the program has been steadily rolled out in other provinces. Although the direct power purchase may act as an alternative channel for our power sales, there is uncertainty as to the effect of the practice of direct power purchase over our operating results basing on the relatively lower tariffs generally for this portion.

The on-grid tariff-setting mechanism is evolving with the reforming of the PRC electric power industry. The PRC government announced a number of development and reform plans for the power market in 2016, covering areas including laws and regulations, comprehensive pilot plans, power transmission and distribution prices and supply side dynamics, the establishment of the power exchanges, rules and market administration committees, and opening up incremental distribution business. In 2017, the development and reform plans have been further expanded to the nationwide scale, with multiple issuances made by the PRC government governing power development plan, electricity transmission and distribution price, opening up of the electricity generation and consumption plans, supply side dynamics, electricity power stock and ancillary market development, electricity exchange rules, market supervision and clean energy consumption, etc. In 2018, the development and reform entered into a implementation stage, reflected in the areas of distribution price reform, establishment of the power exchanges and ancilliary market and the incremental distribution network reform, etc.

There is no assurance that government regulations on the industry will not change in a manner which could adversely affect our business and results of operations or the measures we take would effectively help us to adapt to the new changes and developments. See "Item 4 Information of the Company – B. Business Overview – Pricing Policy."

If our power plants receive less dispatching than planned generation, the power plants will sell less electricity than planned

Our profitability depends, in part, upon each of our power plants generating electricity to meet or surpass the planned generation, which in turn will be subject to a local demand for electric power and dispatching to the grids by the dispatch centers of the local grid companies.

The dispatch of electric power generated by a power plant is controlled by the dispatch center of the applicable grid companies pursuant to a dispatch agreement with us and to governmental dispatch regulations. In each of the markets we operate, we compete against other power plants for power sales. No assurance can be given that the dispatch centers will dispatch the full amount of the planned generation of our power plants. A reduction by the dispatch center in the amount of electric power dispatched relative to a power plant's planned generation could have an adverse effect on the profitability of our operations. We have not encountered such situation before.

In August 2007, the General Office of the State Council issued a notice, promoting the energy saving electricity dispatch policy, which provides dispatching priority to electricity generated from renewable resources over electricity generated from unrenewable resources. In 2013, the government made continuous effort to encourage energy-saving power distribution. In 2014, the NDRC issued Guidance on Strengthening and Improving the Operation of Power Management Regulation. In 2015, the NDRC and China National Energy Administration ("NEA") jointly issued Guidelines on Improving Electric Power Operations and Deepening Clean Energy Generation confirming a system ensuring the full-priced purchasing of renewable energy, and requests furthering

the electric power differentiation system on coal-fired units. In 2016, the NDRC and China National Energy Administration issued Notice on Issuing the Measures for the Administration of the Guaranteed Buyout of Electricity Generated by Renewable Energy Resources, Directive on the Measures for the Administration of the Guaranteed Buyout of Electricity Generated by Solar, Wind Energy Resources and Provisionary, Measures for Priority Dispatch of Renewable Peaking Power Generation Units and Notice on Power Supply and Notice on the Measures on the Consumption of Renewable Energy in Tri-North Area. In 2017, NDRC and NEA issued Circular on Orderly Opening Up the Electricity Generation and Consumption Plans, Interim Measures for Guaranteeing the Safe Consumption of Nuclear Power, Pilot Rules on Inter-regional Spare Renewable Energy Electricity Power Stock Trading, Circular on the Establishment of Pilot Electricity Power Stock Exchange, Circular on Promoting Hydropower Consumption in Southwest China, and Solutions to Abandoning Hydro, Wind and Solar Energy, to promote the development of the power stock exchange and renewable power consumption. In 2018, the NDRC and NEA issued the Circular on Promoting the Capability to Adjust the Power System and Plan for Consumption of Clean Energy (2018-2020) to further direct the development of the clean energy and push for the reform of the power market. The NEA also solicited for public opinions on the Circular on the Renewable Power Quota System, proposing a coordination between the power suppliers and users to take responsibilities under quota system.

We cannot assure that such implementation will not result in any decrease in the amount of the power dispatched by any of our power plants.

The power industry reform may affect our business

The PRC Government in 2002 announced and started to implement measures to further reform the power industry, with the ultimate goal of creating a more open and fair power market. As part of the reform, five power generation companies, including Huaneng Group, were created or restructured to take over all the power generation assets originally belonging to the State Power Corporation of China. In addition, two grid companies were created to take over the power transmission and distribution assets originally belonging to the State Power Corporation of China. An independent power supervisory commission, the SERC, was created to regulate the power industry. There might be further reforms, and it is uncertain how these reform measures and any further reforms will be implemented and impact our business. In December 2012, the PRC Government issued a notice to further reform the coal pricing mechanism, which mandated (1) the termination of all key coal purchase contracts between power generation companies and coal suppliers, and the abolition of national guidance of the railway transportation capacity plan, and (2) the cancellation of the dual-track coal pricing system, effective from January 1, 2013. For a detailed discussion of the reform, see "Item 4 Information on the Company – B. Business overview – Pricing policy." There can be no assurance that such coal pricing reform will not adversely affect our results of operation. In 2013, the PRC Government continued the reform in power industry. In July 2013, China National Energy Administration issued the Notice on Direct Purchases between Power End-users and Power Generation Companies, which officially implemented the direct purchases programs by large end-users.

On March 15, 2015, the Opinions of CPC Central Committee and State Council Regarding Further Deepening Reform of the Electricity System was released, according to which the reform will be focused and directed to orderly liberalize the tariff of the competitive markets other than electricity transmission and distribution, gradually allow investment from private investors in power distribution and selling businesses, consistently open the power generation market other than those for non-profit purpose or under regulation, push for independent and regulated operation of the parties involved in electricity transactions, continue the study of regional power grid construction and the transmission and distribution system suitable for China, further strengthen government regulations for enhanced power coordination and planning, and further improve safe and efficient operation of electricity and reliable power supply. These reforms will have a profound impact on the business models of power generation enterprises and may intensify the competition which may adversely affect our business. In November 2015, the NDRC and China Energy Administration issued six official documents regarding electricity system reform, namely Opinions on Deepening Electricity Price Reform, Opinions on Furthering Electricity Market Development, Opinions on Establishing and Institutionalizing Electricity Purchasing Organizations, Opinions on Orderly Opening Up Electricity Generation and Consumption, Opinions on Deepening Electricity Sales Reform and Guidelines on Fortifying and Institutionalizing the Management of Coal-fired Power Plants, further confirming the direction of the newest round of reforms of the electricity system.

In 2016, the PRC Government implemented various measures to further reform the power industry on many fronts, including (i) seeking public comments on the proposed amendment to the electric power law of the People's Republic of China, (ii) implementing structural reform pilot programs in nineteen provinces; (iii) establishing national electricity exchanges in Beijing and Guangzhou, (iii) setting up independent third party credit rating system for market players, (iv) promulgating rules governing the price and method of direct power purchase/competitive bidding programs as well as the market entrance and exit mechanism, and (v) furthering reform on the pricing mechanism for power transmission and distribution prices.

In 2017, The PRC Government issued various measures to further reform the power industry, including: (i) establishing the national power development plan covering the consumption share of the non-fossil fuel, heating system reform based on "coal to gas," "coal to electricity" and renewable energy development, and new technology programs; (ii) speeding up the reform of electricity transmission and distribution price; (iii) orderly opening up the electricity generation and consumption plans; (vi) establishing the union of power exchanges and speeding up the electricity stock and ancillary service market development; (v) enhancing the development of the electricity power supply side reform; (vi) issuing the rules for monthly inter-region electricity power trade in South China; and (vii) furthering the development of the power-related credit system.

In 2018, NDRC and NEA issued Circular on Promoting the Capability to Adjust the Power System and Plan for Consumption of Clean Energy (2018-2020), Circular on the Renewable Power Quota System and Notice on Actively Promoting Market-oriented Power Exchange and Further Improving the Trading Mechanism to futher promote the consumption of renewable energy and increase the utilization rate of the renewable energy. From 2018, users from coal, steel, non-ferrous metal and construction materials industries, among others, shall participate in the market-oriented power exchange process instead of applying the catalog price. Users are encouraged to negotiate with power generating enterprises to establish the “baseline with floating adjustment” pricing mechanism.

These reform actions will have a profound impact on the operations of power generation companies and may intensify competition, which may negatively impact our company.

We are effectively controlled by Huaneng Group and HIPDC, whose interests may differ from those of our other shareholders

Huaneng Group, directly or indirectly holds 45.67% of our total outstanding shares, and HIPDC directly holds 32.28% of our total outstanding shares. As Huaneng Group is HIPDC's parent company, they may exert effective control over us acting in concert. Their interests may sometimes conflict with those of our other minority shareholders. There is no assurance that Huaneng Group and HIPDC will always vote their shares, or direct the directors nominated by them to act in a way that will benefit our other minority shareholders.

Disruption in coal supply and its transportation as well as increase in coal price may adversely affect the normal operation of our power plants

A substantial majority of our power plants are fueled by coal. The coal supply for our power plants is arranged through free negotiation between power companies, coal suppliers, and railway authorities. Thus, any material disruption in coal supply and its transportation may adversely affect our operations. To date, we have not experienced shutdowns or reduced electricity generation caused by inadequate coal supply or transportation services.

In addition, our results of operations are sensitive to the fluctuation of coal price. For the past few years, the Chinese coal market was showing a surplus in production, resulting in a significantly decreased coal price. However, the policies of reducing overcapacity of the Chinese coal producers implemented in early 2016 led to a supply shortage with surging coal prices in the Chinese coal market. There is no assurance that the increase in coal prices will not continue in the future, and if the price increase does continue, there is no assurance that we will be able to adjust our power tariff to pass on the increase in the coal price in time. Although the government has established a coal-electricity price linkage mechanism to allow power generation companies to increase their power tariffs to cope with the increase in the coal price, the implementation of the mechanism involves uncertainties. For a detailed discussion of the coal-electricity price linkage mechanism, see "Item 4 Information on the Company – B. Business overview – Pricing policy."

Power plant development, acquisition and construction are a complex and time-consuming process, the delay of which may negatively affect the implementation of our growth strategy

We develop, construct, manage and operate large power plants. Our success depends upon our ability to secure all required PRC Government approvals, power sales and dispatch agreements, construction contracts, fuel supply and transportation and electricity transmission arrangements. Delay or failure to secure any of these could increase cost or delay or prevent commercial operation of the affected power plant. Although each of our power plants in operation and the power plants under construction received all required PRC Government approvals in a timely fashion, no assurances can be given that all the future projects will receive approvals in a timely fashion or at all. In addition, due to national policies and related regulations promoting environment-friendly energy, the approval requirements and procedures for power plant are becoming increasingly stringent, which may negatively affect the approval process of our new projects.

We have generally acted as, and intend to continue to act as, the general contractor for the construction of our power plants. As with any major infrastructure construction effort, the construction of a power plant involves many risks, including shortages of equipment, material and labor, labor disturbances, accidents, inclement weather, unforeseen engineering, environmental, geological, delays and other problems and unanticipated cost increases, any of which could give rise to delays or cost overruns. Construction delays may result in loss of revenues. Failure to complete construction according to specifications may result in liabilities, decrease power plant efficiency, increase operating costs and reduce earnings. Although the construction of each of our power plants was completed on or ahead of schedule and within its budget, no assurance can be given that construction of future projects will be completed on schedule or within budget.

In addition, from time to time, we may acquire existing power plants from HIPDC, Huaneng Group or other parties. The timing and the likelihood of the consummation of any such acquisitions will depend, among other things, on our ability to obtain financing and relevant PRC Government approvals and to negotiate relevant agreements for terms acceptable to us.

Substantial capital is required for investing in or acquiring new power plants and failure to obtain capital on reasonable commercial terms will increase our finance cost and cause delay in our expansion plans

An important component of our growth strategy is to develop new power plants and acquire operating power plants and related development rights from HIPDC, Huaneng Group or other companies on commercially reasonable terms. Our ability to arrange financing and the cost of such financing depend on numerous factors, including general economic and capital market conditions, credit availability from banks or other lenders, investor confidence in us and the continued success of our power plants. Although we have not been materially affected by inflation in the past, there is no assurance that we would not be affected in the future. The Chinese government is expected to implement active fiscal policies and sound monetary policies. The fiscal policies would be focused on reducing taxes and other fiscal levies with the view to addressing, in collaboration with the implementation of monetary polies, funding difficulties and prohibitive funding prices encountered by business enterprises. The sound monetary policies would be implemented to underscore overall economic stability, strengthen counter-cyclical monetary administration, optimize credit structure, and maintain reasonably adequate liquidity. Accordingly, it is expected that the market would have reasonably sufficient funding in 2019 and funding costs are expected to be consistent with slight decline. The interest bearing debts of the Company are mostly denominated in Renminbi, changes in benchmark lending interest rate published by the PBOC will have a direct impact on the Company's cost of debt. Regarding our debts denominated in other currencies, it is less likely that the U.S. and other major economies would further increase interest rates due to expected slowdown of the global economy. As the debts denominated in other currencies represent a small percentage in our total debts, the change of interest rates of foreign currencies are not expected to have material effect on the Company. Though the finance costs are expected to be consistent with slight decline, we may not be able to carry out our expansion plans due to the failure to obtain financing or increased financing costs. Furthermore, although we have historically been able to obtain financing on terms acceptable to us, there can be no assurance that financing for future power plant developments and acquisitions will be available on terms acceptable to us or, in the event of an equity offering, that such offering will not result in substantial dilution to existing shareholders.

Operation of power plants involves many risks and we may not have enough insurance to cover the economic losses if any of our power plants' ordinary operation is interrupted

The operation of power plants involves many risks and hazards, including breakdown, failure or substandard performance of equipment, improper installation or operation of equipment, labor disturbances, natural disasters, environmental hazards and industrial accidents. The occurrence of material operational problems, including but not limited to the above events, may adversely affect the profitability of a power plant.

Our power plants in the PRC currently maintain insurance coverage that is typical in the electric power industry in the PRC and in amounts that we believe to be adequate. Such insurance, however, may not provide adequate coverage in certain circumstances. In particular, in accordance with industry practice in the PRC, our power plants in the PRC do not generally maintain business interruption insurance, or any third party liability insurance other than that included in construction all-risks insurance or erection all-risks insurance to cover claims in respect of bodily injury or property or environment damage arising from accidents on our property or relating to our operation. Although each of our power plants has a good record of safe operation, there is no assurance that the afore-mentioned accidents will not occur in the future.

If the PRC Government adopts new and stricter environmental laws and additional capital expenditure is required for complying with such laws, the operation of our power plants may be adversely affected and we may be required to make more investment in compliance with these environmental laws

Most of our power plants, being coal-fired power plants, discharge pollutants into the environment. We are subject to central and local government environmental protection laws and regulations. The Environmental Protection Tax Law of People's Republic of China came into effect in 2018 and impose base-level environmental protection tax for various polluting substances. In addition, such environmental protection laws and regulations also set up the goal for the overall control on the discharge volume of key polluting substances. These laws and regulations impose fines for violations of laws, regulations or decrees and provide for the possible closure by the central government or local government of any power plant which fails to comply with orders requiring it to cease or cure certain activities causing environmental damage. Also, the PRC Government requires thermal power plants to equip all units with desulphurization and denitrification facilities, and sets higher anti-dust standards. The Chinese government is working on a pollution prevention and control campaign, which shall subject us to a more stringent standards for our air pollution control, waste water pollution control and ecological environmental protection efforts. Such stringent standards, together with the environmental protection tax, will result in the increases in the environmental protection expenditure and operating costs of power plants and may have an adverse impact on our operating results.

We attach great importance to the environmental related matters of our existing power plants and our power plants under construction. We have implemented a system that is designed to control pollution caused by our power plants, including the establishment of an environmental protection administration system at each power plant, adoption of relevant control and evaluation procedures and the installation and maintenance of certain pollution control equipment. We also upgraded the super low emission facilities on our coal-fired units. We believe our environmental protection systems and facilities for the power plants are adequate for us to comply with applicable central government and local government environmental protection laws and regulations. However, the PRC Government may impose new, stricter laws and regulations on environmental protection, which may adversely affect our operations.

The PRC is a party to the Framework Convention on Climate Change ("Climate Change Convention"), which is intended to limit or capture emissions of "greenhouse" gases, such as carbon dioxide. Ceilings on such emissions could limit the production of electricity from fossil fuels, particularly coal, or increase the costs of such production. At present, ceilings on the emissions of "greenhouse" gases have not been assigned to developing countries under the Climate Change Convention. Therefore, the Climate Change Convention would not have a major effect on us in the short term because the PRC as a developing country is not obligated to reduce its emissions of "greenhouse" gases at present, and the PRC Government has not adopted relevant control standards and policies. If the PRC were to agree to such ceilings, or otherwise reduce its reliance on coal-fired power plants, our business prospects could be adversely affected. In addition, pilot carbon emission trading programs have been conducted in certain regions and are expected to be gradually implemented throughout China. This may also adversely affect our business and financial prospects in the future.

Our business benefits from certain PRC Government tax incentives. Expiration of, or changes to, the incentives could adversely affect our operating results

Prior to January 1, 2008, according to the relevant income tax law, domestic enterprises were, in general, subject to statutory income tax of 33% (30% enterprise income tax and 3% local income tax). If these enterprises are located in certain specified locations or cities, or are specifically approved by State Administration of Taxation, a lower tax rate would be applied. Effective from January 1, 1999, in accordance with the practice notes on the PRC

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income tax laws applicable to foreign invested enterprises investing in energy and transportation infrastructure businesses, a reduced enterprise income tax rate of 15% (after the approval of State Administration of Taxation) was applicable across the country. We applied this rule to all of our wholly owned operating power plants after obtaining the approval of State Administration of Taxation. In addition, certain power plants were exempted from enterprise income tax for two years starting from the first profit-making year, after offsetting all tax losses carried forward from the previous years (at most of five years), followed by a 50% reduction of the applicable tax rate for the next three years. The statutory income tax was assessed individually based on each of their results of operations.

On March 16, 2007, the Enterprise Income Tax Law of PRC, or the New Enterprise Income Tax Law, was enacted, and became effective on January 1, 2008 and was amended on February 24, 2017. The New Enterprise Income Tax Law imposes a uniform income tax rate of 25% for domestic enterprises and foreign invested enterprises. Therefore, our power plants subject to a 33% income tax rate prior to January 1, 2008 are subject to a lower tax rate of 25% starting on January 1, 2008. With regard to our power plants entitled to a reduced enterprise income tax rate of 15% prior to January 1, 2008, their effective tax rate gradually increased to 25% within a five-year transition period commencing on January 1, 2008. Accordingly, the effective tax rate of our wholly owned power plants has increased over time. In addition, although our power plants entitled to tax exemption and reduction under the income tax laws and regulations that are effective prior to the New Enterprise Income Tax Law will continue to enjoy such preferential treatments until the expiration of the same, newly established power plants will not be able to benefit from such tax incentives, unless they can satisfy specific qualifications, if any, provided by then effective laws and regulations on preferential tax treatment.

The increase of applicable income tax rate and elimination of the preferential tax treatment with regard to certain of our power plants may adversely affect our financial condition and results of operations. Moreover, our historical operating results may not be indicative of our operating results for future periods as a result of the expiration of the tax benefits currently available to us.

In addition, according to the New Enterprise Income Tax Law and its implementation rules, any dividends derived from the distributable profits accumulated from January 1, 2008 and paid to the shareholders who are non-resident enterprises in the PRC will be subject to the PRC withholding tax at the rate of 10%. The withholding tax will be exempted if such dividends are derived from the distributable profits accumulated before January 1, 2008. Under a notice issued by the State Administration of Taxation of the PRC on November 6, 2008, we are required to withhold PRC income tax at the rate of 10% on annual dividends paid for 2008 and later years payable to our H Share investors who are non-resident enterprises.

Fluctuations in exchange rates could have an adverse effect on our results of operations and your investment

As a power producer operating mainly in China, we collect most of our revenues in Renminbi and have to convert Renminbi into foreign currencies to (i) repay some of our borrowings which are denominated in foreign currencies, (ii) purchase foreign made equipment and parts for repairs and maintenance, (iii) purchase fuel from overseas suppliers, and (iv) pay out dividend to our overseas shareholders.

The value of the Renminbi against the U.S. dollar and other currencies may fluctuate and is affected by, among other things, changes in China's political and economic conditions. The conversion of Renminbi into foreign currencies, including U.S. dollars, is based on rates set by the PBOC. On July 21, 2005, the PRC government introduced a floating exchange rate system to allow the value of Renminbi to fluctuate within a regulated band based on market supply and demand and by reference to a basket of foreign currencies. Renminbi appreciated by more than 20% against the U.S. dollar between July 2005 and July 2008. Between July 2008 and June 2010, this appreciation halted and the exchange rate between the Renminbi and the U.S. dollar remained within a narrow band. On June 19, 2010, the PBOC decided to further promote the reform of the Renminbi exchange rate formation mechanism, and improve the flexibility of Renminbi exchange rate. The Company and its subsidiaries (both domestic and overseas) have debts denominated in foreign currencies, fluctuations in the exchange rates of Renminbi and Singapore dollar into foreign currencies create exchange risk for the Company. With the internationalization process and RMB joining the SDR, RMB exchange rate may continue to fluctuate in the future. In August 2015, the PBOC further improved its midpoint rate determination mechanism, which led to a 2% depreciation of Renminbi against the U.S. dollar. With effect from October 1, 2016, RMB is determined to be a freely usable currency and will be included in the SDR basket as a fifth currency. In the fourth quarter of 2016, the RMB has depreciated significantly in the backdrop of a surging U.S. dollar and persistent capital outflows of China.

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In 2017, the RMB has appreciated significantly in the backdrop of a weak U.S. dollar, robust Chinese economy in 2017 and stringent foreign exchange regulation. In the first quarter of 2018, the RMB continued to appreciate. However, the RMB depreciated significantly in the remaining quarters of 2018. However, it is difficult to predict how market forces or PRC or U.S. government policy may impact the exchange rate between the Renminbi and the U.S. dollar in the future. There remains significant international pressure on the PRC Government to further liberalize its currency policy, which could result in further fluctuations in the value of the Renminbi against the U.S. dollar. However, there is no assurance that there will not be a devaluation of Renminbi in the future. If there is such devaluation, our debt servicing cost will increase and the return to our overseas investors may decrease.

Our revenues from SinoSing Power Pte. Ltd. ("SinoSing Power") and its subsidiaries are collected in Singapore dollars. However, commencing from 2008, the operating results of SinoSing Power and its subsidiaries were consolidated into our financial statements, which use Renminbi as the presentation currency. The situation of our Pakistan operation is similar after we consolidate our business in Pakistan since December 2018. As a result, we are exposed to foreign exchange fluctuations between Renminbi and the Singapore dollar or Pakistan Rupee. Appreciation of Renminbi against the Singapore dollar or Pakistan Rupee may cause an adverse impact on our operation results and foreign translation difference.

The audit report included in this annual report is prepared by an auditor who is not inspected by the Public Company Accounting Oversight Board and, as such, you are deprived of the benefits of such inspection

Auditors of companies that are registered with the U.S. Securities and Exchange Commission and traded publicly in the United States, including our independent registered public accounting firm, must be registered with the U.S. Public Company Accounting Oversight Board (United States) (the "PCAOB") and are required by the laws of the United States to undergo regular inspections by the PCAOB to assess their compliance with the laws of the United States and professional standards. Because we have substantial operations within the People's Republic of China and the PCAOB is currently unable to conduct inspections of the work of our auditors as it relates to those operations without the approval of the Chinese authorities, our auditor's work related to our operations in China is not currently inspected by the PCAOB. In May 2013, PCAOB announced that it had entered into a Memorandum of Understanding on Enforcement Cooperation with the China Securities Regulatory Commission ("CSRC") and the PRC Ministry of Finance, which establishes a cooperative framework between the parties for the production and exchange of audit documents relevant to investigations undertaken by PCAOB, the CSRC or the PRC Ministry of Finance in the United States and the PRC, respectively. PCAOB continues to be in discussions with the CSRC and the PRC Ministry of Finance to permit joint inspections in the PRC of audit firms that are registered with PCAOB and audit Chinese companies that trade on U.S. exchanges. On December 7, 2018, the Securities and Exchange Commission, or the SEC, and the PCAOB issued a joint statement highlighting continued challenges faced by the U.S. regulators in their oversight of financial statement audits of U.S.-listed companies with significant operations in China. The joint statement reflects a heightened interest in an issue that has vexed U.S. regulators in recent years. However, it remains unclear what further actions the SEC and PCAOB will take to address the problem.

This lack of PCAOB inspections of audit work performed in China prevents the PCAOB from regularly evaluating audit work of any auditors that was performed in China including that performed by our auditors. As a result, investors may be deprived of the full benefits of PCAOB inspections. Investors may lose confidence in our reported financial information and procedures and the quality of our financial statements.

Our independent registered public accounting firm may be temporarily suspended from practicing before the SEC. If a delay in completion of our audit process occurs as a result, we could be unable to timely file certain reports with the SEC, which may lead to the delisting of our stock

On January 22, 2014, Judge Cameron Elliot, an SEC administrative law judge, issued an initial decision suspending the Chinese member firms of the "Big Four" accounting firms, including our independent registered public accounting firm, from, among other things, practicing before the SEC for six months. In February 2014, the initial decision was appealed. While under appeal and in February 2015, the Chinese member firms of "Big Four" accounting firms reached a settlement with the SEC. As part of the settlement, each of the Chinese member firms of "Big Four" accounting firms agreed to settlement terms that include a censure; undertakings to make a payment to the SEC; procedures and undertakings as to future requests for documents by the US SEC; and possible additional proceedings and remedies should those undertakings not be adhered to.

If the settlement terms are not adhered to, Chinese member firms of "Big Four" accounting firms may be suspended from practicing before the SEC which could in turn delay the timely filing of our financial statements

with the SEC. In addition, it could be difficult for us to timely identify and engage another qualified independent auditor. A delinquency in our filings with the SEC may result in NYSE initiating delisting procedures, which could adversely harm our reputation and have other material adverse effects on our overall growth and prospect.

Forward-looking information may prove inaccurate

This document contains certain forward-looking statements and information relating to us that are based on the beliefs of our management as well as assumptions made by and information currently available to our management. When used in this document, the words "anticipate," "believe," "estimate," "expect," "going forward" and similar expressions, as they relate to us or our management, are intended to identify forward-looking statement. Such statements reflect the current views of our management with respect to future events and are subject to certain risks, uncertainties and assumptions, including the risk factors described in this document. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those described herein as anticipated, believed, estimated or expected. We do not intend to update these forward-looking statements.

There can be no assurance that we will not be passive foreign investment company, or PFIC, for United States federal income tax purposes for any taxable year, which could subject United States investors in the ADSs or our H Shares to significant adverse United States income tax consequences

We will be a "passive foreign investment company," or "PFIC," if, in the case of any particular taxable year, either (a) 75% or more of our gross income for such year consists of certain types of "passive" income or (b) 50% or more of the average quarterly value of our assets (as determined on the basis of fair market value) during such year produce or are held for the production of passive income (the "asset test"). For United States federal income tax purposes, and based upon our income and assets, we do not believe that we were classified as a PFIC for the taxable year ended December 31, 2018, and do not anticipate becoming one in the foreseeable future.

While we do not expect to become a PFIC, because the value of our assets for purposes of the asset test may be determined by reference to the market price of the ADSs, fluctuations in the market price of the ADSs may cause us to become a PFIC for the current or subsequent taxable years. The determination of whether we will be or become a PFIC will also depend, in part, on the composition of our income and assets. Under circumstances where we determine not to deploy significant amounts of cash for active purposes, our risk of being a PFIC may substantially increase. Because there are uncertainties in the application of the relevant rules and PFIC status is a factual determination made annually after the close of each taxable year, there can be no assurance that we will not be a PFIC for the current taxable year or any future taxable year.

If we are a PFIC in any taxable year, a U.S. Holder (as defined in "Item 10. Additional Information—E. Taxation—United States federal income tax considerations") may incur significantly increased United States income tax on gain recognized on the sale or other disposition of the ADSs or H Shares and on the receipt of distributions on the ADSs or H Shares to the extent such gain or distribution is treated as an "excess distribution" under the United States federal income tax rules and such holders may be subject to burdensome reporting requirements. Further, if we are a PFIC for any year during which a U.S. Holder holds the ADSs or our H Shares, we generally will continue to be treated as a PFIC for all succeeding years during which such U.S. Holder holds the ADSs or our H Shares. For more information see "Item 10. Additional Information—E. Taxation—United States federal income tax considerations—Passive Foreign Investment Company Considerations."

Risks relating to doing business in the PRC

China's economic, political and social conditions as well as government policies could significantly affect our business

As of December 31, 2018, the majority of our business, assets and operations are located in China. The economy of China differs from the economies of most developed countries in many respects, including government involvement, control of foreign exchange, and allocation of resources.

The economy of China has been transitioning from a planned economy to a more market-oriented economy. After multiple years of strenuous and sustained economic restructuring reforms, China has become a leading player in the global economy and a major contributing force to the economic revival and growth worldwide. The PRC Government has implemented economic reform measures emphasizing utilization of market forces in the development of the economy of China and a higher level of autonomy for the private sector. Some of these measures will benefit the overall economy of China, but may have a negative effect on us for a short term. For example, our operating results and financial condition may be adversely affected by changes in power tariff for our power plants, cost of fuels, increasingly stringent environment protection policies, and changes in State policies affecting the power industry.

Interpretation of PRC laws and regulations involves significant uncertainties

The PRC legal system is based on written statutes and their interpretation by the Supreme People's Court. Prior court decisions may be cited for reference but are not considered as binding precedents.

We are subject to certain PRC regulations governing PRC companies that are listed overseas. These regulations contain certain provisions that are required to be included in the articles of association of these PRC companies and are intended to regulate the internal affairs of these companies. As the PRC regulations are constantly evolving with the goal of better protecting shareholder's interests, we may face greater uncertainties in the interpretation of PRC laws and regulations. Furthermore, the PRC regulations for protection of shareholder's rights are different from those applicable in the United States and/or exchanges where we are listed. Therefore we made it our policy to adopt the strictest standards of any listing rules potentially applicable to us. Some of these standards are incorporated in our articles of association and bylaws with the view to providing most protection for the interests of our shareholders.

Risks relating to our operations in Singapore

Our operations in Singapore are subject to a number of risks, including, among others, risks relating to electricity pricing, dispatching, fuel supply, project development, capital expenditure, environmental regulations, government policies, and Singapore's economic, political and social conditions. Any of these risks could materially and adversely affect our business, prospects, financial condition and results of operations.

Fluctuation in demand and intensified competition may adversely affect Tuas Power's business and results of operations.

Our operations in Singapore depend on market demand and are subject to competition. Overall power system demand grew by 2.2% in 2018 over 2017. The future growth is highly dependent on a sustained recovery in the Singapore and global economies. The liberalization of Singapore's power market and the further deregulation of its power industry have resulted in more intense competition among the power generation companies in Singapore. Tuas Power Group, or Tuas Power, one of our wholly owned business units, is one of the three largest power generation companies in Singapore. If Tuas Power is unable to compete successfully against other power generation companies in Singapore, its business, prospects, financial condition and results of operations may be adversely affected.

An electricity futures market was also established in 2015 through an incentive scheme by the authority to market makers (MM) in the futures market. This has attracted independent retailers which are expected to exert some price competition in the retail market. A Demand Response (DR) scheme is currently being established which could potentially introduce further price competition in the wholesale generation market in Singapore. Furthermore, the Singapore government recently announced plans to raise the adoption of solar energy to 350 MWp by 2020 and 1,000MWp beyond 2020, compared to around 183 MWp in third quarter 2018.

TP Utilities Pte Ltd ("TPU"), an entity in Tuas Power Group, sells utilities, such as steam, industrial water and demineralized water to industrial customers for their direct consumption. The time of potential customers of TPU to site their premises, if at all, is subject to microeconomic situations. The demand of the utilities by these customers may vary as well. Despite Tuas Power's efforts to develop its facilities in stages and/or in modules to provide sufficient capacity matching the demand, and require customers to pay minimum capacity payment charges

to mitigate the demand risk, its business and results of operations may be adversely affected by fluctuation in demand.

Regulatory changes of the vesting regime in Singapore could expose Tuas Power to electricity price volatility and adversely affect its business and results of operations

Tuas Power derives its revenue mainly from sale of electricity to the National Electricity Market of Singapore (the "NEMS") through a bidding process and vesting contracts under which a significant portion of power sales is predetermined by the Energy Market Authority ("EMA"). The vesting contract regime in Singapore is targeted at mitigation of market power in the wholesale electricity spot market. The regime achieves this objective by assigning a quantity of vesting contracts to generation companies, thereby limiting their incentives to exercise whatever level of market power they may possess. Vesting contracts are a form of bilateral contract imposed/vested on the major power generation companies in Singapore. Vesting contract price is set by the EMA, which is Singapore's power market regulator. Vesting contract price is set at the long run marginal cost of the most efficient base-loaded technology plant employed in Singapore and is reviewed every two years. On a quarterly basis, the EMA allows for vesting contract quantity to be adjusted to account for changes in demand (due to seasonality) and the vesting contract price to be adjusted to account for inflation and changes in fuel prices. Such a mechanism helps protect the profit margins of the power generation companies in the Singapore market, such as Tuas Power, to a large degree. The quantity of vesting contract allocated to the power generation company depends on the proportion of such power generation company's capacity to the total licensed or planned generation capacity at the commencement of the vesting contracts regime. A portion of the volume under the Vesting Contract Scheme has also been allocated to the LNG Vesting Scheme - an incentive scheme where players who have committed to an initial tranche of LNG for Singapore are allocated electricity sale contracts. The volume allocated to the generation companies under the LNG vesting scheme is fixed for a period of 10 years until 2023. Following EMA's review of the Vesting Contract Regime in 2016, it is determined that the vesting contract level will be maintained at 25% until the end of the first half of 2018 and it will be reduced to LNG vesting level by the second half of 2019. The vesting contract regime will be phased out by 2023 when the LNG vesting contract expires, which could lead to volatility in electricity prices and adversely affect our business, financial condition and results of operation.

In July 2018, EMA issued a determination paper to allow vesting contract holders with steam turbine generation plants, i.e., Tuas Power, Senoko Energy and YTL PowerSeraya, to retain their allocated vesting quantities irrespective of whether the steam turbine generation plants are retired. This will facilitate the three generation companies in making commercial decisions on whether and when to retire their steam turbine generation plants so as to reduce overhead costs and free up resources.

The fuel cost of Tuas Power is exposed to volatility of international fuel price and foreign currency risk

The fuel for Tuas Power consists of natural gas, coal, biomass, fuel oil and diesel oil. Since the procurement price of natural gas is closely linked to oil price and the procurement price of coal and biomass is linked to a coal index, the fuel cost of Tuas Power is exposed to the volatility of international oil and coal prices. The prices of oil were on upward trend from January to September 2018 and turned downwards in the remaining months of 2018. The price of coal remained strong in 2018. In addition, the commitments for the purchase of fuel are denominated in U.S. dollars, which further exposes Tuas Power to foreign currency risk. Any increase in fuel price and/or appreciation of the U.S. dollar against the Singapore dollar will translate into an increase in fuel cost for Tuas Power. Part of this increase can be passed through electricity sale contracts and utilities sale contracts, while fuel and foreign exchange hedging strategies done appropriately will mitigate the impact of such increase. No assurance can be given that such increase will not adversely affect results of its operation. Tuas Power is highly dependent upon the import of gas via pipelines from Indonesia. The movement in the price of oil over the course of 2018 has resulted in variation in the price for its various sources of gas supply within the same month. Any disruption of such supply would impact the normal operation of Tuas Power significantly. This risk has been mitigated through Tuas Power's contract to buy LNG for its incremental needs, although there is no assurance that, in the event of fuel supply shortfall, Tuas Power's operations will not be adversely affected.

ITEM 4 INFORMATION ON THE COMPANY

A. History and development of the Company

Our legal and commercial name is Huaneng Power International, Inc. Our head office is at Huaneng Building, 6 Fuxingmennei Street, Xicheng District, Beijing, People's Republic of China and our telephone number is (8610) 63226999. We were established in June 1994 as a company limited by shares organized under the laws of the People's Republic of China.

The SEC maintains an Internet website that contains reports, proxy and information statements, and other information regarding us that filed electronically with the SEC, which can be accessed at http://www.sec.gov. Information about the Company and documents the Company submitted to the SEC are available on our website: http://www.hpi.com.cn/sites/english/Pages/default.aspx.

We completed our initial global public offering of 1,250,000,000 overseas listed 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 ADSs. In January 1998, the foreign shares of the Company were listed on The Stock Exchange of Hong Kong Limited 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 issuance of 350,000,000 A Shares (Stock Code: 600011) in the 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. In October 2018, the Company completed the non-public issuance of 497,709,919 A Shares. Currently, the total share capital of the Company amounts to approximately 15.7 billion shares.

As resolved at the second meeting of the 8th session of the board of the Company on October 13, 2014 and adopted at the third extraordinary general meeting of the Company, we entered into the Huaneng Group Interests Transfer Agreement with Huaneng Group, and the HIPDC Interests Transfer Agreement and the Chaohu Power Interests Transfer Agreement with HIPDC. Pursuant to these transfer agreements, we acquired from Huaneng Group 91.8% interests of Hainan Power, 75% interests of Wuhan Power, 53.45% interests of Suzhou Thermal Power, 97% interests of Dalongtan Hydropower and 100% interests of Hualiangting Hydropower at a total price of RMB7.338 billion, and acquire from HIPDC 60% interests of Chaohu Power, 100% interests of Ruijin Power, 100% interests of Anyuan Power, 100% interests of Jingmen Thermal Power and 100% interest of Yingcheng Thermal Power Interests at a total price of RMB1.938 billion. The total consideration is RMB9.647 billion after adjustment of the profits generated from the date of valuation to the acquisition date in accordance with the equity transfer agreements. The transaction was completed in January 2015.

On October 14, 2016, the Company signed the Agreement for the Transfer of Equity Interests in Certain Companies with Huaneng Group (the "Transfer Agreement"). Pursuant to the Transfer Agreement, the Company shall accept the transfer of (i) 80% equity interest of Huaneng Shandong Power Limited; (ii) 100% equity interest of Huaneng Jilin Power Limited; (iii) 100% equity interest of Huaneng Heilongjiang Power Limited; and (iv) 90% equity interest of Huaneng Henan Zhongyuan Gas Power Generation Co., Ltd. from Huaneng Group for the consideration of RMB15,501 million after certain adjustment of the profits generated from the date of valuation to the acquisition date in accordance with the equity transfer agreements. This transaction was considered and approved at the 21st meeting of the Eighth Session of the Board held on October 14, 2016, and was considered and approved at the 2016 Second Extraordinary General Meeting held on November 30, 2016. The acquisition was completed on January 1, 2017, and the total consideration has been settled in cash by December 31, 2017 after netting off with the receivables due from Huaneng Group.

On July 31, 2018, Shandong Power (a subsidiary of the Company) and Taishan Power entered into the Transfer Agreement, pursuant to which Shandong Power shall acquire from Taishan Power (i) 75% interests in the registered capital of Shandong Huaneng Liaocheng Thermal Power Company Limited (“Liaocheng Thermal Power”), (ii) 80% interests in the registered capital of Shandong Huaneng Laizhou Wind Power Generation Company Limited (“Laizhou Wind Power”), (iii) 80% interests in the registered capital of Shandong Huaneng Laiwu Thermal Power Company Limited (“Laiwu Thermal Power”), and (iv) 15% interests in the registered capital of Huaneng Laiwu Power Generation Limited (“Laiwu Power Generation”) at the consideration of RMB1,800,020,000. Upon completion of the Transfer,

Liaocheng Thermal Power, Laizhou Wind Power and Laiwu Thermal Power will become subsidiaries of Shandong Power.

See "Item 5 Operating and Financial Reviews and Prospects – Liquidity and Cash Resources" for a description of our principal capital expenditures since the beginning of the last three financial years.

B. Business overview

We are one of the China's largest independent power producers and we have been striving for innovations in technologies, structure, and management since its incorporation. We were 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. We 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. We 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. We completed the offshore wind power project with the largest generating capacity in Asia and was the first to realize mass production of the wind turbine of 5 MW in China. We also invested and operated the most advanced gas turbine with the largest generation capacity and heat supplying capacity in China. 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.

As of December 31, 2018, we had controlling generating capacity of 105,991 MW, and total generating capacity of 93,755 MW on equity-ownership basis.

Operations in China

We are engaged in developing, constructing, operating and managing large scale coal-fired and gas turbine power plants, new energy power projects and related facilities, including ports, marine transportation and power distribution. Our domestic power plants are located in 26 provinces, autonomous regions and provincial-level municipalities. In 2018, the Company proactively adapted to the changes in the market and anticipated the dynamics of the reforms in national economy and power market system to promptly realign our operating strategy. Throughout the year, we maintained stable operation of safe and clean production, constantly optimised the power structure, realized increases in both quantity and price in power generation, achieved excellent marketing results, effectively controlled the fuel cost, and steadily carried out capital operation. As a result, we have satisfactorily achieved our annual business objectives and maintained our leading position in the industry.

In 2018, new generating units with a total installed capacity of 653 MW were put into operation. In 2018, our total domestic power generation from all operating power plants on a consolidated basis amounted to 430.457 billion kWh, representing an increase of 9.12% from 2017. The annual average utilization hours of our domestic generating units reached 4,208 hours. Our fuel cost per unit of power sold by domestic power plants increased by 4.85% from the previous year to RMB 236.89 per MWh.

We believe our significant capability in the development and construction of power projects, as exemplified in the completion of our projects under construction ahead of schedule, and our experience gained in the successful acquisitions of power assets in recent years will enable us to take full advantage of the opportunities presented in China's power market.

With respect to the acquisition or development of any project, we will consider, among other factors, changes in power market conditions, and adhere to prudent commercial principles in the evaluation of the feasibility of the project. In addition to business development strategies, we will continue to enhance our profitability by further strengthening our cost control, especially in respect of fuel costs and construction costs, so as to hedge against fluctuations in fuel price and increase competitiveness in the power market.

Operations in Singapore

Tuas Power, one of our wholly owned business units, operates in Singapore and is engaged in the business of generation, wholesale and retail of power and other relating utilities. Tuas Power is comprised of Tuas Power Ltd ("TPL"), the investment holding company, and eight subsidiaries. Among these subsidiaries, Tuas Power Generation Pte. Ltd. ("TPG") is the electricity generation company that owns 100% of Tuas Power Supply Pte Ltd ("TPS"), which is the retail arm of TPG. Separately, TPU, a wholly owned subsidiary of TPL is engaged in the business of production and supply of utilities to industrial customers at Tembusu, Jurong Island in Singapore, as well as the

generation of electricity dispatched to the electricity wholesale market. We have consolidated Tuas Power's results of operations since March 2008. The total assets and revenue of Singapore operations represented approximately 6.49% and 7.08%, respectively, of our consolidated total assets and revenue as of and for the year ended December 31, 2018. In 2018, the power generated by Tuas Power in Singapore accounted for 21.1% of the total power generated in Singapore, slightly lower than 2017.

Operations in Pakistan

We engaged in the business of generation, wholesale and retail of power and other relating utilities through our subsidiaries, Huaneng Shandong Ruyi (Pakistan) Energy (Private) Co., Ltd. (“Ruyi Pakistan Energy”) and Shandong Huatai Electric Power Operation & Maintenance (Private) Co., Ltd. ("Huatai Power") and their subsidiaries. We have consolidated results of operations of Ruyi Pakistan Energy and Huatai Power since December 31, 2018. The total assets of Pakistan represented approximately 3.28% of our consolidated total assets as of December 31, 2018.

Development of power plants

The process of identifying potential sites for power plants, obtaining government approvals, completing construction and commencing commercial operations is usually lengthy. However, because of our significant experience in developing and constructing power plants, we have been able to identify promising power plant projects in China and to obtain all required PRC Government approvals in a timely manner.

Opportunity identification and feasibility study

We initially identify an area in which additional electric power is needed by determining its existing installed capacity and projected demand for electric power. The initial assessment of a proposed power plant involves a preliminary feasibility study. The feasibility study examines the proposed power plant's land use requirements, access to a power grid, fuel supply arrangements, availability of water, local requirements for permits and licenses and the ability of potential customers to afford the proposed power tariff. To determine projected demand, factors such as economic growth, population growth and industrial expansion are used. To gauge the expected supply of electricity, the capacities of existing plants and plants under construction or development are studied.

Approval process

Prior to July 2004, any project proposal and supporting documents for new power plants had to first be submitted to the NDRC for approval and then be submitted to the State Council. In July 2004, the State Council of the PRC reformed the fixed asset investment regulatory system in China. Under the new system, new projects in the electric power industry that do not use government funds will no longer be subject to the examination and approval procedure. Instead, they will only be subject to a confirmation and registration process. Coal-fired projects will be subject to confirmation by the NDRC. Wind power projects with installed capacity of 50 MW or above shall be subject to confirmation and registration with the relevant department of the central government, while wind power projects with an installed capacity lower than 50 MW shall be subject to confirmation and registration with relevant local government departments. Wind power projects confirmed by local government departments at provincial level shall also be filed with the NDRC and China National Energy Administration.

In November 2014, pursuant to the Catalogue of Investment Projects Approved by the Government (2014 Version) issued by the State Council, administrative approval power for certain activities in the energy sector has been delegated to a lower level. The administrative approval power for thermal power stations has been delegated to the provincial level (with coal-fired thermal power station projects being subject to national-level administrative approval based on state-promulgated constructions plans limited by total volume), the administrative approval power for heat power stations has been delegated to the local level (with condensing steam heat power station projects being subject to provincial-level administrative approval based on state-promulgated constructions plans limited by total volume), and the administrative approval power for wind power plants delegated to the local level subject to state-promulgated constructions plans limited by total volume as well as the scope as set out in the annual developmental guides. The Interim Measures for Supervision and Administration of Photovoltaic Power Station Projects issued by China National Energy Administration in 2013 requires that photovoltaic power station projects be regulated by on a filing-based system by the provincial-level energy supervisory departments in accordance with regulations related to investment projects issued by the State Council. The same administrative approval standard was again re-affirmed in December 2016 pursuant to the Catalogue of Investment Projects Approved by the Government (2016 Version) issued by the State Council.

Joint venture power projects are subject to additional governmental approvals. Approval by Ministry of Commerce is also required when foreign investment is involved.

From 2014, China National Energy Administration has placed the stringent control on coal-fired projects within the Beijing-Tianjin-Hebei region, the Yangtze River Delta Region and the Pearl River Delta Region. All new coal-fired generating projects, other than those involving co-generation, were prohibited from being approved. Multi coal-fired generating units may be reconstructed into large capacity units based on the principles of an equivalent replacement for coal but the reduction in replacement pollutant emission.

From 2016, to counter the issue of overcapacity in the coal-fired power sector, China National Energy Administration strengthened the approval of coal-fired projects nationwide, a number of new coal-fired generating projects, other than those involving co-generation, were canceled, postponed or terminated. Considering the increasingly limited availability of prime locations and decreasing subsidies, China National Energy Administration also suspended approval of new wind power plants and photovoltaic power station projects in provinces with wind curtailment rate over 20% and solar curtailment rate over 5%. It is expected that the overcapacity countering policy will be continued in the future.

Permits and contracts

In developing a new power plant, we, like other players in the industry, are required to obtain permits before commencement of the project. Such permits include operating licenses and similar approvals related to plant site, land use, construction, and environment. To encourage the cooperation and support of the local governments of the localities of the power plants, it has been and will be our policy to seek investment in such power plants by the relevant local governments.

Power plant construction

We have generally acted as the general contractor for the construction of our power plants. Equipment procurement and installation, site preparation and civil works are subcontracted to subcontractors through a competitive bidding process. All of our power plants were completed on or ahead of schedule, enabling certain units to enter service and begin generating income earlier than the estimated in-service date.

Plant start-up and operation

We have historically operated and intend to continue to operate our power plants. Our power plants have established management structures based on well-developed management techniques. We select the superintendent for a new power plant from the senior management of our operating plants early in the construction phase of the new plant, invest in the training of operational personnel, adopt management techniques that improve efficiency and structure our plant bonus program to reward efficient and cost-effective operation of the plant in order to ensure the safety, stability and high availability factor of each power plant. Our senior management meets several times a year with the superintendents of the power plants as a group, fostering a team approach to operations, and conducts annual plant performance reviews with the appropriate superintendent, during which opportunities to enhance the power plant's performance and profitability are evaluated.

After a coal-fired generating unit is constructed, the contractor tests its installation and systems. Following such tests, the contractor puts the unit through a continuous 168-hour trial run at full load. After successfully passing the continuous 168-hour test and obtaining approval from the local governments, the unit may commence its commercial operation. Trial run of a wind power project consists of two phases: (i) trial run of single wind power generating unit and (ii) trial run of the entire wind power project as a whole. After successfully passing the trial run, the wind power project may commence its commercial operation.

Development of power plants in Singapore

The Singapore electricity industry had traditionally been vertically integrated and owned by the government. Since 1995, steps have been taken to liberalize the power industry, including the incorporation of the Public Utilities Board ("PUB") in 1995, establishment of Singapore Electricity Pool ("SEP") in 1998, formation of Energy Market Authority ("EMA") in 2001, and the evolvement of the SEP into the New Electricity Market of Singapore ("NEMS") in 2003. The EMA is a statutory body responsible for the economic, technical and competition regulation of the gas and electricity industry in Singapore. In carrying out its functions as the regulator of the power sector, EMA is empowered under the Electricity Act to issue and enforce licenses, codes of practices and

performance standards. Energy Market Company Pte Ltd. (the "EMC") is the market company licensed to operate the wholesale market, or the NEMS.

In Singapore, a company is required to hold a generation license issued by the EMA if it generates electricity by means of one or more generating units with capacity of 10 MW or above. If connected to the power grid, the generating unit(s) must be registered with the EMC and will have to compete with other power generation companies to secure dispatch in the NEMS.

To ensure adequate electricity supply in Singapore, the EMA targets a minimum reserve margin (the excess of generating capacity over peak electricity demand) of 30% based on a loss of load probability (a measure of the probability that a system demand will exceed capacity during a given period, often expressed as the estimated number of days over a year) of three days per year. The 30% required reserve margin is to cater for scheduled maintenance as well as forced outages of generating units in the system. If the reserve margin falls below the required 30% due to demand growth and/or plant retirements, it would be an indication that new generation investments in generation units are needed to maintain system security.

The EMA intends to keep the increase and decrease in generating capacity commercially driven as far as practicable. As a precaution against the risk of insufficient generating capacity in the system, the EMA has planned to put in place a capacity assurance scheme to incentivize new generation planting in case new generating capacity that is required to maintain system security is not forthcoming from the market. EMA has not provided any update on the proposed scheme but given the current oversupply of capacity, it is not anticipated that the scheme will be put into place anytime soon.

By most measures of market power, the Singapore market is highly concentrated, as the three largest power generation companies account for approximately 60% of total power capacity. Since December 2002, EMA has imposed a licensed capacity cap (in MW) on these three power generation companies to prevent them from increasing their market dominance/power. Following a review of the vesting contract regime in 2016, EMA imposed a 25% cap on capacity market share to all generation licensees to prevent structural increases in market concentration/power. With regard to the three largest power generation companies, the cap imposed by EMA is the higher of either the 25% capacity market share cap or their respective licensed capacity cap, until the expiry of their respective generation license. This provides an option for the three largest power generation companies to increase their generation capacities beyond their current generation license up to 25% capacity market share cap.

New entrants as well as existing competitors have invested in new generating capacity or repowering of existing plants to take advantage of the LNG Vesting Scheme. This will impact the market negatively as these new capacities compete for market share as well as to avoid the gas take-or-pay penalties arising out of an oversupplied market.

EMA issued a Singapore Electricity Market Outlook (SEMO) 2018, which provides a long-term outlook of the energy market, such as the projected supply and demand conditions to facilitate power generation investment decisions. Based on the data provided by EMA, annual system demand and system peak demand are projected to grow at a CAGR of 1.4 – 2.0% over the next 10 years (2019 to 2029), while a net reduction of about 1,300 MW of generation capacity is projected over the next 4 years (2019 to 2022).

We are in the process of developing the Tembusu Multi-Utilities Complex (the "TMUC") in Singapore. The TMUC is expected to consist of a co-generation plant, a desalination plant and a wastewater treatment facility, with a total installed capacity of 165 MW. The complex will be developed in multiple phases in order to meet customers' demand. Phase 1 consists of 1 x 450 t/h coal-biomass co-fired circulated fluidized bed boiler, 2 x 200 t/h diesel/natural gas-fired boilers and 1 x 101MW steam turbine-generator, and other components of the plant. Phase 2A consists of 1 x 450 t/h coal-biomass co-fired circulated fluidized bed boiler, 1 x 200 t/h diesel/natural gas-fired boiler and 1 x 32MW steam turbine-generator, and other components of the plant. Phase 1 and Phase IIA commenced commercial operations in March 2013 and June 2014 respectively. The first train of 62.5 m³/h wastewater treatment facility commenced commercial operation in September 2015. TPL owns 100% equity interest in this project.

TPL collaborated with ST Marine Pte. Ltd. (ST Marine), an affiliate of Singapore Temasek Holdings, to participate in the tender for Singapore's Public Utilities Board (PUB)'s fifth desalination plant project under a

Develop-Build-Own-Operate (BDOO) scheme on July 6, 2017. The capacity of the desalination plant is 30 MIGD (137,000 cubic meter per day). The desalination plant is located at Tembusu Jurong Island, adjacent to TMUC in order to achieve synergy. TPL and ST Marine incorporated a concession company, TP-STM Water Resources Pte. Ltd. (TP-STM Water Resources), on November 1, 2017 and executed the Water Purchase Agreement (WPA) with PUB on November 6, 2017. TPL owns 60% equity interests in TP-STM Water Resources. The construction of the desalination plant commenced in August 2018. The project commercial operation date (PCOD) is scheduled for June 2020. The term of concession is 25 years from the PCOD.

Pricing policy

Pricing policy in China

Prior to April 2001, the on-grid tariffs for our planned output were designed to enable us to recover all operating and debt servicing costs and to earn a fixed rate of return. Since April 2001, however, the PRC Government has gradually implemented a new on-grid tariff-setting mechanism based on the operating terms of power plants as well as the average costs of comparable power plants.

On July 3, 2003, the State Council approved the tariff reform plan and made it clear that the long-term objective of the reform is to establish a standardized and transparent tariff-setting mechanism.

Pursuant to the NDRC circular issued in June 2004, on-grid tariffs for newly built power generating units commencing operation from June 2004 should be set on the basis of the average cost of comparable units adding tax and reasonable return in the regional grid. It provides challenges and incentives for power generation companies to control costs for building new generating units.

On March 28, 2005, the NDRC issued the Interim Measures on Regulation of On-grid Tariff, the Interim Measures on Regulation of Transmission and Distribution Tariff, and the Interim Measures on Regulation of End-user Tariff, or collectively the "Interim Measures," to provide guidance for the reform of tariff-setting mechanism in the transition period. Under the Interim Measures, the tariff is classified into on-grid tariff, transmission and distribution tariff and end-user tariff. Transmission and distribution tariff will be instituted by the government. The end-user tariff will be based on on-grid tariff and transmission and distribution tariff. The government is responsible for regulating and supervising power tariffs based on the principles of promoting efficiency, encouraging investment and improving affordability.

In December 2004, the NDRC proposed and the State Council approved the establishment of a linkage mechanism between coal and power prices, pursuant to which, the NDRC may adjust power tariffs if the change of the average coal price reaches 5% within a period of six months compared with the preceding same period. The change in a period, if less than 5%, will be carried forward to the future periods until the accumulated amounts reach 5%. With a goal to encourage power generation companies to reduce cost and improve efficiency, only around 70% of coal price increases will be allowed to pass to end-users through an increase of power tariffs, and power generation companies will bear the remaining 30%. In May 2005, the NDRC activated the coal-electricity price linkage mechanism for the first time to increase on-grid tariffs and end-user tariffs in the northeastern region, central region, eastern region, northwestern region and southern region. We accordingly increased the on-grid tariffs of our power plants in the northeastern region, central region, eastern region and northwestern region on May 1, 2005 and in the southern region on July 15, 2005. In June 2006, the coal-electricity price linkage mechanism was reactivated by the NDRC to increase on-grid tariffs and end-user tariffs in the northeastern region, central region, eastern region, northwestern region and southern region. We accordingly increased the on-grid tariffs of most of our power plants in the same regions on June 30, 2006.

In May 2007, NDRC and the State Environment Protection Administration jointly promulgated Interim Administrative Measures on Electricity Price of Coal-fired Generating Units installed with Desulphurization Facilities and the Operations of Such Facilities, which provided that a premium for desulphurization may be charged on the price of the electricity generated by generating units installed with desulphurization facilities on and from the date on which such desulphurization facilities are tested and accepted by a relevant environment protection regulator. Such pricing policy is also applicable to the old generating units which are installed with desulphurization facilities. The new measures are more stringent on the regulation of the coal-fired power plants with desulphurization facilities, setting forth the categories under which the price including a desulphurization premium will be offset or otherwise

penalized based on the ratio of utilization of the relevant desulphurization facilities on an annual basis. As of December 31, 2013, all of our existing coal-fired generating units have installed and operated the desulphurization facilities and enjoyed the desulphurization premium.

In June 2008, NDRC issued Notice of Raising the Power Tariff, pursuant to which, the power tariff in provincial grids nationwide was increased by an average of RMB0.025 per kWh. In August 2008, NDRC issued Notice of Raising the On-grid Tariffs of the Thermal Power Plants, pursuant to which, the on-grid tariff of thermal power plants, including plants fueled by coal, oil, gas and co-generation, was increased by an average of RMB0.02 per kWh.

On February 25, 2009, NDRC, SERC and China National Energy Administration jointly promulgated the Notice regarding Cleaning up the Concessional Tariff Scheme, pursuant to which, (i) the concessional tariff scheme at the local level is banned, and (ii) certain measures, such as direct purchase by large end-users and adopting peak and off-peak power pricing policy, will be carried out to reduce enterprises' power cost. In addition, the notice emphasizes the supervision and inspection over the setting of power tariffs. For wind power plants located in a specific wind source area, a unified wind power tariff shall be applied. On October 11, 2009, in order to promote a fair market condition and the optimization of electric power resources, NDRC, SERC and China National Energy Administration jointly promulgated the Circular on Regulating the Administration of Electric Power Transaction Tariff to regulate the tariff-setting mechanism for the on-grid tariff, transmission and distribution tariff and end-user tariff and clean up the local preferential power tariffs provided to high energy consumption companies. Pursuant to a notice issued by NDRC, with effect from November 20, 2009, certain adjustments on the on-grid tariffs have been made in various regions of China in order to resolve the inconsistencies in tariffs, rationalize the tariff structure and promote the development of renewable energy.

In 2010, the PRC Government started to implement the direct power purchase policy. As of December 31, 2013, some of the provinces where we operate power plants are approved by the NDRC to implement the direct power purchase by large power end-users. In addition, during 2010 SERC issued several circulars and notices to regulate the trans-provincial and interregional transaction of power and/or power generation right, in which the power purchase price shall be freely determined by negotiation through the market pricing mechanism. In December 2012, SERC issued another circular to further regulate the trans-provincial and interregional transaction of power and/or power generation right.

In May 2011, NDRC issued a notice, increasing the on-grid tariffs of thermal power plants to partially compensate the increased costs incurred by thermal power plants resulting from increases in coal prices. Different adjustments on tariffs were made in different provinces. In November 2011, PRC Government made further nationwide adjustments on power tariffs, including an average of RMB0.026 per kWh increase in on-grid tariff for thermal power plants. In December 2012, NDRC issued a notice, which provided that, from January 1, 2013, NDRC would provide an RMB0.008 per kWh denitrification premium for all coal-fired generating units equipped with denitrification facilities that are inspected and accepted by authorized national or provincial authority.

In March 2012, the PRC Government issued a notice, which mandated the confirmation method for the power generation projects, subsidy standards and fund appropriation standards relating to the application for a subsidy for renewable energy power price of power generation projects. In December 2012, the PRC Government issued the Notice on the Guidelines of Enhancing the Reform of Marketization of Coal Used for Power Generation to further reform the coal pricing mechanism. Effective January 1, 2013, all key coal purchase contracts between power generation companies and coal suppliers were terminated and contracts are directly negotiated between power generation companies and coal suppliers without the interference of local governments. According to the notice, the NDRC will no longer issue inter-provincial guidance on the railway transportation capacity plan. In addition, the dual-track coal pricing system, which included the government regulated mandatory annual contract pricing and spot market prices for the remaining coal production output of each coal supplier, was abolished due to the narrowing gap between the government regulated coal contract price and the spot market price. Pursuant to the notice, future coal contract prices will be determined by the market and freely negotiated between power generation companies and coal suppliers. Furthermore, the coal-electricity price linkage mechanism will continue to be implemented and constantly improved. Once the coal price fluctuates for more than 5% on an annual basis, the on-grid tariff would be adjusted accordingly. The notice also mandates that power generation companies absorb 10% of the coal price fluctuations as compared to 30% prior to 2013. Given the narrow gap between the key contract coal price and the spot market price, the overall on-grid tariff was not adjusted.

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In September 2013, NDRC issued the Notice on the Adjustment of Power Tariff for Power Generation Companies and Related Matters, pursuant to which the on-grid tariffs for coal-fired generating units were lowered, by a national average of RMB0.013 per kWh, and the on-grid tariff for gas turbine power plants was slightly increased. The Notice also increased the power tariff for power-generating companies that are equipped with denitrification facilities and dust-removal facilities.

In March 2014, the NDRC and the Ministry of Environmental Protection jointly issued the Measures to Monitor the Operation of Environmental Protection Tariffs and Facilities Regarding Coal-fired Generating Units, under which the standard on-grid electricity tariff incorporating environmental protection element will no longer be applicable to coal-fired generating units unless the coal-fired power generating enterprise has completed renovation for environmental protection acceptable after testing. In August 2014, the NDRC issued the Notice to Further Resolve Conflicts Regarding Environmental Protection Tariff, under which the standard on-grid tariff for coal-fired power generating units is lowered with the view to resolve the environmental protection tariffs conflicts such as denitrification and dedusting of coal-fired power generation enterprises, and setting the tariff subsidy for denitrification and dedusting at RMB0.01/kWh and RMB0.002/kWh, respectively. In December 2014, the NDRC issued the Notice Regarding Adjusting Standard On-grid Tariff for Onshore Wind Powers, under which the standard on-grid tariff for each of Class I, Class II and Class III wind powers is lowered by RMB0.02, and the tariff for Class IV wind power remains unchanged at RMB0.61/kWh. In December 2014, the NDRC issued the Notice Regarding Certain issues of On-grid Tariff of Natural Gas Powers, defining the principles to formulate and modify the tariff of electricity generated by natural gas, aiming to regulate on-grid tariff administration and used facilitate healthy and orderly growth of natural gas power generating sector in China.

In April 2015, the NDRC issued the Notice on Reducing On-grid Tariff for Coal-fired Power and Commercial and Industrial Power Tariff in order to guide on tariffs for natural gas and for companies that utilize denitration or dedusting techniques or with extremely low emissions, to lower commercial and industrial power tariff, and to moderately lower on-grid tariff for coal-fired power, the power tariff in provincial grids nationwide was decreased by an average of RMB0.02 per kWh.

In December 2015, the NDRC issued the Notice on Issues of Perfecting the Mechanism of Coal-electricity Price Linkage, confirming the annual cycle of the mechanism, the NDRC's leading role in implementing the mechanism, and provinces and cities' executor role in implementing the mechanism. The coal-electricity prices with which the mechanism of coal-electricity price linkage is in line are indexed to the national thermal coal price index. The benchmark coal price is the provincial average price in China's thermal coal price index of 2014. And the benchmark tariff is in principle the on-grid tariff in line with the benchmark coal price. In December 2015, the NDRC also issued the Notice on Improving On-grid Tariff Policy for Wind Power and Photovoltaic Power, which established a policy that the benchmark on-grid tariffs for wind power and photovoltaic power decrease in line with the development of these two types of power plants. To further indicate the investment expectation, the Notice confirmed the benchmark on-grid tariffs for wind power of 2016 and 2018. The 2016 benchmark on-grid tariff for photovoltaic power has been confirmed, yet that of 2017 and onward will be confirmed at a later stage.

On January 1, 2016, after the annual review based on the calculations prescribed in the mechanism of coal-electricity price linkage, the NDRC adjusted on-grid tariff for coal-fired power and commercial and industrial power tariff. National on-grid tariffs for coal power decreased by an average of RMB0.03 per kWh, based on the relevant regulations, RMB0.01 per kWh of which shall be contributed to a specialized corporate restructuring fund with the purpose of supporting placement of personnel laid off during the supply-side reform. The NDRC also increased on-grid tariff for renewable power by RMB0.004 per kWh in order to replenish the renewable energy fund and to support emission reduction efforts of coal-fired power generation enterprises and to resolve conflicts regarding environmental protection tariffs.

In December 2016, in order to implement General Office of the State Council's Energy Development Strategic Action Plan (2014-2020) about achieving equal on-grid tariff for wind and solar power with coal power to encourage the orderly development of wind and solar power by properly guiding investments in these areas, the NDRC issued the Announcement on the Adjustment of Standard On-Grid Tariff for Solar and Onshore Wind Power. From January 1, 2017, standard on-grid tariffs for Class I, Class II and Class III solar powers were adjusted to RMB0.65 per kWh, RMB0.75 per kWh and RMB0.85 per kWh, respectively, which is RMB0.15 per kWh, RMB0.13 per kWh and RMB0.13 per kWh lower than the corresponding tariff in 2016. Such standard on-grid tariff will be adjusted annually.

2018 standard on-grid tariff for Class I, Class II and Class III onshore wind power

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decreased by RMB0.04 per kWh, RMB0.02 per kWh, RMB0.01 per kWh, respectively. Yunnan Province has been recategorized as Class II from Class IV, which meant the standard on-grid tariff for wind power generated in Yunnan province will decrease by an additional RMB0.12 per kWh.

In June 2017, NDRC issued Circular on Canceling or Reducing Governmental Funds and Additional Charges and Reasonably Adjusting On-Grid Tariff Structure, which cancels the special fund for industrial restructuring charged to the power generating enterprises and reduces major water conservancy project construction fund and large and medium-sized reservoir resettlement support fund by 25% to relieve power generation enterprises from its difficulties in daily operations.

In December 2017, NDRC issued Circular on the Pricing Policy of Photovoltaic Projects in 2018, From January 1, 2018, standard on-grid tariffs for Class I, Class II and Class III solar powers were adjusted to RMB0.55 per kWh, RMB0.65 per kWh and RMB0.75 per kWh, respectively (tax included). All distributed photovoltaic projects commencing operation after January 1, 2018, adopting "Self Generate, Self Consume, with Spare Power Put On-grid" model, shall apply a subsidy of RMB0.37 per kWh. All distributed photovoltaic projects adopting "All Power Put On-grid" model shall apply the price set by the region they locate at.

In May 2018, the NDRC, NEA and MOF issued Circular on the Issues related to Photovoltaic Projects in 2018, reducing the standard on-grid tariffs by RMB0.05 for each of Class I, Class II and Class III solar powers. All distributed photovoltaic projects commencing operation after the issuance of the circular, adopting "Self Generate, Self Consume, with Spare Power Put On-grid" model, shall apply a subsidy of RMB0.32 per kWh. All distributed photovoltaic projects adopting "All Power Put On-grid" model shall apply the price set by the region they locate at. In June 2018, the NDRC, NEA and MOF issued the Notice on Releasing the Catalogue of Additional Subsidies for Renewable Energy Tariff (the Seventh Group), which provides that on-grid renewable energy projects incorporated in the catalogue shall not receive the subsidy from the fund of additional subsidies for renewable energy tariff.

Pricing Policy in Singapore

Pricing Policy of Electricity in Singapore

All licensed power plants in Singapore sell their plant output into the NEMS under a half-hourly competitive bidding process, during which a clearing price is determined based on the projected system demand. All successful bids/power plants that are cleared in each half hour will be dispatched automatically by control signals from the Power System Operator, a division of the EMA, and in turn will receive the cleared price as determined earlier. The cleared price paid to the power plants is the nodal price at their point of injection, and the Market Clearing Engine, the computer software that creates dispatch schedules and determines market clearing prices, automatically produces a different price at each node on the network. A Demand Response scheme is being introduced where demand could be curtailed in response to high prices in return for a share of the total savings arising out of lower prices as a result of demand being reduced.

As there is no certainty in the price or the dispatch levels for any power plants, operators of power plants may enter into short- or long-term financial arrangements with other counterparties or their own subsidiary company involved in the electricity retail market (to end consumers of electricity) to secure stability in their revenue stream and manage the commercial risks associated with operations in a competitive market.

In addition, the major power generation companies, including Tuas Power, are obliged to hold vesting contracts. Vesting contracts are a form of the bilateral contract imposed/vested on the generation companies who had been licensed by the EMA before the establishment of NEMS. Market Support Services Licensee is the counterparty to all of the vesting contracts, and the vesting contracts are settled between the parties through the EMC's settlement system. The quantity of vesting contract allocated to the power generation company depends on the proportion of such power generation company's capacity to the total licensed or planned generation capacity at the commencement of the vesting contract regime. Vesting contract price is set by the EMA at the long-run marginal cost and is adjusted by the EMA on a periodic basis for changes in the long-run marginal cost and on a quarterly basis for inflation and changes in fuel prices and electricity demand. Such mechanism helps protect the profit margins of the power generation companies in the Singapore market. The contract quantity and price are currently recalculated every three months. Following the review of vesting contract regime by EMA in 2016, it is determined that the vesting contract level will maintain at 25% until the end of first half of 2018 and reduce to LNG vesting

level by the second half of 2019. The vesting contract regime will be phased out by 2023 when the LNG vesting contracts expire. There will be increased exposure to pool prices which are volatile in nature. The authority has introduced a demand response scheme where loads can choose to participate in peak load shaving and share in part of the consumer surplus and an Electricity Futures Market which attracts independent retailers to enter the Singapore market. We continue to monitor closely and evaluate the impact of such markets on our business.

The gross pool design adopted in NEMS means all quantity sold by retailers to consumers has to be in turn purchased from the pool. The retailers pay for their electricity purchases at the Uniform Singapore Energy Price, which is a weighted average of nodal prices and is determined on a half-hourly basis in the NEMS.

Pricing Policy of Utilities in Singapore

Utilities supply to industrial customers is based on long-term contracts. The pricing of utilities has both fixed and variable components.

Power sales

Each of our power plants has entered into a written agreement with the local grid companies for the sales of its planned power output. Generally, the agreement has a fixed term of one year and provides that the annual utilization hours of the power plant will be determined with reference to the average annual utilization hours of the similar generating units connected to the same grid.

In 2003, SERC and the State Administration of Commerce and Industry jointly promulgated a model contract form (the "Model Contract Form") for use by power grid companies and power generation companies in connection with electricity sale and purchase transactions. The Model Contract Form contains provisions on the parties' rights and obligations, amount of electricity subject to purchase, payment method and liabilities for breach of contract, etc. We believe that the publication of the Model Contract Form has facilitated the negotiation and execution of electricity purchase contracts between power grid companies and power generation companies in a fair, transparent and efficient manner. In 2016, a majority of the agreements entered into between our power plants and the local grid companies were based on the Model Contract Form. In 2018, our power plants, large power end-users and electric power companies/grid companies started to sign tripartite contracts.

From 2015, several rules have been issued to implement the plan for power market reform, including Regulation on Market Access and Exit of Electric Power Company, Several Opinions on Further Deepening the Reform of the Electric Power System, Regulations on Orderly Opening Up Electricity Distribution Business, Basic Rules for Mid- to Long- Term Electricity Trade (Interim), Circulate on Orderly Opening Up Power Generation and Consumption Plans, Response regarding Approving Regulation on Pilot Inter-Region Incremental Renewable Energy Power Trade (Interim), Circular on Establishment of Pilot Electricity Power Stock Exchange, Notice on Actively Promoting Market-oriented Power Exchange and Further Improving the Trading Mechanism, and Implementing Rules on Allocating the Distribution Region of the Incremental Distribution Business, etc. to further the reform of electricity market and the establishment of the electricity exchange.

Starting from 2016, two nationwide and 33 provincial level electricity exchanges have been established, and we have invested in the electricity exchanges established in Chongqing, Shanxi and Hubei, holding 3%, 5% and 5% equity interests, respectively. In 2018, the NDRC and NEA issued Circular on Promoting the Standardization of the Power Exchanges, which provides the power exchanges shall pursue the variety of shareholders and demands a non-grid capital involvement of more than 20%. More than 20 market administration committees have been established, and we have participated in the market administration committees established in areas such as Beijing, Guangzhou, Jiangsu, Shanxi, Liaoning, Shanghai, Henan, Hubei, Chongqing, Jilin and Shandong.

At the end of 2018, all municipalities, autonomous regions and provinces, except for Tibet, have finished their approval of electricity distribution price. We have established 20 provincial level energy sales companies and 13 municipal level energy sales companies, taking a meaningful market share.

In 2018, all municipalities, autonomous regions and provinces, except for Tibet, have developed direct purchase programs. The national volume of electricity sold in 2018 via the direct purchase programs was approximately 1,400 billion kWh, which represented a huge increase from 2017. Most of the sale was negotiated

between power producers and large end users, with a minority completed through the competitive bidding process or listed transactions. We participated in direct purchase programs in all regions where we have control over power plants, other than Hainan, and obtained market shares similar to our capacity shares.

In general, establishing liberalized power markets represents the general trend in China's power market reform, which is conducive to creating a competitive environment that is fair, transparent and equitable.

Power sales in Singapore

According to EMC, the total registered capacity in commercial operation for 2018 in Singapore was 13,554 MW, of which 10,512 MW belonged to CCGT/Cogen/Trigen facilities. In 2018, the peak demand for electricity was 7,071 MW against 2017's 6,967 MW. The power market in Singapore is competitive, and power generation companies compete to sell their power output into NEMS through a bidding process with hedging via vesting contracts and retail sales. For the year ended December 31, 2018, power sold through vesting contracts represented

approximately 22.5% of total system demand. The existing Vesting Contract Scheme will drop to LNG vesting level in second half of 2019. The decrease in allocated vesting contract volumes will have to be made up through increased retail sales or increased exposure to pool prices which are volatile in nature.

The volatility in the sales price of the revenue associated with the sale of electricity in the NEMS is effectively managed via vesting contracts and direct retail sales which is carried out through a Tuas Power's subsidiary. The effective tariffs Tuas Power received for its electricity output are thus largely dependent on the vesting contract prices and volumes as well as prices secured under retail sales. The EMA has launched the Open Electricity Market (previously known as Full Retail Contestability) in April 2018 progressively based on geographical zones and the nationwide launch of the Open Electricity Market is expected to complete by May 2019.

Utility sales in Singapore

In 2018, TMUC sold 2,385,087 MT of steam to customers, a decrease of 7.5% as compared to 2,579,205 MT in 2017.

Fuel supply arrangements

The majority of our power plants in capacity are thermal plants, which are fueled by coal, gas and oil.

Coal

Our coal supply for our coal-fired power plants is mainly obtained from numerous coal producers in Shanxi Province, Inner Mongolia Autonomous Region and Gansu Province. We also obtain coal from overseas suppliers.

In 2016, we purchased 132 million tons of coal and consumed 132 million tons of coal. Of our total coal purchases, 39% was purchased under annual contracting arrangements and the remainder was purchased on the open market. The coal purchase price for our Company, including transportation costs and miscellaneous expenses, averaged approximately RMB423.16 per ton in 2016, representing an increase of 3.54% compared to 2015. Our average unit fuel cost in 2016 decreased by 1.76% from that in 2015.

In 2017, we purchased 168 million tons of coal and consumed 172 million tons of coal. Of our total coal purchases, 64% was purchased under annual contracting arrangements and the remainder was purchased on the open market. The coal purchase price for our Company, including transportation costs and miscellaneous expenses, averaged approximately RMB547.72 per ton in 2017, representing an increase of 29.4% compared to 2016. Our average unit fuel cost in 2017 increased by 32.41% from that in 2016.

In 2018, we purchased 196 million tons of coal and consumed 187 million tons of coal. Of our total coal purchases, 55% was purchased under annual contracting arrangements and the remainder was purchased on the open market. The coal purchase price for our Company, including transportation costs and miscellaneous expenses, averaged approximately RMB551.35 per ton in 2018, representing an increase of 0.66% compared to 2017. Our average unit fuel cost in 2018 increased by 4.85% from that in 2017.

Singapore's Tuas Power used coal as primary fuel for its TMUC's cogeneration plants. Coal is procured from coal producers in Indonesia via two long-term coal supply contracts with 10 year and 15-year terms respectively, and short-term contracts. The prices are indexed to the Global Coal Newcastle Index and HBA (Coal Reference Price which is regulated by Indonesia Government) Index. In 2018, Tuas Power purchased an incremental amount of coal in the open market.

Gas

Currently, the Company has 11 Combined Cycle Gas Turbine Power Plants ("CCGT") in China, including:

- Huaneng Shanghai Combined Cycle Gas Turbine Power Plant ("Shanghai CCGT") with gas supply transported through the pipeline of "West-East Gas Transport Project";
- Huaneng Jiangsu Jinling Combined Cycle Gas Turbine Power Plant ("Jinling CCGT") with gas supply transported through the pipeline of "West-East Gas Transport Project";

Huaneng Beijing Co-generation CCGT Power Plant ("Beijing Co-generation CCGT") with gas supply transported through Shaanxi-Beijing Pipeline;
Huaneng Zhejiang Tongxiang Combined Cycle Gas Turbine Power Plant ("Tongxiang CCGT"), with gas supply transported through the pipeline of "West-East Gas Transport Project";
Huaneng Chongqing Liangjiang Combined Cycle Gas Turbine Power Plant ("Liangjiang CCGT") with gas supply transported through the pipeline of "West-East Gas Transport Project";
Huaneng Tianjin Lingang Combined Cycle Gas Turbine Co-generation Power Plant ("Lingang CCGT Co-generation") with gas supply by CNOOC Tianjin Trading Branch and Petro China Tianjin Trading Branch;
Huaneng Shanxi Dongshan Combined Cycle Gas Turbine Power Plant ("Dongshan CCGT") with gas supply transported through Shaanxi-Beijing Pipeline II;
Huaneng Hainan Nanshan Combined Cycle Gas Turbine Power Plant ("Nanshan CCGT") with gas supply by CNOOC Hainan Branch;
Huaneng Zhongyuan Combined Cycle Gas Turbine Power Plant ("Zhongyuan CCGT") with gas supply transported through the pipeline of "West-East Gas Transport Project";
Huaneng Jiangsu Suzhou Combined Cycle Gas Turbine Co-generation Power Plant ("Suzhou CCGT Co-generation ") with gas supply transported through the pipeline of "West-East Gas Transport Project"; and
Huaneng Guangxi Guilin Distributed Energy Project ("Guilin Distributed Energy") with gas supply by Petro China Nanning Branch.

In addition, Tuas Power in Singapore has five gas-fired combined cycle generating units and three gas-fired backup boilers. The piped gas for Tuas Power is provided by Pavilion Gas Pte Ltd and Sembcorp Gas Pte Ltd., whereas LNG is provided by Shell Gas Marketing Pte Ltd (formally known as BG Singapore Gas Marketing Pte Ltd).

Oil

Tuas Power maintains operation of one 600 MW oil-fired steam generating unit. The oil supply for Tuas Power is purchased from the open market. With the increased competition from new gas-fired CCPs, fuel oil consumption is expected to be marginal at best and therefore future purchases, if any, will be on a spot basis. Diesel, as backup fuel for oil-fired units, is also purchased on a spot basis.

Repairs and maintenance

Each of our power plants shall conduct repairs and maintenance as per the repairs and maintenance plan issued by the regional grid company. The daily repairs and maintenance procedure of generating units shall comply with the relevant rules and technical specifications of the Company.

We arrange our annual repairs and maintenance plan based on the operating status and equivalent operating hours (“EOH”) of generating units:

for imported units of and above 300MW, and domestically-built units of and above 600MW, we arrange an A-grade repairs and maintenance after 60,000 EOH, after which, we arrange a B-grade repairs and maintenance after 30,000 EOH each;

for domestically-built units below 600MW, we arrange an A-grade repairs and maintenance after 40,000 EOH, after which we arrange a B-grade repairs and maintenance after 20,000 EOH each, provided, that a C-grade repairs and maintenance shall be conducted after 10,000 EOH or 18 months, whichever is longer;

for all units not scheduled for any A-grade, B-grade or C-grade repairs and maintenance within a calendar year, a D-grade repairs and maintenance shall be arranged;

for all high backpressure heating units and circulating fluidized bed boilers, we arrange a separate D-grade repairs and maintenance each calendar year;

in principle, we arrange no C-grade or above repairs and maintenance for units newly put into operations, but only one D-grade repairs and maintenance for every two units; and

for CCGT units, we arrange repairs and maintenance pursuant to the long-term servicing agreement.

C. Organizational structure

We are 32.28% owned by HIPDC, which in turn is a subsidiary of Huaneng Group. Huaneng Group was established in 1988 with the approval of the State Council. Huaneng Group also holds a 13.39% equity interest in us in addition to HIPDC's ownership. In 2002, Huaneng Group was restructured as one of the five independent power generation group companies to take over the power generation assets originally belonging to the State Power Corporation of China. Huaneng Group has a registered capital of RMB20 billion and is controlled and managed by the central government. Huaneng Group is principally engaged in the development, investment, construction, operation and management of power plants; organizing the generation and sale of power (and heat); and the development, investment, construction, production and sale of products in relation to energy, transportation, new energy and environmental protection industries.

HIPDC was established in 1985 as a joint venture controlled by Huaneng Group. HIPDC is engaged in developing, investing, operating and constructing power plants in China. Some of the power plants currently owned and operated by us were originally built and later transferred to us by HIPDC. Both Huaneng Group and HIPDC have agreed to give us preferential rights in the power development business and power assets transfers. See "Item 7.A. Major shareholders" for details.

The following organizational chart sets forth the organizational structure of HIPDC and us as of March 31, 2019:

2019:

Notes:

* Huaneng Group indirectly holds 100% equity interests in Pro-Power Investment Limited through its wholly owned subsidiary, China Hua Neng Hong Kong Company Limited, and Pro-Power Investment Limited in turn holds 25% equity interests in HIPDC. As a result, Huaneng Group beneficially holds 100% of equity interests in HIPDC.

** Of the 13.39% equity interest, 9.91% was directly held by Huaneng Group, 3.01% was held by Huaneng Group through its wholly owned subsidiary, China Hua Neng Hong Kong Company Limited, and the remaining approximately 0.47% was held by Huaneng Group through its subsidiary, China Huaneng Finance Corporation Limited.

For a detailed discussion of the Company's subsidiaries, see Note 9 to the Financial Statements.

D. Property, plants and equipment

The following table presents certain summary information on our power plants as of December 31, 2018.

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Heilongjiang Province					
Xinhua Power Plant	Unit I: Sep. 1979	1 x 200	70%	140	Coal
	Unit II: Sep. 2005	1 x 330	70%	231	
Hegang Power Plant	Unit I: Nov. 1998	1x 300	64%	192	Coal
	Unit II: Nov. 1999	1x 300	64%	192	
	Unit III: Apr. 2007	1 x 600	64%	384	
Daqing Co-generation	Unit I: Jun. 2013	1 x 350	100%	350	Coal
	Unit II: Aug. 2013	1 x 350	100%	350	
Yichun Co-generation	Unit I: Sep. 2015	1 x 350	100%	350	Coal
	Unit II: Dec. 2015	1 x 350	100%	350	
Sanjiangkou Wind Power	66 turbines: Feb. 2010	99	82.85%	82	Wind
Linjiang Jiangsheng Wind Power	66 turbines: Oct. 2015	99	82.85%	82	Wind
Daqing Heping Aobao Wind Power	32 turbines: Dec. 2011	96	100%	96	Wind
	32 turbines: May 2012	96	100%	96	
	32 turbines: Dec. 2013	96	100%	48	
Zhaodong Dechang Photovoltaic	Dec. 2017	20	100%	20	Solar
Shuangyu Photovoltaic					
Shuangyu Photovoltaic	Jul. 2018	20	100%	20	Solar
Xinhua Photovoltaic	Jun. 2018	20	100%	20	Solar
Donghai Photovoltaic	Jul. 2018	20	100%	20	Solar
Jilin Province					
Jiutai Power Plant	Unit I: Oct. 2009	1 x 670	100%	670	Coal
	Unit II: Dec. 2009	1 x 670	100%	670	
Changchun Co-generation	Unit I: Dec. 2009	1 x 350	100%	350	Coal

	Unit II: Apr. 2010	1 x 350	100%	350	
Nongan Biomass	Dec. 2011	1 x 25	100%	25	Biomass
Linjiang Jubao Hydropower	Sep. 2004	2 x 10	100%	20	Solar
Zhenlai Wind Power	33 turbines: Jun. 2009	49.5	100%	49.5	Wind
	33 turbines: Dec. 2011	49.5	100%	49.5	

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Siping Wind Power	50 turbines: Oct. 2010	75	100%	75	Wind
	25 turbines: Nov. 2010	50	100%	50	
	50 turbines: Dec. 2010	75	100%	75	
Tongyu Tuanjie Wind Power	74 turbines: Dec. 2015	148	100%	148	Wind
Linjiang Jubao Photovoltaic	Jun. 2017	15	100%	15	Solar
Zhenlai Photovoltaic	Jun. 2018	20	50%	10	Solar
Liaoning Province					
Dalian Power Plan					
Phase I	Unit I: Sep. 1988 Unit II: Dec. 1988	2 x 350	100%	700	Coal
Phase II	Unit III: Jan. 1999 Unit IV: Jan. 1999	2 x 350	100%	700	Coal
Dandong Power Plant	Unit I: Jan. 1999 Unit II: Jan. 1999	2 x 350	100%	700	Coal
Yingkou Power Plant					
Phase I	Unit I: Jan. 1996 Unit II: Dec. 1996	2 x 320	100%	640	Coal
Phase II	Unit III: Aug. 2007 Unit IV: Oct. 2007	2 x 600	100%	1,200	Coal
Yingkou Co-generation	Unit I: Dec. 2009 Unit II: Dec. 2009	2 x 330	100%	660	Coal
Wafangdian Wind Power	24 turbines: Jun. 2011	48	100%	48	Wind
Changtu Wind Power	33 turbines: Nov. 2012	97.5	100%	97.5	Wind
	24 turbines: Oct. 2014				
Suzihe Hydropower	2012	3 x 12.5	100%	37.5	Hydro
Dandong Photovoltaic	May. 2016	10	100%	10	Solar
Yingkou Co-generation Photovoltaic	Jun. 2016	10	100%	10	Solar
Xianrendao Co-generation	Mar. 2017	1 x 50	100%	50	Coal
Yingkou Xianrendao Co-generation Power	Mar. 2017	2*50	100%	100	Coal
Jianchang Bashihan Photovoltaic					
Phase I	Aug. 2017	22.03	100%	22.03	Solar
Phase II	Aug. 2017	22.03	100%	22.03	Solar
Xiao Deyingzi Photovoltaic	Aug. 2017	15.56	100%	15.56	Solar
Chaoyang Heiniuyingzi Photovoltaic	Aug. 2017	18.79	100%	18.79	Solar

Inner Mongolia Autonomous Region					
Huade Wind Power					
Phase I	33 turbines: Dec. 2009	49.5	100%	49.5	Wind
Phase II	33 turbines: Jun. 2011	49.5	100%	49.5	Wind
Hebei Province					
Shang' an Power Plant	Unit I: Aug. 1990	2 x 350	100%	700	Coal
Phase I	Unit II: Dec. 1990				
Phase II	Unit III: Oct. 1997	2 x 330	100%	660	Coal
	Unit IV: Oct. 1997				
Phase III	Unit V: Jul. 2008	2 x 600	100%	1,200	Coal
	Unit VI: Aug. 2008				

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Kangbao Wind Power					
Phase I	33 turbines: Jan. 2011	49.5	100%	49.5	Wind
Kangbao Xitan Photovoltaic	Jun. 2016	20	100%	20	Solar
Zhuolu Dabao Wind Power	24 turbines: Mar. 2017	48	100%	48	Wind
Shang'an Dianchanghuichang Photovoltaic	Dec. 2017	17	100%	17	Solar
Gansu Province					
Pingliang Power Plant					
Phase I	Unit I: Sep. 2000	3 x 325	65%	633.75	Coal
	Unit II: Jun. 2001				
	Unit III: Jun. 2003				
	Unit IV: Nov. 2003	1 x 330	65%	214.5	Coal
	Unit V: Feb. 2010	2 x 600	65%	780	Coal
	Unit VI: March 2010				
Jiuquan Wind Power	259 turbines: Dec. 2011	401	100%	401	Wind
Jiuquan II Wind Power	100 turbines: Dec. 2014	200	100%	200	Wind
	100 turbines: Jun. 2015	200	100%	200	Wind
Yumen Wind Power	24 turbines: Jun. 2015	48	100%	48	Wind
	67 turbines: Jun. 2015	100.5	100%	100.5	Wind
Yigang Wind Power	96 turbines: Dec. 2015	192	100%	192	Wind
Ningxia Autonomous Region					
Ruyi Helan Rooftop Photovoltaic	Jun. 2017	19.8	40%	7.92	Solar
Beijing Municipality					
Beijing Co-generation					
Phase I	Unit I: Jan. 1998	2 x 165	41%	135.3	Coal
	Unit II: Jan. 1998				
	Unit III: Dec. 1998	2 x 220	41%	180.4	Coal
	Unit IV: Jun. 1999				
	Unit V: Apr. 2004	1 x 75	41%	30.75	Coal
Beijing Co-generation CCGT					
Phase II	Unit VI: Dec. 2011	2 x 306.9	41%	251.66	Gas
	Unit VII: Dec. 2011				
	Unit VIII: Dec. 2011	1 x 309.6	41%	126.936	Gas

Beijing Co-generation CCGT					
Phase III	Unit IX: Nov. 2017 Unit X: Nov. 2017	2 x 342.97	41%	281.24	Gas
	Unit XI: Nov. 2017	1 x 312.6	41%	128.166	Gas
Tianjin Municipality					
Yangliuqing Co-generation	Unit I: Dec. 1998 Unit II: Sep. 1999 Unit III: Dec. 2006 Unit IV: May 2007	4 x 300	55%	660	Coal
Lingang Co-generation CCGT	Unit I: Dec. 2014	1 x 313 1 x 150	55%	254.65	Gas
Chenxi Photovoltaic	Jun. 2017	2.2	55%	1.21	Solar

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Shanxi Province					
Yushe Power Plant	Unit III: Oct. 2004 Unit IV: Nov. 2004	2 x 300	60%	360	Coal
Zuoquan Power Plant	Unit I: Dec. 2011 Unit II: Jan. 2012	2 x 673	80%	1,076.8	Coal
Dongshan CCGT	Unit I: Oct. 2015 Unit II: Oct. 2015	2 x297.7	100%	595.4	Gas
	Unit III: Oct. 2015	263.6	100%	263.6	Gas
Yushe Photovoltaic	Jun. 2017	50	100%	50	Solar
Yushe Fupin Photovoltaic	Aug. 2018	10.5	90%	9.45	Solar
Shandong Province					
Dezhou Power Plant					
Phase I	Unit I: 1992	1 x 330	100%	330	Coal
	Unit II: 1992	1 x 320	100%	320	Coal
Phase II	Unit III: Jun. 1994	1 x 330	100%	330	Coal
	Unit IV: May 1995	1 x 320	100%	320	Coal
Phase III	Unit V: Jun. 2002 Unit VI: Oct. 2002	2 x 700	100%	1,400	Coal
Jining Power Plant					
Circulating fluidized bed boiler	Unit V: Jul. 2003	2 x 135	100%	270	Coal
	Unit VI: Aug. 2003				
Co-generation	Unit I: Nov. 2009 Unit II: Dec. 2009	2 x 350	100%	700	Coal
Xindian Power Plant					
Phase III	Unit V: Sep 2006 Unit VI: Nov. 2006	2 x 300	95%	570	Coal
Weihai Power Plant					
Phase II	Unit III: Mar. 1998	2 x 320	60%	384	Coal
	Unit IV: Nov. 1998				
Phase III	Unit V: Dec. 2012 Unit VI: Dec. 2012	2 x 680	60%	816	Coal
Rizhao Power Plant					
Phase I	Unit I: Sep. 1999	1 x 350	88.8%	311	Coal
	Unit II: Jan. 2003	1 x 350	88.8%	311	
Phase II	Dec. 2008	2 x 680	100%	1,360	Coal

Zhanhua Co-generation	Jul. 2005	2 x 165	100%	330	Coal
Baiyanghe Power Plant	Unit I: Oct. 2003	1 x 145	80%	116	Coal
	Unit II: Oct. 2003	1 x 145	80%	116	
	Unit III: Dec. 2009	1 x 300	80%	240	
	Unit IV: Dec. 2009	1 x 300	80%	240	
Jiaxiang Power Plant	Unit I: Oct. 2006	1 x 330	40%	132	Coal
	Unit II: May. 2007	1 x 330	40%	132	
Jining Co-generation	Unit I: Apr. 2004	1 x 30	40%	12	Coal
	Unit II: Jul. 2004	1 x 30	40%	12	
Qufu Co-generation	Unit I: Feb. 2009	1 x 225	40%	90	Coal
	Unit II: Sep. 2009	1 x 225	40%	90	
Huangtai Power Plant	Unit I: Nov. 1987	1 x 330	72%	237.6	Coal
	Unit II: Jan. 2011	1 x 350	72%	252	
	Unit III: Jan. 2011	1 x 350	72%	252	

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Yantai Power Plant	Unit I: Apr. 1996	1 x 110	80%	88	Coal
	Unit II: Oct. 2005	1 x 160	80%	128	
	Unit III: Dec. 2005	1 x 160	80%	128	
	Unit IV: Oct. 2006	1 x 160	80%	128	
Linyi Power Plant	Unit I: Dec. 2012	1 x 350	60%	210	Coal
	Unit II: Oct. 2013	1 x 350	60%	210	
	Unit III: Dec. 1997	1 x 140	60%	84	
	Unit IV: Apr. 2003	1 x 140	60%	84	
	Unit V: Sep. 2003	1 x 140	60%	84	
	Unit VI: Apr. 2005	1 x 140	60%	84	
Jining Yunhe Power Plant	Unit I: Jul. 2000	1 x 145	78.68%	114.09	Coal
	Unit II: Nov. 2000	1 x 145	78.68%	114.09	
	Unit III: Sep. 2003	1 x 145	78.68%	114.09	
	Unit IV: Feb. 2004	1 x 145	78.68%	114.09	
	Unit V: Sep. 2006	1 x 330	78.68%	259.64	
	Unit VI: Mar. 2006	1 x 330	78.68%	259.64	
Liaocheng Co-generation	Unit I: Jan. 2006	1 x 330	60%	198	Coal
	Unit II: Sep. 2006	1 x 330	60%	198	
Zhongtai Power Plant	Unit I: May. 2007	1 x 150	80%	120	Coal
	Unit II: Dec. 2007	1 x 150	80%	120	
Laiwu Power Plant	Unit I: Dec. 2015	1 x 1000	64%	640	Coal
	Unit II: Nov. 2016	1 x 1000	64%	640	
Muping Wind Power	28 turbines: Dec. 2010	42	80%	34	Wind
Penglai Wind Power	24 turbines: Sep. 2014	48	80%	38.4	Wind
	1 turbine: Sep. 2014	1.8	80%	1.44	
	24 turbines: Oct. 2016	48	80%	38.4	
	1 turbine: Oct. 2016	1.8	80%	1.44	
Rushan Wind Power	8 turbines: Sep. 2014	12	80%	9.6	Wind
	11 turbines: Sep. 2014	16.5	80%	13.2	
	2 turbines: Oct. 2016	3	80%	2.4	
	5 turbines: Oct. 2016	10.5	80%	8.4	
Rongcheng Wind Power	1 turbine: Jan. 2006	1.5	48%	0.72	Wind
	1 turbine: Jan. 2006	1.5	48%	0.72	
	1 turbine: Jan. 2006	1.5	48%	0.72	
		3	48%	1.44	

	2 turbines: Feb. 2006				
	2 turbines: Feb. 2006	3	48%	1.44	
	3 turbines: Mar. 2006	4.5	48%	2.16	
Dongying Wind Power	32 turbines: Dec. 2009	48	56%	27	Wind
Boshan Photovoltaic	May. 2016	12	80%	10	Solar
Sishui Photovoltaic	Jun. 2015	20	80%	16	Solar
Gaozhuang Photovoltaic	May. 2016	20	80%	16	Solar
Jining Co-generation Photovoltaic	Feb. 2017	20	80%	16	Solar
Zhanhua Qingfenghu Wind Power	50 turbines: Dec. 2017	100	80%	80	Wind
Jining Photovoltaic	Feb. 2017	20	80%	16	Solar
Laiwu Niuquan Photovoltaic	Apr. 2017	20	80%	16	Solar
Furuite Rooftop Photovoltaic	Jun. 2017	6.3	95%	5.99	Solar
Zhanhua Qingfenghu Photovoltaic	Jun. 2017	100	46%	46	Solar
Weihai Haibu Photovoltaic	Jun. 2017	19.75	80%	15.8	Solar
Jining Weishan Zhaozhuang Photovoltaic	Dec. 2017	80	40%	64	Solar
Laizhou Wind Power	72 turbines: Apr. 2007	98.25	64%	62.88	Wind

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Henan Province					
Qinbei Power Plant					
Phase I	Unit I: Nov. 2004 Unit II: Dec. 2004	2 x 600	60%	720	Coal
Phase II	Unit III: Nov. 2007 Unit IV: Nov. 2007	2 x 600	60%	720	Coal
Phase III	Unit V: Mar. 2012 Unit VI: Feb. 2013	2 x 1000	60%	1,200	Coal
Zhongyuan CCGT	Unit I: Aug. 2007 Unit II: Jan. 2008	2 x 390	90%	702	Coal
Luoyang Co-generation Power Plant	Unit I: May. 2015 Unit II: Jun. 2015	2 x 350	80%	560	Coal
Luoyang Yangguang Power Plant	Unit I: Jun. 2006 Unit II: Oct. 2006	2 x 135	80%	216	Coal
Mianchi Co-generation	Unit I: Dec. 2016 Unit II: Dec. 2016	2 x 350	60%	420	Coal
Zhumadian Wind Power	16 turbines: Dec. 2016	32	90%	28.8	Wind
Qinbei Dianchanghuichang Photovoltaic	Jun. 2017	20	60%	12	Solar
Tangyin Wind Power	69 turbines: Dec. 2018	151.8	100%	151.8	Wind
Jiangsu Province					
Nantong Power Plant					
Phase I	Unit I: Sep. 1989 Unit II: Mar. 1990	2 x 352	100%	704	Coal
Phase II	Unit III: Jul. 1999 Unit IV: Oct. 1999	2 x 350	100%	700	Coal
Nanjing Power Plant	Unit I: Mar. 1994 Unit II: Oct. 1994	2 x 320	100%	640	Coal
Taicang Power Plant					
Phase I	Unit I: Dec. 1999 Unit II: Apr. 2000	2 x 320	75%	480	Coal
Phase II	Unit III: Jan. 2006 Unit IV: Feb. 2006	2 x 630	75%	945	Coal
Taicang Dianchanghuichang Photovoltaic	Jun. 2018	50	75%	37.5	Solar
Huaiyin Power Plant					
Phase II	Unit III: Jan. 2005 Unit IV: Mar. 2005	2 x 330	63.64%	420	Coal
Phase III	Unit V: May 2006 Unit VI: Sep. 2006	2 x 330	63.64%	420	Coal

Huaiyin Dianchang Photovoltaic Jinling Power Plant	Jun. 2018	30	100%	30	Solar
CCGT	Unit I: Dec. 2006 Unit II: Mar. 2007	2 x 390	60%	468	Gas
CCGT-Cogeneration	Unit I: April 2013	191.3	51%	97.56	Gas
	Unit II: May 2013	191.3	51%	97.56	
Jinling Coal-Fired	Unit III: Dec. 2009 Unit IV: Aug. 2012	2 x 1,030	60%	1,236	Coal
Suzhou Co-generation	Unit I: Aug. 2006 Unit II: Oct. 2006	2 x 60	53.45%	64.14	Coal

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Nanjing Chemical Industry Park Co-generation	Unit I: Apr. 2016	50	70%	35	Coal
	Unit II: Dec. 2016	50	70%	35	
Qidong Wind Power					
Phase I	61 turbines: Mar. 2009	91.5	65%	59.5	Wind
Phase II	25 turbines: Jan. 2011	50	65%	32.5	Wind
	22 turbines: Jun. 2012	44	65%	28.6	Wind
Rudong Wind Power	24 turbines: Nov. 2013	48	90%	43.2	Wind
Tongshan Wind Power					
Phase I	25 turbines: Mar. 2016	50	70%	35	Wind
Phase II	24 turbines: Dec. 2017	48	70%	33.6	Wind
Luhe Wind Power	25 turbines: Dec. 2016	50	100%	50	Wind
Rudong Offshore Wind Power	26 turbines: Mar, 2017	106.4	70%	211.68	Wind
	44 turbines: Sep. 2017	196			
Guanyun Power	Unit I: Dec. 2017 Unit II: Dec. 2017	2 x 25	100%	50	Coal
Suzhou CCGT	Unit I: Jul. 2017	178	100%	452	Gas
	Unit II: Jul. 2017	48			
	Unit III: Sep. 2017	178			
	Unit IV: Sep. 2017	48			
Yizheng Wind Power					
Phase I	21 turbines: Dec. 2017	46.2	100%	46.2	Wind
Phase II	6 turbines: Jul. 2018	13.8	100%	13.8	Wind
Guanyun Photovoltaic	Jun. 2017	14.1	100%	14.1	Solar
Shanghai Municipality					
Shidongkou I	Unit I: Feb. 1988 Unit II: Dec. 1988 Unit III: Sep. 1989 Unit IV: May 1990	4 x 325	100%	1,300	Coal
Shidongkou II	Unit I: Jun. 1992 Unit II: Dec. 1992	2 x 600	100%	1,200	Coal
Shidongkou Power	Unit I: Oct. 2011 Unit II: Oct. 2011	2 x 660	50%	660	Coal
Shanghai CCGT	Unit I: May 2006	3 x 390	70%	819	Gas

	Unit II: Jun. 2006 Unit III: Jul. 2006				
Chongqing Municipality					
Luohuang Power Plant					
Phase I	Unit I: Sep. 1991 Unit II: Feb. 1992	2 x 360	60%	432	Coal
Phase II	Unit III: Dec. 1998 Unit IV: Dec. 1998	2 x 360	60%	432	Coal
Phase III	Unit V: Dec. 2006 Unit VI: Jan. 2007	2 x 600	60%	720	Coal
Liangjiang CCGT	Unit I: Oct. 2014 Unit II: Dec. 2014	2 x 467	90%	840.6	Gas
Fengjie Jinfengshan Wind Power	55 turbines: Dec. 2018	110	100%	110	Wind
Zhejiang Province					
Changxing Power Plant	Unit I: Dec. 2014 Unit II: Dec. 2014	2 x 660	100%	1320	Coal

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Yuhuan Power Plant					
Phase I	Unit I: Nov. 2006 Unit II: Dec. 2006	2 x 1,000	100%	2,000	Coal
Phase II	Unit III: Nov. 2007 Unit IV: Nov. 2007	2 x 1,000	100%	2,000	Coal
Tongxiang CCGT	Unit I: Sep. 2014	1 x 258.4	95%	245.48	Gas
	Unit II: Sep. 2014	1 x 200	95%	190	Gas
Changxing Photovoltaic	Dec. 2014	5	100%	5	Solar
	Mar. 2015	5	100%	5	Solar
Changxing Hongqiao Photovoltaic	Sep. 2016	30	100%	30	Solar
Huzhou Distributed Photovoltaic	Jun. 2017	16.13	100%	20	Solar
	Dec. 2017	3.87			
Hunan Province					
Yueyang Power Plant					
Phase I	Unit I: Sep. 1991 Unit II: Dec. 1991	2 x 362.5	55%	398.75	Coal
Phase II	Unit III: Mar. 2006 Unit IV: May 2006	2 x 300	55%	330	Coal
Phase III	Unit V: Jan. 2011 Unit VI: Aug. 2012	2 x 600	55%	660	Coal
Xiangqi Hydropower	Unit I: Dec. 2011 Unit II: May 2012 Unit III: Jul. 2012 Unit IV: Aug. 2012	4 x 20	100%	80	Hydro
Subaoding Wind Power	40 turbines: Dec. 2014	80	100%	80	Wind
	35 turbines: May. 2015	70	100%	70	Wind
Guidong Wind Power	42 turbines: Aug. 2015	48	100%	48	Wind
	18 turbines: Sep. 2015	36	100%	36	Wind
Yueyang Xingang Photovoltaic	May. 2017	10	60%	6	Solar
Yueyang Leigutai Photovoltaic	Jun. 2017	20	55%	11	Solar
Hubei Province					
Enshi Maweigou Hydropower	Dec. 2011	3 x 5	100%	15	Hydro
	Dec. 2015	2 x 20	100%	40	Hydro
Dalongtan Hydropower	Unit I: May 2006	12	97%	11.64	Hydro
	Unit II: Aug. 2005	12	97%	11.64	Hydro
	Unit III: Mar. 2006	12	97%	11.64	
	Unit IV: Oct. 2008	1 x 1.6	97%	1.552	Hydro
Wuhan Power Plant					
Phase I	Unit I: Jun. 1993	2 x 300	75%	450	Coal

Phase II	Unit II: Jan. 1994 Unit III: May 1997	2 x 330	75%	495	Coal
Phase III	Unite IV: Dec. 1997 Unit V: Oct. 2006 Unit VI: Dec. 2006	2 x 600	75%	900	Coal
Jingmen Co-generation	Unit I: Nov. 2014 Unit II: Oct. 2014	2 x 350	100%	700	Coal
Yingcheng Co-generation	Unit II: Jan. 2015	1 x 350	100%	350	Coal
	Unit I: Jun. 2016	1 x 50	100%	50	Coal
Jieshan Wind Power					
Phase I	24 turbines: Jun. 2015	48	100%	48	Wind
Phase II	36 turbines: Aug. 2016	72	100%	72	Wind
Zhongxiang Hujiawan Wind Power	12 turbines: Dec. 2017	24	100%	24	Wind
	63 turbines: Aug. 2018	126	100%	126	Wind
Suizhou Zengdufuhe Photovoltaic	Sep. 2017	16.7	100%	20	Solar
	Oct. 2017	3.3			

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Jiangxi Province					
Jinggangshan Power Plant					
Phase I	Unit I: Dec. 2000 Unit II: Aug. 2001	2 x 300	100%	600	Coal
Phase II	Unit III: Nov. 2009 Unit IV: Dec. 2009	2 x 660	100%	1,320	Coal
Jianggongling Wind Power	24 turbines: Dec. 2014	48	100%	48	Wind
	13 turbines: Dec. 2016	26	100%	26	Wind
Ruijin Power Plant	Unit I: May 2008 Unit II: Aug. 2008	2 x 350	100%	700	Coal
Anyuan Power Plant	Unit I: Jun. 2015 Unit II: Aug. 2015	2 x 660	100%	1,320	Coal
Hushazui Wind Power	13 turbines: Dec. 2016	26	100%	26	Wind
Linghuashan Wind Power	26 turbines: Jun. 2017	52	100%	100	Wind
	24 Turbines: Sep. 2017	48			
Gaolongshan Wind Power	36 turbines: Nov. 2018	80	100%	80	Wind
Anhui Province					
Chaohu Power Plant	Unit I: May 2008 Unit II: Aug. 2008	2 x 600	60%	720	Coal
Hualiangting Hydropower Phase I	Unit I: Oct. 1981 Unit II: Nov. 1981	2 x 10	100%	20	Hydro
Phase II	Unit III: Nov. 1987 Unit IV: Nov. 1987	2 x 10	100%	20	Hydro
Huaining Wind Power	25 turbines: Jun. 2016	50	100%	50	Wind
	45 turbines: Dec. 2017	99	100%	99	Wind
Fujian Province					
Fuzhou Power Plant					
Phase I	Unit I: Sep. 1988 Unit II: Dec. 1988	2 x 350	100%	700	Coal
Phase II	Unit III: Oct. 1999 Unit IV: Oct. 1999	2 x 350	100%	700	Coal
Phase III	Unit V: Jul. 2010 Unit VI: Oct. 2011	2 x 660	100%	1,320	Coal
Changle Photovoltaic	Jun. 2017	10	100%	10	Solar
Guangdong Province					

Shantou Power Plant					
Phase I	Unit VI: Oct. 2011 Unit I: Jan. 1997 Unit II: Jan. 1997	2 x 300	100%	600	Coal
Phase II	Unit III: Oct. 2005	1 x 600	100%	600	Coal
Haimen Power	Unit I: Jul. 2009 Unit II: Oct. 2009	2 x 1,036	100%	2,072	Coal
	Unit III: Mar. 2013 Unit IV: Mar. 2013	2 x 1,036	80%	1,657.6	Coal
Shantou Photovoltaic	Sep. 2016	17	100%	17	Solar
Yunnan Province					
Diandong Energy					
Phase I	Unit I: Feb. 2006 Unit II: Jul. 2006	2 x 600	100%	1,200	Coal
Phase II	Unit III: Nov. 2006 Unit IV: May 2007	2 x 600	100%	1,200	Coal
Yuwang Energy					
Phase I	Unit I: Jul. 2009 Unit II: Feb. 2010	2 x 600	100%	1,200	Coal
Fuyuan Wind Power					
Wenbishan Wind Power	20 turbines: Oct. 2014	40	100%	40	Wind
Yibasan Wind Power	24 turbines: Dec. 2015	48	100%	48	Wind
Shengjing Wind Power	24 turbines: Dec. 2016	48	100%	48	Wind
Guangliangzi Wind Power	24 turbines: Oct. 2017	48	100%	48	Wind

Plant or Expansion (Names as defined below)	Actual In-service Date	Current Installed Capacity (MW)	Owner-ship %	Attributable Capacity MW	Type of Fuel
Hainan Province					
Haikou Power Plant	Unit IV: May 2000 Unit V: May 1999	2 x 138	91.8%	253.368	Coal
	Unit VIII: Apr. 2006 Unit IX: May 2007	2 x 330	91.8%	605.88	Coal
Dongfang Power Plant					
Phase I	Unit I: Jun. 2009 Unit II: Dec. 2009	2 x 350	91.8%	642.6	Coal
Phase II	Unit III: May 2012 Unit IV: Dec. 2012	2 x 350	91.8%	642.6	Coal
Nanshan Co-generation	Unit I: Apr. 1995 Unit II: Apr. 1995	2 x 50	91.8%	91.8	Gas
	Unit III: Oct. 2003 Unit IV: Oct. 2003	2 x 16	91.8%	29.370	Gas
Gezhen Hydropower	Unit I: Nov. 2009 Unit II: Nov. 2009	2 x 40	91.8%	73.40	Hydro
	Unit III: Dec. 2009 Unit IV: Dec. 2009	2 x 1	91.8%	1.836	Hydro
Wenchang Wind Power	34 turbines: Jan. 2009	51.5	91.8%	47.277	Wind
Dongfang Photovoltaic	Jul. 2016	12	91.8%	11.016	Solar
Chengmai Photovoltaic	Jun. 2017	12.5	91.8%	11.475	Solar
	Sep. 2017	12.5	91.8%	11.475	
	Sep. 2018	40	91.8%	36.72	Solar
Guizhou Province					
Panzhou Wind Power					
Dapashan Wind Power	12 turbines: Dec. 2015	24	100%	24	Wind
	9 turbines: Nov. 2017	18	100%	24	Wind
	3 turbines: Dec. 2017	6			
Jiaoziding Wind Power	16 turbines: Nov. 2017	32	100%	48	Wind
	8 turbines: Dec. 2017	16			
Guangxi Autonomous Region					
Guilin Distributed Energy	Unit I: Dec. 2017 Unit II: Dec. 2017 Unit III: Dec. 2017	3 x 70	80%	168	Gas
Singapore					
Tuas Power	Unit I: Mar. 1999	1 x 600	100%	600	Oil
	Unit III: Nov. 2001 Unit IV: Jan. 2002	4 x 367.5	100%	1,470	Gas

	Unit V: Feb. 2005 Unit VI: Sep. 2005 Unit VII: Dec. 2013	405.9	100%	405.9	Gas
TMUC					
Phase I	Feb. 2013	1 x 101	100%	101	Coal & biomass
Phase IIA	Jun. 2014	1 x 32.5	100%	32.5	Coal & biomass
Pakistan					
Sahiwal	2017	1320	40%	528	Coal

The following table presents the availability factors and the capacity factors of our coal-fired operating power plants in China for the years ended December 31, 2016, 2017 and 2018.

Coal-fired Power Plant	Availability factor (%)			Capacity factor (%)		
	2016	2017	2018	2016	2017	2018
Heilongjiang Province						
Xinhua Power Plant	—	99.83	99.98	—	54.41	50
Hegang Power Plant	—	94.18	89.14	—	42.01	43.32
Daqing Co-generation	—	92.85	95.28	—	49.9	49.58
Yichun Co-generation	—	94.08	89.91	—	43.15	46.30
Jilin Province						
Jiutai Power Plant	—	99.89	95.29	—	43.63	46.42
Changchun Co-generation	—	92.98	95.24	—	49.09	53.72
Liaoning Province						
Dalian	99.86	99.94	92.17	49.91	50.69	47.02
Dandong	97.4	100	93.84	47.49	46.08	46.10
Yingkou	100	95.35	93.41	48.70	47.77	45.81
Yingkou Co-generation	100	92.36	90.48	43.55	51.81	47.47
Hebei Province						
Shang'an	93.18	91.72	88.82	57.50	58.56	58.53
Gansu Province						
Pingliang	96.3	95.74	94.74	39.77	40.34	48.29
Beijing Municipality						
Beijing Cogeneration	92.79	98.28	97.57	45.89	18.09	23.43
Tianjin Municipality						
Yangliuqing	96.78	93.39	91.64	53.38	53.82	55.11
Shanxi Province						
Yushe	94.77	93.97	96.13	53.01	43.76	53.31
Zuoquan	87.61	81	96.05	46.68	40.16	50.93
Shandong Province						
Dezhou	93.96	96.59	91.71	57.97	55.1	58.08
Jining	91.35	96.1	94.82	59.22	59.88	53.61
Weihai	93.47	94.71	99.20	65.83	59.7	61.24
Xindian	90.10	94.73	91.24	63.07	69.97	59.20
Rizhao Power	90.12	94.87	94.13	62.89	64.60	61.15
Rizhao II	94.08	93.97	94.13	66.34	60.48	61.15
Zhanhua Co-generation	97.32	92.1	99.48	55.27	43.84	48.54
Laiwu Power Plant	—	97.41	95.71	—	60.7	61.49
Baiyanghe Power Plant	—	93.71	97.57	—	59.63	56.58
Huangtai Power Plant	—	96.41	90.87	—	59.17	60.00
Yantai Power Plant	—	97.58	97.85	—	44.14	60.60
Liaocheng Co-generation	—	94.05	93.58	—	50.01	58.63
Linyi Power Plant	—	95.78	96.90	—	54.44	57.54
Jining Yunhe Power Plant	—	96.68	91.99	—	60.99	52.72
Qufu Co-generation	—	94.43	96.36	—	60.19	63.59
Jiaxiang Power Plant	—	94.29	95.73	—	59.74	60.58
Jining Co-generation	—	91.48	92.50	—	71.87	70.23
Zhongtai Power Plant	—	93.83	92.53	—	31.46	45.39
Henan Province						
Qinbei	96.69	88.99	92.80	55.06	39.29	48.44
Luoyang Cogeneration Power Plant	92.71	97.26	95.89	46.20	41.37	51.38
Luoyang Yangguang Power Plant	100.00	97.62	99.93	67.70	24.91	16.32
Mianchi Co-generation	100.00	100	91.10	59.04	40.3	50.19

Jiangsu Province						
Nantong	91.37	92.78	91.64	52.99	49.91	46.89
Nanjing	96.92	92.89	93.84	57.24	49.15	48.48

Coal-fired Power Plant	Availability factor (%)			Capacity factor (%)		
	2016	2017	2018	2016	2017	2018
Taicang	99.84	98.9	97.35	71.16	68.49	59.12
Huaiyin	89.66	93.76	95.13	48.04	43.51	40.73
Jinling Coal-fired	93.85	88.3	95.24	70.19	60.92	58.32
Suzhou Co-generation	96.41	94.77	98.41	74.35	73.37	71.00
Shanghai Municipality						
Shidongkou I	99.86	90.97	95.94	43.53	46.51	41.94
Shidongkou II	92.81	93.77	93.23	55.07	54.74	52.31
Zhejiang Province						
Changxing	96.5	97.21	97.39	49.18	56.72	55.57
Yuhuan	93.64	94.61	95.35	55.58	58.6	56.88
Chongqing Municipality						
Luohuang	95.58	87.25	91.26	35.16	34.13	37.33
Hunan Province						
Yueyang	99.71	98.24	95.76	33.56	42.63	47.51
Hubei Province						
Wuhan Power	94.54	96.8	92.27	46.84	46.06	51.43
Jingmen Thermal Power	97.86	98.05	97.67	41.39	43.53	49.54
Yingcheng Thermal Power	90.80	99.97	98.87	44.30	52.56	60.53
Jiangxi Province						
Jinggangshan	92.19	94.73	92.20	49.55	58.65	58.47
Ruijin Power	92.43	91.28	92.66	49.77	56.82	59.41
Anyuan Power Plant	88.6	83.62	94.45	55.29	60.24	62.64
Anhui Province						
Chaohu Power	86.29	99.66	94.71	56.42	54.04	52.46
Fujian Province						
Fuzhou	99.98	95.46	94.39	36.05	47.26	53.52
Guangdong Province						
Shantou	97.91	94.32	96.25	43.39	49.98	57.03
Haimen	94.41	93.93	95.73	38.88	54.66	54.93
Yunnan Province						
Diandong	98.82	98.34	98.36	15.73	15.29	17.17
Yuwang	100	99.59	99.98	2.54	0.54	2.61
Hainan Province						
Haikou	91.15	95.4	95.24	60.46	57.21	59.72
Dongfang	94.33	99.53	95.14	60.23	64.6	63.10

The details of our operating power plants, construction projects and related projects as of December 31, 2018 are described below.

Power Plants in Heilongjiang Province

Xinhua Power Plant

Huaneng Xinhua Power Plant ("Xinhua Power Plant") is located in the city of Daqing in Heilongjiang Province. Xinhua Power Plant, including Phase I and Phase II, has an installed capacity of 530 MW and consists of one 200 MW coal-fired generating unit and one 330 MW coal-fired generating unit and which commenced operations in 1979 and 2005 respectively. We hold 70% equity interest in Xinhua Power Plant.

The coal supply for Xinhua Power Plant is mainly obtained from Inner Mongolia Autonomous Region. Xinhua Power Plant typically stores 120,000 tons of coal on site. In 2018, Xinhua Power Plant obtained 87.3% of its

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total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Xinhua Power Plant in 2018 was RMB357.33 (2017: RMB326.06) per ton.

Xinhua Power Plant sells its electricity to Heilongjiang Electric Power Company.

Hegang Power Plant

Huaneng Hegang Power Plant ("Hegang Power Plant") is located in the city of Hegang in Heilongjiang Province. Hegang Power Plant, including Phases I to III, has an installed capacity of 1,200 MW and consists of two 300 MW coal-fired generating unit and one 600 MW coal-fired generating unit and which commenced operations in 1998, 1999 and 2007 respectively. We hold 64% equity interest in Hegang Power Plant.

The coal supply for Hegang Power Plant is mainly obtained from the city of Hegang. Hegang Power Plant typically stores 120,000 tons of coal on site. In 2018, Hegang Power Plant obtained 65.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Hegang Power Plant in 2018 was RMB428.66 (2017: RMB406.37) per ton.

Hegang Power Plant sells its electricity to Heilongjiang Electric Power Company.

Daqing Co-generation

Huaneng Daqing Co-generation Power Plant ("Daqing Co-generation") is located in the city of Daqing in Heilongjiang Province. Daqing Co-generation, including Phase I and Phase II, has an installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which commenced operations in 2003. We hold 100% equity interest in Daqing Co-generation.

The coal supply for Daqing Co-generation is mainly obtained from Inner Mongolia Autonomous Region. Daqing Co-generation typically stores 80,000 tons of coal on site. In 2018, Daqing Co-generation obtained 82.6% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Daqing Co-generation in 2018 was RMB355.80 (2017: RMB323.56) per ton.

Daqing Co-generation sells its electricity to Heilongjiang Electric Power Company.

Yichun Co-generation

Huaneng Yichun Co-generation Power Plant ("Yichun Co-generation") is located in the city of Yichun in Heilongjiang Province. Yichun Co-generation, including Phase I and Phase II, has an installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which commenced operations in 2015. We hold 100% equity interest in Yichun Co-generation.

The coal supply for Yichun Co-generation is mainly obtained from the city of Hegang. Yichun Co-generation typically stores 80,000 tons of coal on site. In 2018, Yichun Co-generation obtained 65.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yichun Co-generation in 2018 was RMB435.56 (2017: RMB416.97) per ton.

Yichun Co-generation sells its electricity to Heilongjiang Electric Power Company.

Sanjiangkou Wind Power

Huaneng Shanjiangkou Wind Power Plant ("Sanjiangkou Jiangsheng Wind Power") is located in the city of Jiamusi in Heilongjiang Province. The installed capacity of Sanjiangkou Wind Power Plant is 99 MW and consists of 66 turbines. It commenced operation in February 2010. We hold 82.85% equity interest in Sanjiangkou Wind Power.

Sanjiangkou Wind Power sells its electricity to Heilongjiang Electric Power Company.

Linjiang Jiangsheng Wind Power

Linjiang Jiangsheng Wind Power Plant ("Linjiang Jiangsheng Wind Power") is located in the city of Jiamusi in Heilongjiang Province. The installed capacity of Linjiang Jiangsheng Wind Power Plant is 99 MW and consists of 66 turbines. It commenced operation in October 2015. We hold 82.85% equity interest in Linjiang Jiangsheng Wind Power.

Linjiang Jiangsheng Wind Power sells its electricity to Heilongjiang Electric Power Company.

Daqing Heping Aobao Wind Power

Daqing Heping Aobao Wind Power Plant ("Daqing Heping Aobao Wind Power") is located in the city of Jiamusi in Heilongjiang Province. Phase I of the Daqing Heping Aobao Wind Power commenced operation in December 2011, with an installed capacity of 96 MW, consisting of 32 wind power turbines of 3 MW each. Phase II of the Daqing Heping Aobao Wind Power commenced operation in May 2012, with an installed capacity of 96 MW, consisting of 32 wind power turbines of 3 MW each. Phase III of the Daqing Heping Aobao Wind Power commenced operation in December, with an installed capacity of 96 MW, consisting of 32 wind power turbines of 3 MW each. We hold 100% of the equity interest in Daqing Heping Aobao Wind Power.

Daqing Heping Aobao Wind Power sells its electricity to Heilongjiang Electric Power Company.

Zhaodong Dechang Photovoltaic

Zhaodong Dechang 20 MW Photovoltaic Power Plant ("Zhaodong Dechang Photovoltaic") is located in the city of Zhaodong in Heilongjiang Province. Zhaodong Dechang Photovoltaic commenced operation in December 2017, with an installed capacity of 20 MW. We hold 100% of the equity interest in Zhaodong Dechang Photovoltaic.

Zhaodong Dechang Photovoltaic sells its electricity to Heilongjiang Electric Power Company.

Shuangyu Photovoltaic

Daqing Huaneng Shuangyu Solar Power Plant (“Shuangyu Photovoltaic”), in which we hold 100% equity interest, consists of Xinhua Photovoltaic, Donghai Photovoltaic and Shuangyu Photovoltaic. Xinhua Photovoltaic with an installed capacity of 20 MW, commenced commercial operation in June 2018. Donghai Photovoltaic and Shuangyu Photovoltaic, both with an installed capacity of 20 MW, commenced commercial operation in July 2018. Daqing Huaneng Shuangyu, Donghai Photovoltaic and Shuangyu Photovoltaic are located in Daqing city, Heilongjiang.

Power Plants in Jilin Province

Jiutai Power Plant

Huaneng Jiutai Power Plant ("Jiutai Power Plant") is located in the city of Changchun in Jilin Province. Jiutai Power Plant, including Phase I and Phase II, has an installed capacity of 1,340 MW and consists of two 670 MW coal-fired generating units which commenced operations in 2009. We hold 100% equity interest in Jiutai Power Plant.

The coal supply for Jiutai Power Plant is mainly obtained from Inner Mongolia Autonomous Region. Jiutai Power Plant typically stores 120,000 tons of coal on site. In 2018, Jiutai Power Plant obtained 74.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jiutai Power Plant in 2018 was RMB406.78 (2017: RMB371.93) per ton.

Jiutai Power Plant sells its electricity to Jilin Electric Power Company.

Changchun Co-generation

Huaneng Changchun Co-generation Power Plant ("Changchun Co-generation") is located in the city of Changchun in Jilin Province. Changchun Co-generation, including Phase I and Phase II, has an installed capacity of

700 MW and consists of two 350 MW coal-fired generating units which commenced operations in 2009. We hold 100% equity interest in Changchun Co-generation.

The coal supply for Changchun Co-generation is mainly obtained from Inner Mongolia Autonomous Region. Changchun Co-generation typically stores 160,000 tons of coal on site. In 2018, Changchun Co-generation obtained 81.4% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Changchun Co-generation in 2018 was RMB392.76 (2017: RMB349.00) per ton.

Changchun Co-generation sells its electricity to Jilin Electric Power Company.

Nongan Biomass

Huaneng Nongan Biomass Power Plant ("Nongan Biomass") is located in the city of Changchun in Jilin Province. The installed capacity of Nongan Biomass is 25 MW and consists of one 25 MW generating unit, which commenced operation in December 2011. We hold 100% equity interest in Nongan Biomass.

Nongan Biomass also uses coal to meet part of its fuel needs. Nongan Biomass typically stores 40,000 tons of coal on site. The average coal purchase price for Nongan Biomass in 2018 was RMB254.88 (2017: RMB303.11) per ton.

Nongan Biomass sells its electricity to Jilin Electric Power Company.

Linjiang Jubao Hydropower

Huaneng Linjiang Jubao Hydropower Station ("Linjiang Jubao Hydropower") is located in the city of Baishan of Jilin Province. Linjiang Jubao Hydropower consists of four 20 MW hydraulic generating units with a total installed capacity of 80 MW. In December 2011, Unit I of Linjiang Jubao Hydropower with an installed capacity of 20 MW passed a trial run. Unit I and Unit II of Linjiang Jubao Hydropower with an installed capacity of 20 MW each commenced operation in December 2011 and May 2012, respectively. Unit III and Unit IV of Linjiang Jubao Hydropower with an installed capacity of 20 MW commenced operation in May and August 2012, respectively. We hold 100% equity interest in Linjiang Jubao Hydropower.

Linjiang Jubao Hydropower sells its electricity to Jilin Electric Power Company.

Zhenlai Wind Power

Huaneng Zhenlai Mali Wind Power Plant ("Zhenlai Wind Power") is located in the city of Baicheng in Jilin Province. Phase I of the Zhenlai Wind Power commenced operation in June 2009, with an installed capacity of 49.5 MW, consisting of 33 wind power turbines of 1.5 MW each. Phase II of the Zhenlai Wind Power commenced operation in December 2011, with an installed capacity of 49.5 MW, consisting of 33 wind power turbines of 1.5 MW each. We hold 100% of the equity interest in Zhenlai Wind Power.

Zhenlai Wind Power sells its electricity to Jilin Electric Power Company.

Siping Wind Power

Huaneng Siping Wind Power Plant ("Siping Wind Power") is located in the city of Siping in Jilin Province. Phase I of the Siping Wind Power commenced operation in October 2010, with an installed capacity of 75 MW, consisting of 50 wind power turbines of 1.5 MW each. Phase II of the Siping Wind Power commenced operation in November 2010, with an installed capacity of 50 MW, consisting of 25 wind power turbines of 2 MW each. Phase III of the Siping Wind Power commenced operation in December 2010, with an installed capacity of 75 MW, consisting of 50 wind power turbines of 1.5 MW each. We hold 100% of the equity interest in Siping Wind Power.

Siping Wind Power sells its electricity to Jilin Electric Power Company.

Tongyu Tuanjie Wind Power

Huaneng Jilin Tongyu Tuanjie Wind Power Plant ("Tongyu Tuanjie Wind Power") is located in the city of Baicheng in Jilin Province. Tongyu Tuanjie Wind Power commenced operation in December 2015, with an installed capacity of 148 MW, consisting of 74 wind power turbines of 2 MW each. We hold 100% of the equity interest in Tongyu Tuanjie Wind Power.

Tongyu Tuanjie Wind Power sells its electricity to Jilin Electric Power Company.

Linjiang Jubao Photovoltaic

Linjiang Jubao 15 MW Photovoltaic Power Plant ("Linjiang Jubao Photovoltaic") is located in the city of Linjiang in Jilin Province. Linjiang Jubao Photovoltaic commenced operation in June 2017, with an installed capacity of 15 MW. We hold 100% of the equity interest in Linjiang Jubao Photovoltaic.

Linjiang Jubao Photovoltaic sells its electricity to Jilin Electric Power Company.

Zhenlai Photovoltaic

Zhenlai Wind Power Photovoltaic Power Plant (“Zhenlai Photovoltaic”) is located in Baicheng city in Jilin Province. Zhenlai Photovoltaic commenced operation in June 2018, with an installed capacity of 20 MW. We hold 50% of the equity interest in Zhenlai Photovoltaic.

Power Plants in Liaoning Province

Dalian Power Plant

Huaneng Dalian Power Plant ("Dalian Power Plant") is located on the outskirts of Dalian, on the coast of Bohai Bay. Dalian Power Plant, including Phase I and Phase II, has an installed capacity of 1,400 MW and consists of four 350 MW coal-fired generating units which commenced operations in 1988 and 1999 respectively. We hold 100% equity interest in Dalian Power Plant.

The coal supply for Dalian Power Plant is obtained from several coal producers located mostly in Northern Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port and shipped by special 27,000 ton automatic unloading ships to the wharf at the Dalian Power Plant. The wharf is owned and maintained by the Dalian Port Authority and is capable of handling 30,000 ton vessels. Dalian Power Plant typically stores 200,000 tons of coal on site.

In 2018, Dalian Power Plant obtained 42.2% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Dalian Power Plant in 2018 was RMB550.27 (2017: RMB549.27) per ton.

Dalian Power Plant sells its electricity to Liaoning Electric Power Company.

Dandong Power Plant

Huaneng Dandong Power Plant ("Dandong Power Plant") is located on the outskirts of the city of Dandong in Liaoning. Dandong Power Plant had originally been developed by HIPDC which, pursuant to the Reorganization Agreement, transferred all its rights and interests therein to us effective December 31, 1994. In March 1997, we began the construction of Dandong Power Plant, which comprises two 350 MW coal-fired generating units. We hold 100% equity interest in Dandong Power Plant.

The coal supply for Dandong Power Plant is obtained from several coal producers in Northern Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port and shipped by barge to the Dandong port in Dandong, where it is unloaded and transported to Dandong Power Plant using special coal handling facilities. The wharf is owned and maintained by Dandong Power Plant and is capable of handling 28,000 ton vessels. Dandong Power Plant typically stores 220,000 tons of coal on site.

In 2018, Dandong Power Plant obtained 27.6% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Dandong Power Plant in 2018 was RMB512.18 (2017: RMB528.38) per ton.

Dandong Power Plant sells its electricity to Liaoning Electric Power Company.

Yingkou Power Plant

Huaneng Yingkou Power Plant ("Yingkou Power Plant") is located in Yingkou City in Liaoning Province. Yingkou Power Plant Phase I has an installed capacity of 640 MW and consists of two 320 MW supercritical coal-fired generating units which commenced operations in January and December 1996, respectively. Yingkou Power Plant Phase II has an installed capacity of 1,200MW and consists of two 600 MW coal-fired generating units which commenced operations in August and October 2007, respectively. We hold 100% equity interest in Yingkou Power Plant.

The coal supply for Yingkou Power Plant is mainly obtained from Shanxi Province. Yingkou Power Plant typically stores 400,000 tons of coal on site. In 2018, Yingkou Power Plant obtained 17.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yingkou Power Plant in 2018 was RMB520.61 (2017: RMB540.89) per ton.

Yingkou Power Plant sells its electricity to Liaoning Electric Power Company.

Yingkou Co-generation

Huaneng Yingkou Co-generation Power Plant ("Yingkou Co-generation") is located in Yingkou City in Liaoning Province. Yingkou Co-generation has an installed capacity of 660 MW and consists of two 330 MW generating units which commenced operation in December 2009. We hold 100% equity interest in Yingkou Co-generation.

The coal supply for Yingkou Co-generation is mainly obtained from Inner Mongolia Autonomous Region. Yingkou Co-generation typically stores 140,000 tons of coal on site. In 2018, Yingkou Co-generation obtained 96.5% of its total consumption of coal from annual contracts. The average coal purchase price for Yingkou Co-generation in 2018 was RMB431.29 (2017: RMB411.04) per ton.

Yingkou Co-generation sells its electricity to Liaoning Electric Power Company.

Wafangdian Wind Power

Dalian Wafangdian Wind Power Plant ("Wafangdian Wind Power") is located in Dalian City in Liaoning Province. The installed capacity of phase I of Wafangdian Wind Power is 48 MW and consists of 24 turbines. It commenced operation in June 2011. We hold 100% equity interest in Wafangdian Wind Power.

Wafangdian Wind Power sells its electricity to Liaoning Electric Power Company.

Suzihe Hydropower

Liaoning Suzihe Hydropower Plant ("Suzihe Hydropower") is located in Liaoning Province. The installed capacity of Suzihe Hydropower is 37.5 MW and consists of three 12.5 MW generating units. Unit I (12.5 MW) of Suzihe Hydropower commenced operation in August 2012. We hold 100% equity interest in Suzihe Hydropower.

Changtu Wind Power

Huaneng Liaoning Changtu Wind Power Plant ("Changtu Wind Power") is located in Liaoning Province. Phase I of the Changtu Wind Power commenced operation in November 2012, with an installed capacity of 49.5 MW, consisting of 33 wind power turbines of 1.5 MW each. Phase II of the Changtu Wind Power commenced operation in October 2014, with an installed capacity of 48 MW, consisting of 24 wind power turbines of 2 MW each. We hold 100% of the equity interest in Changtu Wind Power.

Dandong Photovoltaic

Dandong 10 MW Photovoltaic Power Plant ("Dandong Photovoltaic") is located in Liaoning Province. Dandong Photovoltaic commenced operation in May 2016, with an installed capacity of 10 MW. We hold 100% of the equity interest in Dandong Photovoltaic.

Dandong Photovoltaic sells its electricity to Liaoning Electric Power Company.

Yingkou Co-generation Photovoltaic

Yingkou Co-generation 10 MW Photovoltaic Power Plant ("Yingkou Co-generation Photovoltaic") is located in Liaoning Province. Yingkou Co-generation Photovoltaic commenced operation in June 2016, with an installed capacity of 10 MW. We hold 100% of the equity interest in Yingkou Co-generation Photovoltaic.

Yingkou Co-generation Photovoltaic sells its electricity to Liaoning Electric Power Company.

Yingkou Xianrendao Co-generation Power

Yingkou Xianrendao Co-generation Power Plant ("Yingkou Xianrendao Co-generation Power") is located in the city of Yingkou of Liaoning Provinces. Yingkou Xianrenao Co-generation Power commenced operation in March 2017, with two sets of generating units of 50 MW each. We hold 100% equity interest in Yingkou Xianrendao Co-generation Power. In 2018, Yingkou Xianrendao Co-generation Power obtained 65.5% of its total consumption of coal from annual contracts. The average coal purchase price for Yingkou Xianrendao Co-generation Power in 2018 was RMB459.81 (2017: RMB443.00) per ton.

Yingkou Xianrendao Co-generation Power sells its electricity to Liaoning Electric Power Company.

Jianchang Bashihan Photovoltaic

Jianchang Bashihan 20 MW Photovoltaic Power Plant ("Jianchang Bashihan Photovoltaic") is located in the city of Huludao of Liaoning Province. Jianchang Bashihan Photovoltaic commenced operation in August 2017, with an installed capacity of 22.03 MW. We hold 100% of the equity interest in Jianchang Bashihan Photovoltaic.

Jianchang Bashihan Photovoltaic sells its electricity to Liaoning Electric Power Company.

Jianchang Bashihan Photovoltaic Phase II

Jianchang Bashihan 20 MW Photovoltaic Phase II Power Plant ("Jianchang Bashihan Photovoltaic Phase II") is located in the city of Huludao of Liaoning Province. Jianchang Bashihan Photovoltaic Phase II commenced operation in August 2017, with an installed capacity of 22.03 MW. We hold 100% of the equity interest in Jianchang Bashihan Photovoltaic Phase II.

Jianchang Bashihan Photovoltaic Phase II sells its electricity to Liaoning Electric Power Company.

Xiao Deyingzi Photovoltaic

Xiao Deyingzi 15 MW Photovoltaic Power Plant ("Xiao Deyingzi Photovoltaic") is located in the city of Huludao of Liaoning Province. Xiao Deyingzi Photovoltaic commenced operation in August 2017, with an installed capacity of 15.56 MW. We hold 100% of the equity interest in Xiao Deyingzi Photovoltaic.

Xiao Deyingzi Photovoltaic sells its electricity to Liaoning Electric Power Company.

Chaoyang Heiniuyingzi Photovoltaic

Chaoyang Heiniuyingzi 17 MW Photovoltaic Power Plant ("Chaoyang Heiniuyingzi Photovoltaic") is located in the city of Chaoyang of Liaoning Province. Chaoyang Heiniuyingzi Photovoltaic commenced operation in August 2017, with an installed capacity of 18.79 MW. We hold 100% of the equity interest in Chaoyang Heiniuyingzi Photovoltaic.

Chaoyang Heiniuyingzi Photovoltaic sells its electricity to Liaoning Electric Power Company.

Power Plant in Inner Mongolia Autonomous Region

Huade Wind Power

Huaneng Huade Wind Power Plant ("Huade Wind Power") is located in Huade, Inner Mongolia Autonomous Region. Phase I of Huade Wind Power has an installed capacity of 49.5 MW and consists of 33 wind power turbines which commenced operation in 2009. Phase II of Huade Wind Power has an installed capacity of 49.5 MW and consists of 33 wind power turbines which commenced operation in June 2011. We hold 100% equity interest in Huade Wind Power.

Huade Wind Power sells its electricity to Inner Mongolia Power (Group) Co., Ltd.

Power Plants in Hebei Province

Shang'an Power Plant

Huaneng Shang'an Power Plant ("Shang'an Power Plant") is located on the outskirts of Shijiazhuang. Shang'an Power Plant has been developed in three separate expansion phases. The Shang'an Power Plant Phase I has an installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which commenced operations in 1990. Shang'an Power Plant Phase II shares with the Shang'an Power Plant Phase I certain facilities, such as coal storage facilities and effluence pipes, which have been built to accommodate the requirements of plant expansions. The Shang'an Power Plant Phase II utilizes two 330 MW coal-fired generating units, which commenced operation in 1997. The Shang'an Power Plant Phase III has an installed capacity of 1,200 MW and consists of two 600 MW supercritical coal-fired generating units which commenced operations in July and August 2008, respectively. Unit 5 of Shang'an Power Plant is the first 600MW supercritical air-cooling unit which commenced operation in the PRC. We hold 100% equity interest in Shang'an Power Plant.

The coal supply for Shang'an Power Plant is obtained from numerous coal producers in Central Shanxi Province, which is approximately 64 kilometers from Shang'an Power Plant. The coal is transported by rail from the mines to the Shang'an Power Plant. We own and maintain the coal unloading facilities which are capable of unloading 10,000 tons of coal per day. Shang'an Power Plant typically stores 300,000 tons of coal on site.

In 2018, Shang'an Power Plant obtained 82.2% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Shang'an Power Plant in 2018 was RMB491.08 (2017: RMB486.86) per ton.

Shang'an Power Plant sells its electricity to Hebei Electric Power Company.

Kangbao Wind Power

Huaneng Kangbao Wind Power Plant ("Kangbao Wind Power") consists of 33 wind power turbines with a total installed capacity of 49.5 MW. In January 2011, the Phase I of Kangbao Wind Power with a total generation capacity of 49.5MW completed the trial run. We hold 100% equity interest in Kangbao Wind Power.

Kangbao Wind Power sells its electricity to Hebei Electric Power Company.

Kangbao Xitan Photovoltaic

Kangbao Xitan Photovoltaic ("Kangbao Xitan Photovoltaic") is located in Kangbao, Zhangjiakou, Hebei. Kangbao Xitan Photovoltaic commenced operation in June 2016, with an installed capacity of 20 MW. We hold 100% equity interest in Kangbao Xitan Photovoltaic.

Kangbao Xitan Photovoltaic sells its electricity to Hebei Electric Power Company.

Zhuolu Dabao Wind Power

Zhuolu Dabao Wind Power Plant ("Zhuolu Dabao Wind Power") consists of 24 wind power turbines with a total installed capacity of 48 MW, consisting of 24 wind power turbines of 2MW each. Zhuolu Dabao Wind Power commence operation in March 2017. We hold 100% equity interest in Kangbao Wind Power.

Zhuolu Dabao Wind Power sells its electricity to Hebei Electric Power Company.

Shang'an Dianchanghuichang Photovoltaic

Shang'an Dianchanhuichang 18 MW Photovoltaic Power Plant ("Shang'an Dianchanhuichang Photovoltaic") is located in the city of Shijiazhuang of Hebei Province. Shang'an Dianchanghuichang Photovoltaic commenced operation in December 2017, with an installed capacity of 17 MW. We hold 100% of the equity interest in Shang'an Dianchanhuichang Photovoltaic.

Shang'an Dianchanghuichang Photovoltaic sells its electricity to Hebei Electric Power Company.

Power Plant in Gansu Province

Pingliang Power Plant

Huaneng Pingliang Power Plant ("Pingliang Power Plant") is located in Pingliang City of Gansu Province. Pingliang Power Plant consists of three 325 MW and one 330 MW coal-fired generating units which commenced operation in 2000, 2001 and June and November 2003 respectively. The installed capacity of Unit I, Unit II and Unit III of Pingliang Power Plant were expanded from 300 MW to 325 MW in January 2010, respectively. The installed capacity of Unit IV of Pingliang Power Plant was expanded from 300 MW to 330 MW in January 2011. Pingliang Power Plant Phase II consists of two 600 MW generating units with a total installed capacity of 1200 MW, which commenced operation in February 2010 and March 2010, respectively. We hold 65% equity interest in Pingliang Power Plant.

The coal supply for Pingliang Power Plant is obtained from local coal mines. Pingliang Power Plant typically stores 230,000 tons of coal on site. In 2018, Pingliang Power Plant obtained 100.0% of its coal supplies from annual contracts and the remainder from the open market. The average coal purchase price for Pingliang Power Plant in 2018 was RMB376.95 (2017: RMB356.70) per ton.

Pingliang Power Plant sells its electricity to Gansu Electric Power Company.

Jiuquan Wind Power

Jiuquan Wind Power Plant ("Jiuquan Wind Power") consists of 234 wind power turbines of 1.5 MW each and 25 wind power turbines of 2 MW each. In December 2011, all the wind power plants completed the trial run. We hold 100% equity interest in Jiuquan Wind Power.

Jiuquan Wind Power sells its electricity to Gansu Electric Power Company.

Jiuquan II Wind Power

Jiuquan II Wind Power Plant ("Jiuquan II Wind Power") is located in Gansu Province. Zone A of this plant commenced operation in December 2014, with an installed capacity of 200 MW in operating, consisting of 100 wind power turbines of 2 MW each. Zone B of this plant commenced operation in June 2015, with an installed capacity of 200 MW in operating, consisting of 100 wind power turbines of 2 MW each. We hold 100% equity interest in Jiuquan II Wind Power.

Jiuquan II Wind Power sells its electricity to Gansu Electric Power Company.

Yumen Wind Power

Yumen Wind Power Plant ("Yumen Wind Power") is located in Gansu Province. This plant commenced operation in June 2015, with an installed capacity of 148.5 MW, consisting of 67 wind power turbines of 1.5 MW each and 24 wind power turbines of 2 MW each. We hold 100% equity interest in Yumen Wind Power.

Yumen Wind Power sells its electricity to Gansu Electric Power Company.

Yigang Wind Power

Yigang Wind Power ("Yigang Wind Power") is located in Gansu Province. This plant commenced operation in December 2015, with an installed capacity of 192 MW, consisting of 96 wind power turbines of 2 MW each. We hold 100% equity interest in Yigang Wind Power.

Yigang Wind Power sells its electricity to Gansu Electric Power Company.

Power Plant in Beijing Municipality

Beijing Co-generation

Huaneng Beijing Co-generation Power Plant ("Beijing Co-generation") is located in Beijing Municipality. Beijing Co-generation has an installed capacity of 845 MW and consists of two 165 MW generating units, two 220 MW generating units and one 75 MW generating units which commenced operation in January 1998, December 1998, June 1999 and April 2004, respectively. We hold 41% equity interest in Beijing Co-generation and believe we exercise effective control over Beijing Co-generation.

The coal supply for Beijing Co-generation is mainly obtained from Inner Mongolia Autonomous Region. Beijing Co-generation typically stores 165,000 tons of coal on site. In 2018, Beijing Co-generation obtained 83.0% of its total consumption of coal from annual contracts. The average coal purchase price for Beijing Co-generation in 2018 was RMB563.24 (2017: RMB529.61) per ton.

Beijing Co-generation sells its electricity to Beijing Electric Power Company.

Beijing Co-generation CCGT

Beijing Co-generation CCGT consists of one set of "two on one" F-grade gas and steam combined cycle generating units with a power generation capacity of 923.4 MW, heat supply capacity of 650 MW and heat supply area of approximately 13,000,000 square meters. High-standard denitrification, noise reduction, water treatment and other environmental protection facilities were constructed concurrently. In December 2011, Beijing Co-generation CCGT completed its trial run. Beijing Co-generation CCGT sells its electricity to North China Electric Company.

Being the first project commencing construction among the four major co-generation centers in Beijing, Beijing Co-generation CCGT firstly introduced the most efficient world-class F-grade gas turbine in the PRC, thus setting a new record of the maximum heat supply capacity, minimum power consumption for power generation and highest annual thermal efficiency for the same type of generating units in the PRC and attaining a leading and international class design standard in the PRC.

Beijing Co-generation Phase III

Beijing Co-generation Phase III consists of two sets of F-grade gas and steam combined cycle generating units with a power generation capacity of 998 MW. Beijing Co-generation Phase III commence operation in November 2017. We hold 41% equity interest in Beijing Co-generation Phase III.

Beijing Co-generation CCGT sells its electricity to Beijing Electric Company.

Power Plant in Tianjin Municipality

Yangliuqing Co-generation

Tianjin Huaneng Yangliuqing Co-generation Power Plant ("Yangliuqing Co-generation") is located in Tianjin Municipality. Yangliuqing Co-generation has an installed capacity of 1,200 MW and consists of four 300 MW coal-fired co-generation units which commenced operation in December 1998, September 1999, December 2006 and May 2007, respectively. We hold 55% equity interest in Yangliuqing Co-generation.

The coal supply for Yangliuqing Co-generation mainly obtained from Shanxi Province and Inner Mongolia Autonomous Region. Yangliuqing Co-generation typically stores 300,000 tons of coal on site. In 2018, Yangliuqing Co-generation obtained 67.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yangliuqing Co-generation in 2018 was RMB510.49 (2017: RMB496.91) per ton.

Yangliuqing Co-generation sells its electricity to Tianjin Electric Company.

Lingang Co-generation CCGT

Lingang Co-generation CCGT is located in Tianjin Municipality. The first set of generating units of Lingang Co-generation CCGT commenced operation in December 2014, with an installed capacity of 463 KW. We hold 100% equity interest in the Lingang Co-generation CCGT. The gas supply for Lingang Co-generation CCGT is transported through the pipeline of "Shaanxi-Gansu-Ningxia Transport Project."

Lingang Co-generation CCGT sells its electricity to Tianjin Electric Company.

Chenxi Photovoltaic

Chenxi 2.2 MW Photovoltaic Power Plant ("Chenxi Photovoltaic") is located in the city of Tianjin. Chengxi Photovoltaic commenced operation in June 2017, with an installed capacity of 2.2 MW. We hold 55% of the equity interest in Chenxi Photovoltaic.

Chenxi Photovoltaic sells its electricity to Tianjin Electric Power Company.

Power Plant in Shanxi Province

Yushe Power Plant

Huaneng Yushe Power Plant ("Yushe Power Plant") is located in Yushe County of Shanxi Province. Yushe Power Plant Phase I has an installed capacity of 200 MW and consists of two 100 MW coal-fired generating units which commenced operations in August and December 1994, respectively. Two 300 MW coal-fired generating units of Yushe Power Plant Phase II commenced operations in October and November 2004, respectively. Yushe Power Plant Phase I was shut down in 2011. We hold 60% equity interest in Yushe Power Plant.

The coal supply for Yushe Power Plant is obtained from several coal producers located mostly in Shanxi Province. Yushe Power Plant typically stores 500,000 tons of coal on site. In 2018, Yushe Power Plant obtained approximately 27.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yushe Power Plant in 2018 was RMB307.31 (2017: RMB316.51) per ton.

Yushe Power Plant sells its electricity to Shanxi Electric Power Company.

Zuoquan Power Plant

Shanxi Huaneng Zuoquan Power Plant ("Zuoquan Power Plant") is located in Zuoquan County of Shanxi Province. Zuoquan Power Plant has an installed capacity of 1,346 MW and consists of two 673 MW coal-fired generating units which commenced operations in December 2011 and January 2012, respectively. We hold 80% equity interest in Zuoquan Power Plant.

Zuoquan Power Plant typically stores 200,000 tons of coal on site. In 2017, Zuoquan Power Plant obtained approximately 29.8% of its total consumption of coal from annual contracts and the remainders from the open market. The average coal purchase price for Zuoquan Power Plant in 2018 was RMB316.91 (2017: RMB348.06) per ton. Zuoquan Power Plant sells its electricity to Shanxi Electric Power Company.

Dongshan Combined Cycle Gas Turbine Power Plant

Dongshan Combined Cycle Gas Turbine Power Project ("Dongshan CCGT") is located at Taiyuan City of Shanxi Province. Dongshan CCGT commenced operation in October 2015 with an installed capacity of 859 KW, consisting of one 2×F Class gas-steam combined cycle co-generating unit. We hold 100% equity interest in the plant. Dongshan CCGT sells its electricity to Shanxi Electric Power Company.

Yushe Photovoltaic

Yushe 50 MW Photovoltaic Power Plant ("Yushe Photovoltaic") is located in the city of Jinzhong of Shanxi Province. Yushe Photovoltaic commenced operation in June 2017, with an installed capacity of 50 MW. We hold 100% of the equity interest in Yushe Photovoltaic.

Yushe Photovoltaic sells its electricity to Shanxi Electric Power Company.

Yushe Fupin Photovoltaic

Yushe 10.5 MW Fupin Photovoltaic (“Yushe Fupin Photovoltaic”) is located in the city of Jinzhong of Shanxi Province. Yushe Fupin Photovoltaic commenced operation in August 2018, with an installed capacity of 10.5 MW. We hold 90% of the equity interest in Yushe Fupin Photovoltaic.

Power Plants in Shandong Province

Dezhou Power Plant

Huaneng Dezhou Power Plant ("Dezhou Power Plant") is located in Dezhou City, near the border between Shandong and Hebei Provinces, close to an industrial zone that is an important user of electric power for industrial and commercial purposes. Dezhou Power Plant is comprised of three phases, with Phase I consisting of one 320MW and one 330MW coal-fired generating units, Phase II consisting of one 330MW and one 320MW coal-fired generating units, and Phase III consisting of two 700 MW coal-fired generating units. The installed capacity of Unit IV was upgraded from 300 MW to 320 MW in January 2009. We hold 100% equity interest in Dezhou Power Plant.

Dezhou Power Plant is approximately 200 km from Taiyuan, Shanxi Province, the source of the plant's coal supply. The plant is located on the Taiyuan-Shijiazhuang-Dezhou rail line, giving it access to transportation facilities for coal. Dezhou Power Plant typically stores 400,000 tons of coal on site. In 2018, Dezhou Power Plant obtained approximately 66.1% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Dezhou Power Plant in 2018 was RMB530.44 (2017: RMB525.39) per ton. The plant is connected to the main trunk rail line at Dezhou by a dedicated 3.5 km spur line owned by us.

Dezhou Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Jining Power Plant

Huaneng Jining Power Plant ("Jining Power Plant") is located in Jining City, near the Jining load center and near numerous coal mines. Yanzhou coal mine, which is adjacent to the plant, alone has an annual production of approximately 20 million tons. Jining Power Plant typically stores 100,000 tons of coal on site.

Jining Power Plant currently consists of two coal-fired generating units, with an aggregate installed capacity of 270 MW. In addition, Jining Power Plant (Co-generation) has an installed capacity of 700 MW and

consists of two 350 MW generating units which commenced operation in November and December 2009, respectively. We hold 100% equity interest in Jining Power Plant.

In 2018, Jining Power Plant obtained approximately 43.8% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jining Power Plant in 2018 was RMB587.09 (2017: RMB580.38) per ton.

Jining Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Xindian Power Plant

Huaneng Xindian Power Plant ("Xindian Power Plant") is located in Zibo City of Shandong Province. Xindian Power Plant has an installed capacity of 450 MW and consists of two 225 MW coal-fired generating units which commenced operations in December 2001 and January 2002, respectively, and were shut down in September 2009. Xindian Power Plant Phase III consists of two 300 MW generating units with a total installed capacity of 600 MW, which were put into operation in September and November 2006, respectively. We hold 95% equity interest in Xindian Power Plant Phase III.

The coal supply for Xindian Power Plant is obtained from several coal producers located mostly in Shanxi Province. Xindian Power Plant typically stores 250,000 tons of coal on site. In 2018, Xindian Power Plant obtained 20.6% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Xindian Power Plant in 2018 was RMB606.12 (2017: RMB608.35) per ton.

Xindian Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Furuite Rooftop Photovoltaic

Furuite 6.3MW Photovoltaic Power Plant ("Furuite Photovoltaic") is located in the city of Zibo of Shandong Province. Furuite Photovoltaic commenced its operation in June 2017 and has an installed capacity of 6.3 MW. We hold 95% equity interest in Furuite Photovoltaic.

Furuite Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Weihai Power Plant

Huaneng Weihai Power Plant ("Weihai Power Plant") is located approximately 16 km southeast of Weihai City, on the shore of the Bohai Gulf. Its location provides access to cooling water for operations and transportation of coal as well as ash and slag disposal facilities. We hold 60% equity interest in Weihai Power Plant, the remaining 40% interest of which is owned by Weihai Power Development Bureau ("WPDB").

Weihai Power Plant Phase I consists of two 125 MW generating units (Units I and II), and Phase II consists of two 320 MW generating units (Units III and IV). Unit I began commercial operation in May 1994 and was shut down in December 2008, and Unit II began commercial operation in January 1995 and was shut down in November 2008. Unit III and Unit IV commenced operation in March and November 1998, respectively. Each of the Units III and IV was upgraded from 300 MW to 320 MW in January 2009. Weihai Power Plant Phase III consists of two 680 MW generating units which commenced operations in December 2012. The coal supply for Weihai Power Plant is obtained from Shanxi Province and Inner Mongolia. Weihai Power Plant typically stores 160,000 tons of coal on site. In 2018, Weihai Power Plant obtained approximately 72.8% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Weihai Power Plant in 2018 was RMB607.62 (2017: RMB573.98) per ton.

Weihai Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Rizhao Power Plant

Huaneng Rizhao Power Plant ("Rizhao Power Plant") is located in Rizhao City of Shandong Province. Rizhao Power Plant currently has an aggregate installed capacity of 2,060 MW. Rizhao Power Plant Phase I has an

installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which both commenced operations in April 2000. We hold 88.8% equity interests in Phase I of Rizhao Power Plant.

We hold 100% equity interest in Phase II of Rizhao Power Plant, which commenced operation in December 2008 and consists of two 680 MW supercritical coal-fired generating units. The coal supply for Phase II of Rizhao Power Plant is obtained from Shanxi Province. Phase II of Rizhao Power Plant typically stores 217,800 tons of coal on site. In 2018, Phase II of Rizhao Power Plant obtained 39.3% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Phase II of Rizhao Power Plant in 2018 was RMB615.83 (2017: RMB601.16) per ton.

Rizhao Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Zhanhua Co-generation

Shandong Zhanhua Co-generation Limited Company ("Zhanhua Co-generation") is located in Zhanhua City of Shandong Province. Zhanhua Co-generation currently has an aggregate installed capacity of 330 MW, consisting of two generating units which commenced operations in July 2005. We hold 100% equity interest in Zhanhua Co-generation.

The coal supply for Zhanhua Co-generation is mainly obtained from Inner Mongolia Autonomous Region. Zhanhua Co-generation typically stores 90,000 tons of coal on site. In 2018, Zhanhua Co-generation obtained 21.8% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Zhanhua Co-generation in 2018 was RMB579.37 (2017: RMB563.71) per ton.

Zhanhua Co-generation sells its electricity to State Grid Shandong Electric Power Company.

Baiyanghe Power Plant

Huaneng Shandong Zibo Baiyanghe Power Plant ("Baiyanghe Power Plant") is located in the city of Zibo in Shandong Province. Baiyanghe Power Plant currently has an aggregate installed capacity of 890 MW. Baiyanghe Power Plant Phase I has an installed capacity of 290 MW and consists of two 145 MW coal-fired generating units which commenced operations in October 2003. Baiyanghe Power Plant Phase II has an installed capacity of 600 MW and consists of two 300 MW coal-fired generating units which commenced operations in December 2009. We hold 80% equity interests in Baiyanghe Power Plant.

The coal supply for Baiyanghe Power Plant is obtained from several coal producers located in the provinces of Shandong, Shanxi, Shaanxi and Inner Mongolia Autonomous Region. Baiyanghe Power Plant typically stores 125,300 tons of coal on site. In 2018, Baiyanghe Power Plant obtained 29.3% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Baiyanghe Power Plant in 2018 was RMB567.90 (2017: RMB551.56) per ton.

Baiyanghe Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Jiaxiang Power Plant

Huaneng Jiaxiang Power Plant ("Jiaxiang Power Plant") is located in the city of Jining in Shandong Province. Jiaxiang Power Plant currently has an aggregate installed capacity of 660 MW which consists of two 330 MW coal-fired generating units which commenced operations in September 1999 and January 2003, respectively. We hold 40% equity interests in Jiaxiang Power Plant.

The coal supply for Jiaxiang Power Plant is obtained from several coal producers located in the Shandong Province. Jiaxiang Power Plant typically stores 115,300 tons of coal on site. In 2018, Jiaxiang Power Plant obtained 96.8% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jiaxiang Power Plant in 2018 was RMB524.55 (2017: RMB535.62) per ton.

Jiaxiang Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Jining Co-generation

Huaneng Jining Co-generation Power Plant ("Jining Co-generation") is located in the city of Jining in Shandong Province. Jining Co-generation currently has an aggregate installed capacity of 60 MW which consists of two 30 MW coal-fired generating units which commenced operations in April and July 2004, respectively. We hold 40% equity interests in Jining Co-generation.

The coal supply for Jining Co-generation is obtained from several coal producers located in the Shandong Province. Jining Co-generation typically stores 10,600 tons of coal on site. In 2018, Jining Co-generation obtained 100.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jining Co-generation in 2018 was RMB521.34 (2017: RMB501.70) per ton.

Jining Co-generation sells its electricity to State Grid Shandong Electric Power Company.

Qufu Co-generation

Huaneng Qufu Shengcheng Co-generation Power Plant ("Qufu Co-generation") is located in the city of Jining in Shandong Province. Qufu Co-generation currently has an aggregate installed capacity of 450 MW which consists of one 225 MW coal-fired generating unit which commenced operations in February 2009 and one 225 MW coal-fired generating unit which commenced operations in September 2009. We hold 40% equity interests in Qufu Co-generation.

The coal supply for Qufu Co-generation is obtained from several coal producers located in the Shandong Province. Qufu Co-generation typically stores 34,100 tons of coal on site. In 2018, Qufu Co-generation obtained 100.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Qufu Co-generation in 2018 was RMB536.94 (2016: RMB544.29) per ton.

Qufu Co-generation sells its electricity to State Grid Shandong Electric Power Company.

Huangtai Power Plant

Huaneng Jinan Huangtai Power Plant ("Huangtai Power Plant") is located in the city of Jinan in Shandong Province. Huangtai Power Plant currently has an aggregate installed capacity of 680 MW which consists of one 330 MW coal-fired generating unit which commenced operations in November 1987 and one 350 MW coal-fired generating unit which commenced operations in January 2011. We hold 72% equity interests in Huangtai Power Plant.

The coal supply for Huangtai Power Plant is obtained from several coal producers located in the provinces of Shandong, Shanxi, Shaanxi and Inner Mongolia Autonomous Region. Huangtai Power Plant typically stores 155,700 tons of coal on site. In 2018, Huangtai Power Plant obtained 35.3% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Huangtai Power Plant in 2018 was RMB611.30 (2017: RMB602.21) per ton.

Huangtai Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Yantai Power Plant

Huaneng Yantai Power Plant ("Yantai Power Plant") is located in the city of Yantai in Shandong Province. Yantai Power Plant currently has an aggregate installed capacity of 590 MW which consists of one 110 MW and three 160 MW coal-fired generating units. The 110 MW unit commenced operations in April 1996, and the three 160 MW units commenced operation in October 2005, December 2005 and October 2006 respectively. We hold 80% equity interest in Yantai Power Plant.

The coal supply for Yantai Power Plant is obtained from Shanxi Province, Inner Mongolia Autonomous Region and partially imported coal. Yantai Power Plant typically stores 176,100 tons of coal on site. In 2018, Yantai Power Plant obtained 82.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yantai Power Plant in 2018 was RMB603.47 (2017: RMB561.89) per ton.

Yantai Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Linyi Power Plant

Huaneng Linyi Power Plant ("Linyi Power Plant") is located in the city of Linyi in Shandong Province. Linyi Power Plant currently has an aggregate installed capacity of 1,260 MW which consists of four 140 MW and two 350 MW coal-fired generating units. The 350 MW units commenced operations in December 2012 and October 2013, respectively, and the four 140 MW units commenced operation in December 1997, April 2003, September 2003 and April 2005, respectively. We hold 60% equity interest in Linyi Power Plant.

The coal supply for Linyi Power Plant is obtained from several coal producers located in the provinces of Shandong, Shanxi, Shaanxi and Inner Mongolia Autonomous Region. Linyi Power Plant typically stores 249,000 tons of coal on site. In 2018, Linyi Power Plant obtained 29.6% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Linyi Power Plant in 2018 was RMB649.38 (2017: RMB639.79) per ton.

Linyi Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Jining Yunhe Power Plant

Huaneng Jining Yunhe Power Plant ("Jining Yunhe Power Plant") is located in the city of Jining in Shandong Province. Jining Yunhe Power Plant currently has an aggregate installed capacity of 1,240 MW which consists of four 145 MW and two 330 MW coal-fired generating units. The 330 MW units commenced operations in March and September 2006, respectively, and the four 145 MW units commenced operation in July 2000, November 2000, September 2003 and February 2004, respectively. We hold 78.68% equity interest in Jining Yunhe Power Plant.

The coal supply for Jining Yunhe Power Plant is obtained from several coal producers located in the Shandong Province. Jining Yunhe Power Plant typically stores 50,900 tons of coal on site. In 2017, Jining Yunhe Power Plant obtained 84.8% of its total consumption of coal from annual contracts and the remainder from the open market from the open market. The average coal purchase price for Jining Yunhe Power Plant in 2018 was RMB555.42 (2017: RMB556.80) per ton.

Jining Yunhe Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Liaocheng Co-generation

Huaneng Liaocheng Co-generation Power Plant ("Liaocheng Co-generation") is located in the city of Liaocheng in Shandong Province. Liaocheng Co-generation currently has an aggregate installed capacity of 660 MW which consists of two 330 MW coal-fired generating unit which commenced operations in January and September 2006, respectively. We hold 60% equity interests in Liaocheng Co-generation.

The coal supply for Liaocheng Co-generation is obtained from several coal producers located in the provinces of Shandong, Shanxi, Shaanxi and Inner Mongolia Autonomous Region. Liaogcheng Co-generation typically stores 141,300 tons of coal on site. In 2018, Liaogcheng Co-generation obtained 21.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Liaogcheng Co-generation in 2018 was RMB568.97 (2017: RMB561.17) per ton.

Liaogcheng Co-generation sells its electricity to State Grid Shandong Electric Power Company.

Zhongtai Power Plant

Huaneng Taian Zhongtai Power Plant ("Zhongtai Power Plant") is located in the city of Taian in Shandong Province. Taian Power Plant currently has an aggregate installed capacity of 300 MW which consists of two 150 MW coal-fired generating units, which commenced operations in May and December 2007, respectively. We hold 80% equity interest in Taian Power Plant.

The coal supply for Zhongtai Power Plant is obtained from several coal producers located in the Shandong and Shanxi. Zhongtai Power Plant typically stores 103,600 tons of coal on site. In 2018, Zhongtai Power Plant obtained 30.3% of its total consumption of coal from annual contracts and the remainder from the open market from the open market. The average coal purchase price for Zhongtai Power Plant in 2018 was RMB454.71 (2017: RMB435.19) per ton.

Zhongtai Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Laiwu Power Plant

Huaneng Laiwu Power Plant ("Laiwu Power Plant") is located in the city of Laiwu in Shandong Province. Laiwu Power Plant currently has an aggregate installed capacity of 2,000 MW which consists of two 1,000 MW coal-fired generating units, which commenced operations in December 2015 and November 2016, respectively. We hold 64% equity interest in Laiwu Power Plant.

The coal supply for Laiwu Power Plant is obtained from several coal producers located in the provinces of Shandong, Shanxi, Shaanxi and Inner Mongolia Autonomous Region. Laiwu Power Plant typically stores 246,600 tons of coal on site. In 2018, Laiwu Power Plant obtained 16.4% of its total consumption of coal from annual contracts and the remainder from the open market from the open market. The average coal purchase price for Laiwu Power Plant in 2018 was RMB636.96 (2017: RMB645.56) per ton.

Laiwu Power Plant sells its electricity to State Grid Shandong Electric Power Company.

Muping Wind Power

Muping Wind Power Plant ("Muping Wind Power") is located in the city of Yantai in Shandong Province. Muping Wind Power Plant consists of 28 wind power turbines of 1.5 MW each. We hold 80% equity interest in Muping Wind Power.

Muping Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Penglai Wind Power

Huaneng Penglai Daliuhang Wind Power Plant ("Penglai Wind Power") is located in the city of Yantai in Shandong Province. Penglai Wind Power Plant consists of 48 wind power turbines of 2 MW each and 2 wind power turbines of 1.8 MW each. We hold 80% equity interest in Penglai Wind Power.

Penglai Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Rushan Wind Power

Huaneng Rushan Wind Power Plant ("Rushan Wind Power") is located in the city of Weihai in Shandong Province. Rushan Wind Power Plant consists of 28 wind power turbines of 1.5 MW each. We hold 80% equity interest in Rushan Wind Power.

Rushan Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Rongcheng Wind Power

Huaneng Rongcheng Wind Power Plant ("Rongcheng Wind Power") is located in the city of Weihai in Shandong Province. Rongcheng Wind Power Plant consists of 10 wind power turbines of 1.5 MW each. We hold 48% equity interest in Rongcheng Wind Power.

Rongcheng Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Dongying Wind Power

Huaneng Dongying Wind Power Plant ("Dongying Wind Power") is located in the city of Dongying in Shandong Province. Dongying Wind Power Plant consists of 32 wind power turbines of 1.5 MW each. We hold 56% equity interest in Dongying Wind Power.

Dongying Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Boshan Photovoltaic

Boshan Photovoltaic Power Plant ("Boshan Photovoltaic") is located in Zibo City. Boshan Photovoltaic commenced its operation in May 2016 and has an installed capacity of 12 MW. We hold 80% equity interest in Boshan Photovoltaic.

Boshan Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Gaozhuang Photovoltaic

Gaozhuang Photovoltaic Power Plant ("Gaozhuang Photovoltaic") is located in Laiwu City. Gaozhuang Photovoltaic commenced its operation in May 2016 and has an installed capacity of 20 MW. We hold 80% equity interest in Gaozhuang Photovoltaic.

Gaozhuang Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Jining Co-generation Photovoltaic.

Jining Co-generation Photovoltaic Project ("Jining Co-generation Photovoltaic") is located in Jining City. The project commenced its operation in February 2017 and has an installed capacity of 20 MW. We hold 80% equity interest in this project.

Jining Co-generation Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Zhanhua Qingfenghu Wind Power

Zhanhua Qingfenghu Wind Power Plant ("Zhanhua Qingfenghu Wind Power") is located in the city of Binzhou in Shandong Province. Zhanhua Qingfenghu Wind Power Plant commenced operation in December 2017 with an installed capacity of 100 MW, including 50 wind power turbines of 2 MW each. We hold 80% equity interest in Zhanhua Qingfenghu Wind Power.

Zhanhua Qingfenghu Wind Power sells its electricity to State Grid Shandong Electric Power Company.

Jining Photovoltaic

Jining 20 MW Photovoltaic Power Plant ("Jining Photovoltaic") is located in the city of Jining of Shandong Province. Jining Photovoltaic commenced its operation in February 2017 and has an installed capacity of 20 MW. We hold 80% equity interest in Jining Photovoltaic.

Jining Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Laiwu Niuquan Photovoltaic

Laiwu Niuquan 20 MW Photovoltaic Power Plant ("Laiwu Niuquan Photovoltaic") is located in the city of Laiwu of Shandong Province. Laiwu Niuquan Photovoltaic commenced its operation in April 2017 and has an installed capacity of 20 MW. We hold 80% equity interest in Laiwu Niuquan Photovoltaic.

Laiwu Niuquan Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Zhanhua Qingfenghu Photovoltaic

Zhanhua Qingfenghu 100MW Photovoltaic Power Plant ("Zhanhua Qingfenghu Photovoltaic") is located in the city of Binzhou of Shandong Province. Zhanhua Qingfenghu Photovoltaic commenced its operation in June 2017 and has an installed capacity of 100 MW. We hold 46% equity interest in Zhanhua Qingfenghu Photovoltaic.

Zhanhua Qingfenghu Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Weihai Haibu Photovoltaic

Weihai Haibu 19.8MW Photovoltaic Power Plant ("Weihai Haibu Photovoltaic") is located in the city of Weihai of Shandong Province. Weihai Haibu Photovoltaic commenced its operation in June 2017 and has an installed capacity of 19.75 MW. We hold 80% equity interest in Weihai Haibu Photovoltaic.

Weihai Haibu Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Jining Weishan Zhaozhuang Photovoltaic

Jining Weishan Zhaozhuang 80MW Photovoltaic Power Plant ("Jining Weishan Zhaozhuang Photovoltaic") is located in the city of Jining of Shandong Province. Jining Weishan Zhaozhuang Photovoltaic commenced its operation in December 2017 and has an installed capacity of 80MW. We hold 40% equity interest in Jining Weishan Zhaozhuang Photovoltaic.

Jining Weishan Zhaozhuang Photovoltaic sells its electricity to State Grid Shandong Electric Power Company.

Power Plants and Projects in Henan Province

Qinbei Power Plant

Huaneng Qinbei Power Plant ("Qinbei Power Plant") is located in Jiyuan City of Henan Province. Its installed capacity is 2,400 MW which consists of four 600 MW supercritical coal-fired generating units. Two units commenced operations in November and December 2004, and the other two units commenced operation in November 2007. In March 2012 and February 2013, two 1,000 MW domestic ultra-supercritical coal-fired generating units of Phase III of Qinbei Power Plant commenced operation, respectively. We hold 60% equity interest in Qinbei Power Plant.

The coal supply for Qinbei Power Plant is obtained from Shanxi Province. Qinbei Power Plant typically stores 270,000 tons of coal on site. In 2018, Qinbei Power Plant obtained 37.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Qinbei Power Plant in 2018 was RMB546.80 (2017: RMB538.13) per ton.

Qinbei Power Plant sells its electricity to Henan Electric Power Company.

Luoyang Co-generation Power Plant

Luoyang Co-generation Power Plant ("Luoyang Co-generation") is located at Luoyang City of Henan Province. The project has an installed capacity of 700 MW, consisting of two sets of 350MW coal-fired generation units, which commenced operation in May and June 2015, respectively. We hold 80% equity interest in this plant.

The coal supply for Luoyang Co-generation is obtained from Henan and Shaanxi. Luoyang Co-generation typically stores 120,000 tons of coal on site. In 2018, Luoyang Co-generation obtained 49.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Luoyang Co-generation in 2018 was RMB522.17 (2017: RMB535.13) per ton.

Luoyang Co-generation sells its electricity to Henan Electric Power Company.

Luoyang Yangguang Power Plant

Luoyang Yangguang Power Plant ("Luoyang Yangguang") is located at Luoyang City of Henan Province. The project has an installed capacity of 270 MW, consisting of two sets of 135 MW coal-fired generation units, which commenced operation in June and October 2006, respectively. We hold 80% equity interest in this plant.

Luoyang Yangguang sells its electricity to Henan Electric Power Company.

Mianchi Co-generation

Mianchi Co-generation Power Plant ("Mianchi Co-generation") is located in Mianchi City of Henan Province. The project has an installed capacity of 700 MW, consisting of two sets of 350MW coal-fired generation units, which commenced operation in December 2016. We hold 60% equity interest in this plant.

The coal supply for Mianchi Co-generation is obtained from Yima Coal Group which has mining operations in Henan, Qinghai, Shanxi, Tibet and Inner Mongolia. Mianchi Co-generation typically stores 20,000 tons of coal on site. In 2018, Mianchi Co-generation obtained 85.5% of its total consumption of coal from annual contracts. The average coal purchase price for Luoyang Co-generation Power Plant in 2018 was RMB448.69 (2017: RMB413.22) per ton.

Mianchi Co-generation sells its electricity to Henan Electric Power Company.

Zhumadian Wind Power

Zhumadian Wind Power ("Zhumadian Wind Power") is located in Zhumadian City of Henan Province. The project has an installed capacity of 32 MW, consisting of sixteen 2MW wind turbines, which commenced operation in December 2016. We hold 90% equity interest in this plant.

Zhumadian Wind Power sells its electricity to Henan Electric Power Company.

Qinbei Dianchanghuichang Photovoltaic

Qinbei Dianchanghuichang 20MW Photovoltaic Power Plant ("Qinbei Dianchanghuichang Photovoltaic") is located in the city of Jiyuan of Henan Province. Qinbei Dianchanghuichang Photovoltaic commenced its operation in June 2017 and has an installed capacity of 20MW. We hold 60% equity interest in Qinbei Dianchanghuichang Photovoltaic.

Qinbei Dianchanghuichang Photovoltaic sells its electricity to Henan Electric Power Company.

Tangyin Wind Power

Tangyin Wind Power is located in Anyang City of Henan Province. The project has an installed capacity of 151.8 MW, consisting of 69 2MW wind turbines, which commenced operation in December 2018. We hold 100% equity interest in this plant.

Power Plants and Projects in Jiangsu Province

Nantong Power Plant

Huaneng Nantong Power Plant ("Nantong Power Plant") is located in Nantong City. Nantong Power Plant, including Phase I, Phase II and Phase III, has an installed capacity of 2,454 MW and consists of two 352 MW, two 350 MW and one 1,050 MW coal-fired generating units which commenced operations in 1989, 1990 1999 and 2014. We hold 100% equity interest in Phase I and Phase II of Nantong Power Plant and 35% equity interest in Phase III of Nantong Power Plant.

The coal supply for Nantong Power Plant is obtained from several coal producers located mostly in Northern Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port and then shipped to the Nantong Power Plant. Nantong Power Plant typically stores 300,000 tons of coal on site.

In 2018, Nantong Power Plant obtained 54.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Nantong Power Plant in 2018 was RMB516.52 (2017: RMB507.93) per ton.

Nantong Power Plant sells its electricity to Jiangsu Electric Power Company.

Nanjing Power Plant

Huaneng Nanjing Power Plant ("Nanjing Power Plant") has an installed capacity of 640 MW consisting of two 320 MW coal-fired generating units which commenced operations in March and October 1994, respectively. We hold 100% equity interest in Nanjing Power Plant.

The coal supply for the Nanjing Power Plant is obtained from several coal producers located in the Shanxi and Anhui Provinces. The coal is transported by rail from the mines to Yuxikou Port and Pukou Port and shipped to the plant's own wharf facilities. The wharf is capable of handling 6,000 ton vessels. Nanjing Power Plant typically stores 120,000 tons of coal on site and consumes 5,000 tons of coal per day when operating at maximum generating capacity.

In 2018, Nanjing Power Plant obtained approximately 80.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Nanjing Power Plant in 2018 was RMB623.28 (2017: RMB608.51) per ton.

Nanjing Power Plant sells its electricity to Jiangsu Electric Power Company.

Taicang Power Plant

Huaneng Taicang Power Plant ("Taicang Power Plant") is located in the vicinity of Suzhou, Wuxi and Changzhou, which is the most affluent area in Jiangsu Province. Taicang Power Plant is an ancillary facility of the China-Singapore Suzhou Industrial Park. Taicang Power Plant Phase I consists of two 300 MW coal-fired generating units, which commenced operations in December 1999 and April 2000 respectively. Taicang Phase II Expansion consists of two 600 MW coal-fired generating units, which commenced operations in January and February 2006, respectively. In April 2008, the installed capacities of the four units of Taicang Power Plant were upgraded to 320 MW, 320 MW, 630 MW and 630 MW, respectively, which increased the total installed capacity of Taicang Power Plant to 1,900 MW. We hold 75% equity interest in Taicang Power Plant.

The coal supply for Taicang Power Plant is primarily from Shenhua in Inner Mongolia and Datong in Shanxi Province. Taicang Power Plant typically stores 350,000 tons of coal on site. In 2018, Taicang Power Plant obtained approximately 47.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Taicang Power Plant in 2018 was RMB491.97 (2017: RMB497.05) per ton.

Taicang Power Plant sells its electricity to Jiangsu Electric Power Company.

Huaiyin Power Plant

Huaneng Huaiyin Power Plant ("Huaiyin Power Plant") is located in the Center of the Northern Jiangsu Power Grid. The plant's two 220 MW coal-fired generating units commenced operation in November 1993 and August 1994, respectively. In order to reduce energy consumption and increase capacity, one generating unit of Huaiyin Power Plant was upgraded in October 2001, which increased the maximum generating capacity of that unit to 220 MW. In 2002, upgrading of the second generating unit was completed, and the actual generating capacity of Huaiyin Power Plant is 440 MW. The other two 330 MW coal-fired generating units of Huaiyin Power Plant Phase II Expansion commenced operations in January and March 2005, respectively. Huaiyin Power Plant Phase III consists of two 330 MW coal-fired generating units, and which were put into operation in May and September 2006, respectively. We hold 100% equity interest in Phase I and 63.64% equity interest in Phase II and Phase III of Huaiyin Power Plant. Unit I and Unit II of Huaiyin Power Plant were shut down in December 2007 and January 2009, respectively.

The coal supply for the Huaiyin Power Plant is primarily from Anhui Province, Henan Province and Shanxi Province. Huaiyin Power Plant typically stores 180,000 tons of coal on site. In 2018, Huaiyin Power Plant obtained approximately 47.9% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Huaiyin Power Plant in 2018 was RMB619.22 (2017: RMB591.79) per ton.
Huaiyin Power Plant sells its electricity to Jiangsu Electric Power Company.

Jinling Power Plant

Huaneng Nanjing Jinling Power Plant ("Jinling Power Plant") is located in Nanjing, Jiangsu. Jinling Power Plant (CCGT) consists of two 390 MW gas-fired generating units, which commenced operation in December 2006 and March 2007, respectively. We hold 60% equity interest in Jinling Power Plant (CCGT). The gas supply for Jinling Power Plant (CCGT) is transported through the pipeline of "West-East Gas Transport Project."
Jinling Power Plant (Coal-fired) consists of two 1,030 MW domestic ultra-supercritical coal-fired generating units, which commenced operation in December 2009 and August 2012, respectively. We hold 60% equity interest in Phase I and Phase II of Jinling Power Plant (Coal-fired). The coal supply for Jinling Power Plant (Coal-fired) is primarily from Shanxi Province and Inner Mongolia Autonomous Region. Jinling Power Plant (Coal-fired) typically stores 300,000 tons of coal on site. In 2018, Jinling Power Plant (Coal-fired) obtained approximately 57.9% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jinling Power Plant (Coal-fired) in 2018 was RMB538.15 (2017: RMB543.80) per ton.
Jinling Power Plant sells its electricity to Jiangsu Electric Power Company.

Qidong Wind Power

Huaneng Qidong Wind Power Plant ("Qidong Wind Power") is located in Nantong City, Jiangsu. Qidong Wind Power Phase I has an installed capacity of 91.5 MW and commenced operation in March 2009. The first stage and second stage of the Phase II Project of Qidong Wind Power with a total generation capacity of 50 MW and 44 MW respectively commenced operation in January 2011 and June 2012, respectively. We hold 65% equity interest in Qidong Wind Power.
Qidong Wind Power Plant sells its electricity to Jiangsu Electric Power Company.

Jinling CCGT Co-generation

Jinling CCGT Co-generation is located in Nanjing, Jiangsu. The plant comprises of two 191 MW class (E grade) combined cycle gas turbine cogeneration units and the corresponding support facilities. The two units commenced operation in April 2013 and May 2013, respectively. We hold 51% equity interest in Jinling CCGT Co-generation. The gas supply for this plant is transported through the pipeline of "West-East Gas Transport Project."
Jinling CCGT Co-generation sells its electricity to Jiangsu Electric Power Company.

Rudong Wind Power

Rudong Wind Power Plant ("Rudong Wind Power") is located in Rudong, Jiangsu. Phase I of the plant has a total installed generation capacity of 48MW. It commenced operations in November 2013. We hold 90% equity interest in Rudong Wind Power.
Rudong Wind Power sells its electricity to Jiangsu Electric Power Company.

Tongshan Wind Power

Tongshan Wind Power Plant ("Tongshan Wind Power") is located in Tongshan, Jiangsu Province. Phase I of the plant has an installed capacity of 50 MW. It commenced operation in March 2016. The phase II commenced operation in December 2017, and has an installed capacity of 48MW, consisting of 24 wind turbines of 2WM each. We hold 70% equity interest in Tongshan Wind Power.

Tongshan Wind Power sells its electricity to Jiangsu Electric Power Company.

Suzhou Co-generation

Huaneng Suzhou Co-generation Power Plant ("Suzhou Co-generation") is located in Suzhou City in Jiangsu Province. Suzhou Co-generation has an installed capacity of 120 MW and consists of two 60 MW coal-fired generating units which commenced operation in 2006. We hold 53.45% equity interest in Suzhou Co-generation. We acquired the power plant in January, 2015 from Huaneng Group.

The coal supply for Suzhou Co-generation is obtained from Shanxi, Inner Mongolia and partially imported coal. Suzhou Co-generation typically stores 30,000 tons of coal on site. In 2018, Suzhou Co-generation obtained 56.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Suzhou Co-generation in 2018 was RMB590.35 (2017: RMB551.67) per ton.

Suzhou Co-generation sells its electricity to Jiangsu Electric Power Company.

Taicang Coal Pier Project

Suzhou Port Taicang Terminal Zone Huaneng Coal Pier ("Taicang Coal Pier Project") is located in Taicang, Suzhou. The Taicang Coal Pier Project has one berth of 100,000 dead weight tonnage ("DWT") and one berth of 50,000 DWT for coal discharging, four berths of 5,000 DWT each and six berths of 1,000 DWT each for coal loading. The above facilities have commenced trial operation in 2013. We hold 100% equity interest in this project.

Nanjing Chemical Industry Park Co-generation Power Plant

Nanjing Chemical Industry Park Co-generation Power Plant ("Nanjing Chemical Industry Park Co-Generation") is located in the city of Nanjing in Jiangsu Province. It has an installed capacity of 100MW consisting of two sets of extraction back-pressure turbines of 50 MW each, which commenced operation in April and December 2016, respectively. We hold 70% equity interest in Nanjing Chemical Industry Park Co-Generation Power Plant.

Nanjing Chemical Industry Park Co-generation typically stores 60,000 tons of coal on site. In 2018, Nanjing Co-generation obtained 95.9% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Nanjing Chemical Industry Park Co-generation in 2018 was RMB613.77 (2017: RMB588.20) per ton.

Nanjing Chemical Industry Park Co-generation Power Plant sells its electricity to Jiangsu Electric Power Company.

Luhe Wind Power

Luhe Wind Power ("Luhe Wind Power") is located in Nanjing, Jiangsu. It has an installed capacity of 50 MW, consisting of 25 wind power turbines of 2 MW each, which commenced operation in December 2016. We hold 100% equity interest in Luhe Wind Power.

Luhe Wind Power sells its electricity to Jiangsu Electric Power Company.

Guanyun Co-generation Power

Guanyun Co-generation Power Plant ("Guanyun Co-generation Power") is located in the city of Lianyungang of Jiangsu Province, with an installed capacity of 50 MW consisting of two 25 MW coal-fired generating units which commenced operations in December 2017. We hold 100% equity interest in Guanyun Co-generation Power.

In 2018, Guanyun Co-generation Power obtained 100.0% of its total consumption of coal from annual contracts. The average coal purchase price for Guanyun Co-generation Power in 2018 was RMB670.30 per ton.

Guanyun Co-generation Power sells its electricity to Jiangsu Electric Power Company.

Suzhou CCGT

Suzhou Gas-fired Co-generation Power Plant ("Suzhou CCGT") is located in the city of Lianyungang of Jiangsu Province, with an installed capacity of 452 MW consisting of two (E-class) combined cycle gas turbine cogeneration units which commenced operations in July and September 2017, respectively. We hold 100% equity interest in Suzhou CCGT.

Suzhou CCGT sells its electricity to Jiangsu Electric Power Company.

Rudong Offshore Wind Power

Rudong Offshore Wind Power ("Rudong Offshore Wind Power") is located in the county of Rudong, the city of Nantong of Jiangsu Province. It has an installed capacity of 302.4 MW, consisting of 38 wind power turbines of 4 MW each, 12 wind power turbines of 4.2 MW each, and 20 wind power turbines of 5 MW each, which commenced operation in March and September 2017. We hold 70% equity interest in Rudong Offshore Wind Power.

Rudong Offshore Wind Power sells its electricity to Jiangsu Electric Power Company.

Yizheng Wind Power

Yicheng Wind Power ("Yicheng Wind Power") is located in the city of Yizheng of Jiangsu Province. It has an installed capacity of 60 MW, consisting of 21 wind power turbines of 2.2 MW each and 6 wind power turbines of 2.3 MW each, which commenced operation in December 2017 and July 2018, respectively. We hold 100% equity interest in Yizheng Wind Power.

Yizheng Wind Power sells its electricity to Jiangsu Electric Power Company.

Taicang Dianchanghuichang Photovoltaic

Taicang Dianchanghuichang 40MW Photovoltaic Power Plant ("Taicang Dianchanghuichang Photovoltaic") is located in the city of Taicang of Jiangsu Province. Taicang Dianchanghuichang Photovoltaic commenced its production of 40MW in April 2017 and commenced its production of 10 MW in June 2018, respectively. We hold 75% equity interest in Taicang Dianchanghuichang Photovoltaic.

Taicang Dianchanghuichang Photovoltaic sells its electricity to Jiangsu Electric Power Company.

Guanyun Photovoltaic

Guanyun 14.1MW Photovoltaic Power Plant ("Guanyun Photovoltaic") is located in the city of Lianyungang of Jiangsu Province. Guanyun Photovoltaic commenced its operation in June 2017 and has an installed capacity of 14.1MW. We hold 100% equity interest in Guanyun Photovoltaic.

Guanyun Photovoltaic sells its electricity to Jiangsu Electric Power Company.

Huaiyin Dianchang Photovoltaic

Huaiyin Dianchang Photovoltaic is located in Huaian City of Jiangsu Province. Huaiyin Dianchang Photovoltaic commenced its operation in June 2018 and has an installed capacity of 30 MW. We hold 100% equity interest in Huaiyin Dianchang Photovoltaic.

Power Plants in Shanghai Municipality

Shidongkou I

Huaneng Shanghai Shidongkou First Power Plant ("Shidongkou I") is located in the northern region of the Shanghai Power Grid. The plant comprises four 325 MW coal-fired generating units, which commenced operation in February and December 1988, September 1989 and May 1990 respectively, and has a total installed capacity of 1,300 MW. The installed capacities of Unit II and Unit III were expanded from 300 MW to 325 MW in September

2007 and January 2008, respectively. The installed capacities of Unit I and Unit V were expanded from 300 MW and 320 MW to 325 MW and 325 MW in January 2010, respectively. We hold 100% equity interest in Shidongkou I.

The coal supply for Shidongkou I is primarily from Shanxi Province, Anhui Province and Henan Province. Shidongkou I Power Plant typically stores 150,000 tons of coal on site. In 2018, Shidongkou I obtained 59.2% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Shidongkou I in 2018 was RMB447.03 (2017: RMB447.81) per ton.

Shidongkou I sells its electricity to State Grid Shanghai Municipal Electric Power Company.

Shidongkou II

Huaneng Shanghai Shidongkou Second Power Plant ("Shidongkou II") is located in the northern suburbs of Shanghai. Shidongkou II has an installed capacity of 1,200 MW and consists of two 600 MW coal-fired super-critical units which commenced operations in June and December 1992, respectively. We hold 100% equity interest in Phase I of Shidongkou II. Phase II of Shidongkou II has an installed capacity of 1,320 MW and consists of two 660 MW coal-fired super-critical units which commenced operations in October 2011. We hold 50% equity interest in Phase II of Shidongkou II.

The coal supply for Shidongkou II is obtained from several coal producers located mostly in Northern Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port or Tianjin port and shipped to the plant's own wharf facilities. The wharf is capable of handling 35,000 ton vessels. Shidongkou II typically stores 180,000 tons of coal on site.

In 2018, Shidongkou II obtained 61.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Shidongkou II in 2018 was RMB503.58 (2017: RMB471.49) per ton.

Shidongkou II sells its electricity to State Grid Shanghai Municipal Electric Power Company.

Shanghai CCGT

Shanghai CCGT is located in Baoshan District of Shanghai Municipality. Shanghai CCGT consists of three 390 MW gas-fired combined-cycle generating units with a total installed capacity of 1,170 MW, which were put into operation in May, June and July 2006, respectively. We hold 70% equity interest in Shanghai CCGT.

The gas supply for Shanghai CCGT is transported through the pipeline of "West-East Gas Transport Project." Shanghai CCGT generates electricity during the peak load periods and sells its electricity to State Grid Shanghai Municipal Electric Power Company.

Power Plant in Chongqing Municipality

Luohuang Power Plant

Huaneng Luohuang Power Plant ("Luohuang Power Plant") is located in Chongqing Municipality. Each of Phase I and Phase II of Luohuang Power Plant has an installed capacity of 720 MW and consists of two 360 MW coal-fired generating units. The two units in Phase I commenced operation in September 1991 and February 1992 respectively, and the two units in Phase II commenced operation in December 1998. Luohuang Power Plant Phase III consist of two 600 MW coal-fired generating units with an installed capacity of 1,200 MW, which were put into operation in December 2006 and January 2007, respectively. We hold 60% equity interest in Luohuang Power Plant.

The coal supply for Luohuang Power Plant is obtained from Chongqing Municipality. Luohuang Power Plant typically stores 450,000 tons of coal on site. In 2018, Luohuang Power Plant obtained 99.9% of its coal supplies from annual contracts and the remainder from the open market. The average coal purchase price for Luohuang Power Plant in 2018 was RMB550.64 (2017: RMB584.09) per ton.

Luohuang Power Plant sells its electricity to Chongqing Municipal Electric Power Company.

Liangjiang CCGT

Liangjiang CCGT is located in Chongqing Municipality. Two generating units of this plant commenced operation in October and December 2014, respectively, with an installed capacity of 934 MW. We hold 90% equity interest in Liangjiang CCGT. The gas supply for Liangjiang CCGT is transported through pipeline of "West-East Gas Transport Project."

Liangjing CCGT sells its electricity to State Grid Chongqing Municipal Electric Power Company.

Fengjie Jinfengshan Wind Power

Fengjie Jinfengshan Wind Power is located in Fengjie County of Chongqing Municipality. Fengjie Jinfengshan Wind Power commenced its operation in December 2018 and has an installed capacity of 110 MW, consisting of 55 2MW wind turbines. We hold 100% equity interest in Fengjie Jinfengshan Wind Power.

Power Plants in Zhejiang Province

Yuhuan Power Plant

Huaneng Yuhuan Power Plant ("Yuhuan Power Plant") is located in Taizhou of Zhejiang Province. Yuhuan Power Plant Phase I consists of two 1,000 MW ultra-supercritical coal-fired generating units with a total installed capacity of 2,000 MW. Unit I and Unit II were put into operation in November 2006 and December 2006, respectively. Yuhuan Power Plant Phase II consists of two 1,000 MW ultra-supercritical coal-fired generating units with a total installed capacity of 2,000 MW, which commenced operations in November 2007. We hold 100% equity interest in Yuhuan Power Plant.

The coal supply for Yuhuan Power Plant is primarily obtained from Shanxi Province and Inner Mongolia Autonomous Region. Yuhuan Power Plant typically stores 500,000 tons of coal on site. In 2018, Yuhuan Power Plant obtained 56.2% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yuhuan Power Plant in 2018 was RMB631.29 (2017: RMB632.40) per ton.

Yuhuan Power Plant sells its electricity to State Grid Zhejiang Electric Power Company.

Changxing "Replacing Small Units with Large Ones" Project

Changxing Power Plant "Replacing Small Units with Large Ones" Project ("Changxing Power Plant") is located in Changxing County of Zhejiang Province. Changxing "Replacing Small Units with Large Ones" Project commenced operation in December 2014, with an installed capacity of 1,320 MW. This is the first project of ultra-supercritical coal-fired generating units of the Company. We hold 100% equity interest in the project.

The coal supply for Changxing Power Plant is primarily obtained from Inner Mongolia, Hebei and partially imported coal. Changxing Power Plant typically stores 150,000 tons of coal on site. In 2018, Changxing Power Plant obtained 50.4% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Changxing Power Plant in 2018 was RMB620.99 (2017: RMB602.20) per ton.

Tongxiang CCGT

Tongxiang CCGT is located in Tongxiang City of Zhejiang Province. The plant commenced operation in September 2014 with an installed capacity of 458.4 MW. We hold 95% equity interest in the Tongxiang CCGT. The gas supply for Tongxiang CCGT is transported through pipeline of "West-East Gas Transport Project."

Tongxiang CCGT sells its electricity to State Grid Zhejiang Electric Power Company.

Changxing Photovoltaic

Si'an 10MW Distributed Photovoltaic Power Project ("Changxing Photovoltaic") is located in Changxing County of Zhejiang Province. Part of the project commenced operation in December 2014, with an installed capacity

of 5 MW. In March 2015, the rest of the project commenced operation in March 2015, with an installed capacity of 5 MW. We hold 100% equity interest in Changxing Photovoltaic.

Changxing Hongqiao Photovoltaic

Changxing Hongqiao PhotovoltaicPower Project ("Changxing Hongqiao Photovoltaic") is located in Changxing Country of Zhejiang Province. It commenced operation in September 2016, with an installed capacity of 30 MW. We hold 100% equity interest in this project.

Huzhou Distributed Photovoltaic

Huzhou Distributed PhotovoltaicPower Project ("Huzhou Distributed Photovoltaic") is located in the city of Huzhou of Zhejiang Province. It commenced operation in June and December 2017, with an installed capacity of 20 MW. We hold 100% equity interest in Huzhou Distributed Photovoltaic.

Huzhou Distributed Photovoltaic sells its electricity to Zhejiang Electric Power Company.

Power Plant in Hunan Province

Yueyang Power Plant

Huaneng Yueyang Power Plant ("Yueyang Power Plant") is located in Yueyang City of Hunan Province. Yueyang Power Plant Phase I has an installed capacity of 725 MW and consists of two 362.5 MW sub-critical coal-fired generating units which commenced operation in September and December 1991 respectively. Yueyang Power Plant Phase II consists of two 300MW coal-fired generating units with installed capacity of 600 MW, which were put into operation in March and May 2006, respectively. Huaneng Yueyang Power Plant Phase III ("Yueyang Power Plant Phase III") consists of two 600 MW generating units with a total installed capacity of 1,200 MW. In January 2011 and August 2012, Unit 5 and Unit 6 of Yueyang Power Plant Phase III, two 600MW coal-fired generating units, commenced operation, respectively. We hold 55% equity interest in Yueyang Power Plant.

The coal supply for Yueyang Power Plant is obtained from Datong in Shanxi Province. Yueyang Power Plant typically stores 500,000 tons of coal on site. In 2018, Yueyang Power Plant obtained 43.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Yueyang Power Plant in 2018 was RMB702.09 (2017: RMB642.12) per ton.

Yueyang Power Plant sells its electricity to State Grid Hunan Electric Power Company.

Xiangqi Hydropower

Huaneng Yongzhou Xiangqi Hydropower Station ("Xiangqi Hydropower") is located in Xiangqi County of Hunan Province. Xiangqi Hydropower consists of four 20 MW hydraulic generating units with a total installed capacity of 80 MW. In December 2011, Unit I of Xiangqi Hydropower with an installed capacity of 20 MW passed a trial run. Unit I and Unit II of Yongzhou Xiangqi Hydropower with an installed capacity of 20 MW each commenced operation in December 2011 and May 2012, respectively. Unit III and Unit IV of Xiangqi Hydropower with an installed capacity of 20 MW commenced operation in May and August 2012, respectively. We hold 100% equity interest in Xiangqi Hydropower.

Xiangqi Hydropower sells its electricity to Hunan Electric Power Company.

Subaoding Wind Power

Subaoding Wind Power ("Subaoding Wind Power") is located between Hongjiang City and Dongkou County in Hunan. Part of the Subaoding Wind Power commenced operation in December 2014, with an installed capacity of 80MW, consisting of 40 wind power turbines of 2 MW. The rest of the Subaoding Wind Power commenced operation in March 2015, with an installed capacity of 70 MW, consisting of 35 wind power turbine of 2 MW each. As of the date of this report, all of the wind power turbines have commenced operation with a total installed capacity of 150 MW. We hold 100% equity interest in the Subaoding Wind Power.

Subaoding Wind Power sells its electricity to Hunan Electric Power Company.

Guidong Wind Power

Guidong Wind Power ("Guidong Wind Power") is located at Guidong County of Hunan Province. Guidong Wind Power commenced operation in 2015, with an installed capacity of 84 MW, consisting of 42 wind power turbines of 2 MW each. We hold 100% equity interest in this plant.

Guidong Wind Power sells its electricity to Hunan Electric Power Company.

Yueyang Xingang Photovoltaic

Yueyang Xingang 10MW Distributed Photovoltaic Power Project ("Yueyang Xingang Photovoltaic") is located in the city of Yueyang of Hunan Province. Yueyang Xingang Photovoltaic commenced operation in May 2017, with an installed capacity of 10 MW. We hold 60% equity interest in Yueyang Xingang Photovoltaic.

Yueyang Xingang Photovoltaic sells its electricity to Hunan Electric Power Company.

Yueyang Leigutai Photovoltaic

Yueyang Leigutai 20MW Distributed Photovoltaic Power Project ("Yueyang Leigutai Photovoltaic") is located in the city of Yueyang of Hunan Province. Yueyang Liangang Photovoltaic commenced operation in June 2017, with an installed capacity of 20 MW. We hold 55% equity interest in Yueyang Leigutai Photovoltaic.

Yueyang Leigutai Photovoltaic sells its electricity to Hunan Electric Power Company.

Power Plant in Hubei Province

Enshi Maweigou Hydropower

Hubei Enshi Maweigou Hydropower Station ("Enshi Maweigou Hydropower") is located in Enshi City of Hubei Province. We entered into an equity transfer agreement to acquire Enshi Maweigou Hydropower on September 30, 2011. Enshi Maweigou Hydropower consists of three 5 MW hydraulic generating units and two 20 MW hydraulic generating units with a total installed capacity of 55 MW. We hold 100% equity interest in Enshi Maweigou Hydropower.

Enshi Maweigou Hydropower sells its electricity to Hubei Electric Power Company.

Wuhan Power Plant

Huaneng Wuhan Power Plant ("Wuhan Power Plant") is located in Wuhan City in Hubei Province. Wuhan Power Plant has an installed capacity of 2,460 MW and consists of two 300 MW coal-fired generating units which commenced operation in 1993 and 1994, two 330 MW coal-fired generating units which commenced operation in 1997, and two 600 MW coal-fired generating units which commenced operation in 2006. We hold 75% equity interest in Wuhan Power Plant. We acquired the power plant in January, 2015 from Huaneng Group.

In 2018, Wuhan Power Plant obtained 64.3% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Wuhan Power Plant in 2018 was RMB691.71per ton.

Wuhan Power Plant sells its electricity to Hubei Electric Power Company.

Dalongtan Hydropower

Huaneng Dalongtan Hydropower Station ("Dalongtan Hydropower") is located in Enshi City of Hubei Province. Dalongtan Hydropower has an installed capacity of 37.6 MW. We hold 97% equity interest in Dalongtan Hydropower. We acquired the power plant in January, 2015 from Huaneng Group.

Dalongtan Hydropower sells its electricity to Hubei Electric Power Company.

Jingmen Co-generation

Huaneng Jingmen Co-generation Power Plant ("Jingmen Co-generation" or "Jingmen Thermal Power") is located in Jingmen City in Hubei Province. Jingmen Co-generation has an installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which commenced operation in 2014. We hold 100% equity interest in Jingmen Co-generation. We acquired the power plant in January, 2015 from HIPDC.

The coal supply for Jingmen Co-generation is obtained from Shaanxi and Gansu. Jingmen Co-generation typically stores 90,000 tons of coal on site. In 2018, Jingmen Co-generation obtained 59.7% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Jingmen Co-generation in 2018 was RMB645.38 (2017: RMB615.65) per ton.

Jingmen Co-generation sells its electricity to Hubei Electric Power Company.

Yingcheng Co-generation

Huaneng Yingcheng Co-generation Power Plant ("Yingcheng Co-generation") is located in Yingcheng City in Hubei Province. Unit II of Yingcheng Co-generation has an installed capacity of 350 MW which commenced operation in January 2015. Unit I of Yingcheng Co-generation has an installed capacity of 50 MW, which commenced operation in June 2016. We hold 100% equity interest in Yingcheng Co-generation. We acquired the power plant in January, 2015 from HIPDC.

The coal supply for Yingcheng Co-generation is obtained from Shanxi and Shaanxi.Yingcheng Co-generation typically stores 50,000 tons of coal on site. In 2018, Yingcheng Co-generation obtained 74.4% of its total consumption of coal from the open market. The average coal purchase price for Yingcheng Co-generation in 2018 was RMB680.05 (2017: RMB722.85) per ton.

Yingcheng Co-generation sells its electricity to Hubei Electric Power Company.

Jieshan Wind Power

Jieshan Wind Power Plant ("Jieshan Wind Power") is located at Suixian County of Hubei Province. The Phase I of Jieshan Wind Power commenced operation in June 2015, with an installed capacity of 48 MW, consisting of 24 wind power turbines of 2 MW. Phase II of Jieshan Wind Power commenced operation in August 2016, with an installed capacity of 72 MW, consisting of 36 wind power turbines of 2 MW. We hold 100% equity interest in the Jieshan Wind Power.

Jieshan Wind Power sells its electricity to Hubei Electric Power Company.

Zhongxiang Hujiawan Wind Power

Zhongxiang Hujiawan Wind Power ("Zhongxiang Hujiawan Wind Power") is located in the city of Jingmen of Hubei Province. Zhongxiang Hujiawan Wind Power commenced operation in December 2017 and August 2018, with an installed capacity of 24 MW and 126 MW, respectively, consisting of totally 75 wind power turbines of 2 MW each. We hold 100% equity interest in this plant.

Zhongxiang Hujiawan Wind Power sells its electricity to Hubei Electric Power Company.

Suizhou Zengdufuhe Photovoltaic

Suizhou Zengdufuhe 20MW Photovoltaic Power Project ("Suizhou Zengdufuhe Photovoltaic") is located in the city of Suizhou of Hubei Province. Suizhou Zengdufuhe Photovoltaic commenced operation in September and December 2017, with an installed capacity of 20 MW. We hold 100% equity interest in Suizhou Zengdufuhe Photovoltaic.

Suizhou Zengdufuhe Photovoltaic sells its electricity to Hubei Electric Power Company.

Power Plant in Jiangxi Province

Jinggangshan Power Plant

Huaneng Jinggangshan Power Plant ("Jinggangshan Power Plant") is located in Ji'an City of Jiangxi Province. Jinggangshan Power Plant has an installed capacity of 1,920 MW and consists of two 300 MW coal-fired generating units which commenced operation in December 2000 and August 2001 respectively, and two 660 MW generating units which commenced operation in November and December 2009, respectively. We hold 100% equity interest in Jinggangshan Power Plant.

The coal supply for Jinggangshan Power Plant is obtained from Henan Province, Anhui Province and Jiangxi Province. Jinggangshan Power Plant typically stores 255,000 tons of coal on site. In 2018, Jinggangshan Power Plant obtained 49.6% of its total coal consumption from annual contracts and the remainder from the open market. The average coal purchase price for Jinggangshan Power Plant in 2018 was RMB752.45 (2017: RMB730.52) per ton.

Jinggangshan Power Plant sells its electricity to Jiangxi Electric Power Company.

Jianggongling Wind Power

Jianggongling Wind Power Plant ("Jianggongling Wind Power") is located in Jiujiang Municipality of Jiangxi Province. Jianggongling Wind Power commenced operation in December 2014 (Phase I), with an installed capacity of 48 MW, consisting of 24 wind power turbine of 2 MW, and in December 206 (Phase II), with an installed capacity of 26 MW, consisting of 13 wind power turbines of 2 MW. We hold 100% equity interest in the Jianggongling Wind Power.

Ruijin Power Plant

Huaneng Ruijin Power Plant ("Ruijin Power Plant") is located in Ruijin City in Jiangxi Province. Ruijin Power Plant has an installed capacity of 700 MW and consists of two 350 MW coal-fired generating units which commenced operation in 2008. We hold 100% equity interest in Ruijin Power Plant. We acquired the power plant in January, 2015 from HIPDC.

The coal supply for Ruijin Power Plant is obtained from Shanxi, Shaanxi, and partially imported coal. Ruijin Power Plant typically stores 110,000 tons of coal on site. In 2018, Ruijin Power Plant obtained 32.4% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Ruijin Power Plant in 2018 was RMB754.04 (2017: RMB713.93) per ton.

Ruijin Power Plant sells its electricity to Jiangxi Electric Power Company.

Anyuan Power Plant

Anyuan Power Plant "Replacing Small Units with Large Ones" Project ("Anyuan Power Plant") is located at Pingxiang City of Jiangxi Province. The plant has a total installed capacity of 1,320 MW, consisting of two ultra-supercritical units with second reheat cycle of 660 MW each. Anyuan Power Plant is the first project equipped with 660MW ultra supercritical unit with second reheat cycle. We acquired 100% equity interest in the power plant in January 2015.

The coal supply for Anyuan Power Plant is obtained from Gansu and Shanxi. Ruijin Power Plant typically stores 130,000 tons of coal on site. In 2018, Anyuan Power Plant obtained 48.9% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Ruijin Power Plant in 2018 was RMB699.12 (2017: RMB665.70) per ton.

Anyuan Power Plant sells its electricity to Jiangxi Electric Power Company.

Linghuashan Wind Power

Linghuashan Wind Power Plant ("Linghuashan Wind Power") is located in the city of Ji'an of Jiangxi Province. Linghuashan Wind Power has a total installed capacity of 100 MW, consisting of 50 turbines of 2MW each, which commenced operation in June and September 2017. We hold 100% equity interest in Linghuashan Wind Power.

Linghuashan Wind Power sells its electricity to Jiangxi Electric Power Company.

Gaolongshan Wind Power

Gaolongshan Wind Power is located in the city of Ji'an of Jiangxi Province. Gaolongshan Wind Power has a total installed capacity of 80 MW, consisting of 28 wind turbines of 2.2 MW each and 8 wind turbines of 2.3 MW each, which commenced operation in November 2018. We hold 100% equity interest in Gaolongshan Wind Power.

Power Plant in Anhui Province

Chaohu Power Plant

Huaneng Chaohu Power Plant (" Chaohu Power Plant") is located in Chaohu City in Anhui Province. Chaohu Power Plant has an installed capacity of 1,200 MW and consists of two 600 MW coal-fired generating units which commenced operation in 2008. We hold 60% equity interest in Chaohu Power Plant. We acquired the power plant in January, 2015 from HIPDC.

The coal supply for Chaohu Power Plant is obtained from Shandong and Gansu. Chaohu Power Plant typically stores 110,000 tons of coal on site. In 2018, Chaohu Power Plant obtained 59.1% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Chaohu Power Plant in 2018 was RMB645.84 (2017: RMB617.03) per ton.

Chaohu Power Plant sells its electricity to Anhui Electric Power Company.

Hualiangting Hydropower

Huaneng Hualiangting Hydropower Plant ("Hualiangting Hydropower") is located in Anqing City in Anhui Province. Hualiangting Hydropower has an installed capacity of 40 MW which commenced operation in 1981 and 1987. We hold 100% equity interest in Hualiangting Hydropower. We acquired the power plant in January, 2015 from Huaneng Group.

Hualiangting Hydropower sells its electricity to Anhui Electric Power Company.

Huaining Shijing Wind Power

Shijing Wind Power Plant in Huaining Country ("Huaining Wind Power") is located in Huaining Country, Anhui Province. Huaining Wind Power has a total installed capacity of 50 MW, consisting of 25 turbines of 2MW each, which commenced operation in June 2016. We hold 100% equity interest in the plant.

Huaining Wind Power sells its electricity to Anhui Electric Power Company.

Huaining Longchi Wind Power

Huaining Longchi Wind Power Plant ("Huaining Longchi Wind Power") is located in the city of the county of Huaining of Anhui Province. Huaining Longchi Wind Power has a total installed capacity of 99 MW, consisting of 45 turbines of 2.2MW each. We hold 100% equity interest in Huaining Longchi Wind Power.

Huaining Longchi Wind Power sells its electricity to Anhui Electric Power Company.

Power Plant in Fujian Province

Fuzhou Power Plant

Huaneng Fuzhou Power Plant ("Fuzhou Power Plant") is located on the south bank of the Min River, southeast of the city of Fuzhou. Fuzhou Power Plant has been developed in three phases. The Fuzhou Power Plant Phase I and Phase II utilize four 350 MW coal-fired generating units with an installed capacity of 1,400 MW, and commenced operations in 1988 and 1999, respectively. The Fuzhou Power Plant Phase III consists of two 600 MW generating units with a total installed capacity of 1,200 MW, and commenced operations in 2010 and 2011, respectively. The capacity of Unit V and Unit VI of the Fuzhou Power Plant Phase III was expanded to 660 MW per unit since January 2012. We hold 100% equity interest in Fuzhou Power Plant.

The coal supply for Fuzhou Power Plant is obtained from several coal producers located mostly in Northern Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port and by ship down to the east coast of China and up to the Min River to a wharf located at Fuzhou Power Plant. We own and maintain the wharf, which is capable of handling vessels of up to 20,000 tons and of unloading 10,000 tons to 15,000 tons of coal per day. Fuzhou Power Plant typically stores 180,000 tons of coal on site.

In 2018, the Fuzhou Power Plant obtained 61.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Fuzhou Power Plant in 2018 was RMB563.21 (2017: RMB561.28) per ton.

Fuzhou Power Plant sells its electricity to Fujian Electricity Power Company.

Changle Photovoltaic

Changle 10 MW Photovoltaic Power Plant ("Changle Photovoltaic") is located in the city of Fuzhou of Fujian Province. It has an installed capacity of 10 MW, which commenced operation in June 2017. We hold 100% equity interest in Changle Photovoltaic.

Changle Photovoltaic sells its electricity to Fujian Electric Power Company.

Power Plants in Guangdong Province

Shantou Power Plant

Huaneng Shantou Coal-Fired Power Plant ("Shantou Power Plant") had originally been developed and constructed by HIPDC which transferred all its rights and interests therein to us effective on December 31, 1994. Located on the outskirts of the city of Shantou, Shantou Power Plant was set up with the support of the Shantou municipal government and the Guangdong provincial government. Shantou Power Plant Phase I consists of two 300 MW coal-fired generating units with boilers, which commenced operation in January 1997. Shantou Power Plant Phase II consists of one 600 MW coal-fired generating unit and commenced operation in October 2005. We hold 100% equity interest in Shantou Power Plant.

The coal supply for Shantou Power Plant is obtained from several coal producers located mostly in the northern area of Shanxi Province. The coal is transported by rail from the mines to Qinhuangdao port and by ship down the east coast of China to the wharf located at Shantou Power Plant, which is maintained by the Shantou Port Authority and is capable of handling 35,000 ton vessels. The Shantou Power Plant typically stores 300,000 tons of coal on site.

In 2018, the Shantou Power Plant obtained 26.0% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Shantou Power Plant in 2018 was RMB584.24 (2017: RMB585.02) per ton.

Shantou Power Plant sells its electricity to Guangdong Electric Power Company.

Haimen Power Plant

Huaneng Haimen Power Plant is located in Shantou City, Guangdong Province. Haimen Power Plant has an installed capacity of 4,144 MW and consists of four 1,036 MW generating units. The first two generating units ("Haimen") commenced operation in July 2009 and October 2009, respectively. We hold 100% equity interest in the first two generating units. The other two generation units commenced operation at the beginning of 2013 ("Haimen Power"). We hold 80% equity interest in the other two generating units.

The coal supply for Haimen Power Plant is mainly imported from Indonesia. Haimen Power Plant typically stores 400,000 tons of coal on site. In 2018, Haimen Power Plant obtained 59.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Haimen Power Plant in 2018 was RMB596.47 (2017: RMB611.14) per ton.

Haimen Power Plant sells its electricity to Guangdong Electric Power Company.

Shantou Photovoltaic

Shantou Power Plant 17 MW Photovoltaic Power Plant ("Shantou Photovoltaic") is located in Shantou City, Guangdong Province. It has an installed capacity of 17 MW, which commenced operation in September 2016. We hold 100% equity interest in the Project.

Shantou Photovoltaic sells its electricity to Guangdong Electric Power Company.

Power Plants in Yunnan Province

Diandong Energy

Yunnan Diandong Energy Limited Company ("Diandong Energy") is located in Qujing City, Yunnan Province. Diandong Energy has an installed capacity of 2,400 MW and consists of four 600 MW generating units which commenced operation in February 2006, July 2006, November 2006 and May 2007, respectively. We hold 100% equity interest in Diandong Energy.

The coal supply for Diandong Energy is mainly obtained from Yunnan and Guizhou Provinces. Diandong Energy typically stores 1,200,000 tons of coal on site. In 2018, Diandong Energy obtained none of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price for Diandong Energy in 2018 was RMB540.19 (2017: RMB583.82) per ton.

Diandong Energy sells its electricity to Yunnan Electric Power Company.

Yuwang Energy

Yunnan Diandong Yuwang Energy Limited Company ("Yuwang Energy") is located in Qujing City, Yunnan Province. Yuwang Energy has an installed capacity of 1,200 MW and consists of two 600 MW generating units which commenced operation in July 2009 and February 2010, respectively. We hold 100% equity interest in Yuwang Energy.

The coal supply for Yuwang Energy is mainly obtained from Yunnan and Guizhou Provinces. Yuwang Energy typically stores 600,000 tons of coal on site. In 2018, Yuwang Energy obtained 7.5% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price of coal for Yuwang Energy in 2018 was RMB507.68 (2017: RMB455.69) per ton.

Yuwang Energy sells its electricity to Yunnan Electric Power Company.

Fuyuan Wind Power

Fuyuan Wind Power Plant ("Fuyuan Wind Power") is located in the Fuyuan County of Qujing Municipality of Yunnan Province. Fuyuan Wind Power consists of Wenbishan Wind Power, which commenced operation in November 2014 with 20 wind power turbines of 2 MW each, Yibasan Wind Power, which commenced operation in

2014 with 24 wind power turbines of 2 MW each, and Shengjing Wind Power, which commenced operation in December 2016 with 24 wind power turbines of 2 MW each. A new project with an installed capacity of 48 MW commenced operation in October and November 2017, consisting of 24 wind power turbines of 2 MW each. We hold 100% equity interest in Fuyuan Wind Power.

Fuyuan Wind Power sells its electricity to Yunnan Electric Power Company.

Power Plants in Hainan Province

Haikou Power Plant

Huaneng Haikou Power Plant ("Haikou Power Plant") is located in Haikou City in Hainan Province. Haikou Power Plant has an installed capacity of 936 MW and consists of two 138 MW coal-fired generating units which commenced operation in 1999, 2000, and two 330 MW coal-fired generating units which commenced operation in 2006. We hold 91.8% equity interest in Haikou Power Plant. We acquired the power plant in January, 2015 from Huaneng Group.

The coal supply for Haikou Power Plant is mainly obtained from Inner Mongolia, Shanxi, and partially imported coal. Haikou Power Plant typically stores 120,000 tons of coal on site. In 2018, Haikou Power Plant obtained 33.6% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price of coal for Haikou Power Plant in 2018 was RMB515.21 (2017: RMB498.76) per ton.

Haikou Power Plant sells its electricity to Hainan Electric Power Company.

Dongfang Power Plant

Huaneng Dongfang Power Plant ("Dongfang Power Plant") is located in Dongfang City in Hainan Province. Dongfang Power Plant has an installed capacity of 1,400 MW and consists of four 350 MW coal-fired generating units which commenced operation in 2009, 2012. We hold 91.8% equity interest in Dongfang Power Plant. We acquired the power plant in January, 2015 from Huaneng Group.

The coal supply for Dongfang Power Plant is mainly obtained from Shanxi and partially imported coal. Dongfang Power Plant typically stores 160,000 tons of coal on site. In 2018, Dongfang Power Plant obtained 38.2% of its total consumption of coal from annual contracts and the remainder from the open market. The average coal purchase price of coal for Dongfang Power Plant in 2018 was RMB514.48 (2017: RMB502.22) per ton.

Dongfang Power Plant sells its electricity to Hainan Electric Power Company.

Nanshan Co-generation

Huaneng Nanshan Co-generation Power Plant ("Nanshan Co-generation") is located in Sanya City in Hainan Province. Nanshan Co-generation has an installed capacity of 132 MW which commenced operation in 2003. We hold 91.8% equity interest in Nanshan Co-generation. We acquired the power plant in January 2015 from Huaneng Group.

Nanshan Co-generation sells its electricity to Hainan Electric Power Company.

Gezhen Hydropower Plant

Huaneng Gezhen Hydropower Plant ("Gezhen Hydropower Plant") is located in Dongfang City in Hainan Province. Gezhen Hydropower Plant has an installed capacity of 82 MW which commenced operation in 2009. We hold 91.8% equity interest in Gezhen Hydropower Plant. We acquired the power plant in January, 2015 from Huaneng Group.

Gezhen Hydropower Plant sells its electricity to Hainan Electric Power Company.

Wenchang Wind Power

Huaneng Wenchang Wind Power Plant ("Wenchang Wind Power") is located in Wenchang City in Hainan Province. Wenchang Wind Power has an installed capacity of 51.5 MW and consists of 33 turbines with each capacity of 1.5 MW which commenced operation in 2008, and one turbine with a capacity of 2 MW which commenced operation in 2015. We hold 91.8% equity interest in Wenchang Wind Power. We acquired the power plant in January, 2015 from Huaneng Group.

Wenchang Wind Power sells its electricity to Hainan Electric Power Company.

Dongfang Photovoltaic

Dongfang Photovoltaic Power Plant ("Dongfang Photovoltaic") is located in Dongfang City in Hainan Province. Dongfang Photovoltaic has an installed capacity of 12 MW which commenced operation in July 2016. We hold 91.8% equity interest in Dongfang Power Plant.

Dongfang Photovoltaic sells its electricity to Hainan Electric Power Company.

Chengmai Photovoltaic

Chengmai Photovoltaic Power Plant ("Chengmai Photovoltaic") is located in the county of Chengmai of Hainan Province. Chengmai Photovoltaic has an installed capacity of 25 MW and 40 MW which commenced operation in June 2017 and September 2018, respectively. We hold 91.8% equity interest in Chengmai Photovoltaic.

Chengmai Photovoltaic sells its electricity to Hainan Electric Power Company.

Power Plant in Guangxi Autonomous Region

Guilin Distributed Energy

Guilin Distributed Energy Power Plant ("Guilin Distributed Energy") is located in the city of Guilin of Guangxi Autonomous Region. Guilin Distributed Energy has an installed capacity of 210 MW which commenced operation in December 2017. We hold 80% equity interest in Guilin Distributed Energy.

Guilin Distributed Energy sells its electricity to Hainan Electric Power Company.

Power Plant in Guizhou

Panxian Wind Power

Panxian Wind Power ("Panxian Wind Power") is located at Panxian county of Guizhou Province. It commenced operation in December 2015, with an installed capacity of 24 MW, consisting of 12 wind power turbine of 2 MW each. We hold 100 % equity interest in Panxian Wind Power.

Panxian Wind Power sells its electricity to Guizhou Electric Power Company.

Panxian Dapashan Wind Power

Panxian Dapashan Wind Power Plant ("Panxian Dapashan Wind Power") is located in the county of Pan of Guizhou Province. Panxian Dapashan Wind Power has an installed capacity of 24 MW and consists of 12 turbines with each capacity of 2 MW which commenced operation in November and December 2017. We hold 100% equity interest in Panxian Dapashan Wind Power.

Panxian Dapashan Wind Power sells its electricity to Guizhou Electric Power Company.

Panxian Jiaoziding Wind Power

Panxian Jiaoziding Wind Power Plant ("Panxian Jiaoziding Wind Power") is located in the county of Pan of Guizhou Province. Panxian Jiaoziding Wind Power has an installed capacity of 48 MW and consists of 24 turbines

with each capacity of 2 MW which commenced operation in November and December 2017. We hold 100% equity interest in Panxian Jiaoziding Wind Power.

Panxian Jiaoziding Wind Power sells its electricity to Guizhou Electric Power Company.

Power Plant in Ningxia

Ruyi Helan Rooftop Photovoltaic

Ruyi Helan Rooftop Photovoltaic Power Plant ("Ruyi Helan Rooftop Photovoltaic") is located in the county of Helan of Ningxia Autonomous Region. Ruyi Helan Rooftop Photovoltaic has an installed capacity of 19.8 MW which commenced operation in June 2017. We hold 40% equity interest in Ruyi Helan Rooftop Photovoltaic.

Ruyi Helan Rooftop Photovoltaic sells its electricity to Ningxia Electric Power Company.

Power Plant in Singapore

Tuas Power

With a licensed generating capacity of 2,670MW, Tuas Power is one of the three largest power generation companies in Singapore. It currently has an installed operation generating capacity of 2,609MW, comprising of 1,876 MW gas-fired combined cycle generating units, 133 MW of coal-biomass fired steam turbine generating units and 600 MW of oil-fired steam generating unit.

Supply of coal is procured from coal producers in Indonesia via two long-term coal supply contracts with 10 years and 15 years term respectively, and short-term contracts. Supply of gas is obtained from Pavilion Gas Pte Ltd, Sembcorp Gas Pte Ltd and Shell Gas Marketing Pte Ltd (formally known as BG Singapore Gas Marketing Pte Ltd). Oil supply, if required, is obtained through the spot market.

Power Plant in Pakistan

Sahiwal Power Plant

Sahiwal Power Plant is located near the city of Sahiwal in Punjab Province. It commenced operation of two 660 MW coal-biomass fired steam turbines in 2017. We indirectly hold 40% equity interest in Sahiwal Power Plant.

Competition and Dispatch

All power plants in China are subject to dispatch conducted by various dispatch centers. A dispatch center is required to dispatch electricity pursuant to the Regulations on the Administration of Electric Power Dispatch Networks and Grids, issued by the State Council with effect from November 1, 1993, and in accordance with its agreements with power plants subject to its dispatch. Power generation companies are also required to enter into on-grid dispatch agreements with power grid companies. As a result, there is competition for favorable dispatch treatment in the PRC electric power industry, especially during the off-peak load periods. More efficient power plants usually operate at higher output than less efficient power plants. We believe that in order to increase system stability, large and efficient power plants such as ours will be preferred as base load plants to generate power for the grids to which they connect. We believe that our dispatch arrangements with the local power corporations and dispatch centers, superior quality equipment, lower coal consumption rate, higher efficiency of plant operation, lower emission levels and larger capacity represent competitive advantages in the markets in which we operate.

Since 2002, we have been facing competition from four other major power generation groups: China Datang Corporation Ltd., China Huadian Power Corporation, CHN Energy (established through the merge of China Guodian Corporation and Shenhua Group Corporation Limited) and State Power Investment Corporation (formerly known as China Power Investment Corporation), which were created following the break-up of the former State Electric Corporation in 2002.

As power generation companies were separated from power grid companies and more competitors entered into the market, the SERC issued the Interim Measures Regarding Promotion of Openness, Fairness and

Equitableness of Power Dispatch, requiring power dispatch centers to treat all competitors indiscriminately in respect of dispatch administration and information disclosure, except in cases where safe and stable operation of the electric power system requires different treatment.

In 2008, with the purpose of improving energy usage efficiency, the government implemented an electricity-optimized dispatch policy in Henan Province, Sichuan Province, Jiangsu Province, Guangdong Province and Guizhou Province on a pilot basis, and plans to roll out to others if the trial operation is successful. In addition, as of December 31, 2014, in all regions in which we operate power plants, the government's power administrative departments make power generation plan policies with the aim to improve the planned utilization hours of the environment-protecting and energy-saving units. In 2015, the NDRC and China Energy Administration jointly issued the Guidelines on Improving Electric Power Operations and Deepening Clean Energy Generation, which confirms a system that aims to ensure the full-priced acquisitions of renewable energy and ensure that the hours of usage for high-efficiency energy-saving generators be significantly higher than that for coal-fired generators. The Guidelines also demand, within a certain time period, an increase of the hours of usage for coal-fired generators, of which the emission level is close to or reaches the cap level of gas turbine.

In 2016, China National Energy Administration issued Guidelines on Improving Clean Energy Consumption and Distribution in Northern China, Notice on Issuing the Measures for the Administration of the Guaranteed Buyout of Electricity Generated by Renewable Energy Resources, Pilot Program of Local Clean Energy Consumption and Distribution inGansu, Inner Mongolia and Jilin, and Provisionary Measures for Priority Dispatch of Renewable Peaking Power Generation Units, which require an improvement on clean energy consumption and distribution.

In 2017, NDRC and NEA issued Circular on Orderly Opening Up the Electricity Generation and Consumption Plans, Interim Measures for Guaranteeing the Safe Consumption of Nuclear Power, Pilot Rules on Inter-regional Spare Renewable Energy Electricity Power Stock Trading, Circular on the Establishment of Pilot Electricity Power Stock Exchange, Circular on Promoting Hydropower Consumption in Southwest China, and Solutions to Abandoning Hydro, Wind and Solar Energy, to promote the development of the power stock exchange and renewable power consumption and emphasize the low-carbon energy scheduling.

In 2018, NDRC and NEA issued Circular on Promoting the Capability to Adjust the Power System and Plan for Consumption of Clean Energy (2018-2020), Circular on the Renewable Power Quota System and Notice on Actively Promoting Market-oriented Power Exchange and Further Improving the Trading Mechanism to futher promote the consumption of renewable energy and increase the utilization rate of the renewable energy. From 2018, users from coal, steel, non-ferrous metal and construction materials industries, among others, shall participate in the market-oriented power exchange process instead of applying the catalog price. Users are encouraged to negotiate with power generating enterprises to establish the “baseline with floating adjustment” pricing mechanism.

Competition and Dispatch in Singapore

Following the introduction of LNG into Singapore, new players as well as incumbents have invested in new gas-fired generating capacities to compete in the Singapore electricity market. Tuas Power competes in the NEMS using its portfolio of gas-fired, coal-biomass fired and oil-fired generating units. It was able to maintain a market share of approximately 21.1% in the NEMS for 2018. Its major competitors include Senoko Energy (formerly Senoko Power) which is owned by a Japanese/French consortium led by Marubeni Group, YTL PowerSeraya that is owned by YTL Group of Malaysia, SembCorp Cogen and Keppel Merlimau Cogen and PacificLight Power Pte Ltd. A new entrant, Tuaspring, entered the market in 2015. In 2017, ExxonMobil and Singapore Refining Company introduced additional capacity of 158MW. Tuas Power's portfolio of generating units allows it to maintain its leadership position in Singapore's power industry.

In the NEMS, power generation companies compete to generate and sell electricity every half-hour by offering their capacity (specifying price/quantity pairs). The EMC, the operator of Singapore's wholesale electricity market, determines the least-cost dispatch quantities and the corresponding market-clearing or spot prices based on the offers made by power generation companies. The spot prices in the NEMS reflect the least-cost market solution for the dispatch of energy and provision of operating reserves. In general, this means that each power generation company that submitted an offer below the spot price will be dispatched, and a power generation company that submitted an offer above the spot price will not be dispatched. The spot price that a power generation company

receives is a nodal price, which may vary according to their location on the network to reflect the cost of transmission losses or network constraints.

Environmental Regulation

We are subject to the PRC Environmental Protection Law, and relevant laws and regulations (collectively the "National Environmental Laws") and the environmental rules promulgated by the Local Governments in whose jurisdictions our various power plants are located (the "Local Environmental Rules"). According to the National Environmental Laws, the Ministry of Ecology and Environment sets national environmental protection standards and local environmental protection bureaus may set stricter local standards. Enterprises are required to comply with the stricter of the two standards.

At present, new projects are subject to the environmental evaluation approval. The project proposal is required to be submitted to the Ministry of Ecology and Environment for approval, save for those projects can be approved by local governments.

Effective July 1, 2003, all power plants in China became subject to the pollutant discharge levy system, pursuant to which discharge fees are levied based on the actual amount of pollutants discharged. In 2016, 2017 and 2018, we paid to the local governments total discharge fees of approximately RMB372 million, RMB308 million and RMB62 million, respectively. In 2018, the Environmental Protection Tax Law of People’s Republic of China came into effect, and all of our plants have been paying the environmental protection tax since. Under the Environmental Protection Tax Law, the unit tax(fee) rates rise significantly in various regions. We took the low emission modification and other measures and actively sought tax deduction treatments, which helped us to cut our environmental protection tax liabilies in the amount of RMB50 million.

In 2011, the PRC Government promulgated a New Emission Standards of Air Pollutants for Thermal Power Plants, which implement more stringent standards on discharge of polluting substances by thermal power plants. These restrictive standards govern both the total sulfur dioxide and nitrous oxide emissions from the power plant and the emission density of each chimney.

In September 2013, the State Council issued the Air Pollution Prevention Action Plan (the "Plan"), setting forth stricter requirements for air pollution prevention and control. Local government departments have released local rules and regulations under the Plan, some of which require higher emission standards than the national ones. Carbon emission trading has been conducted in certain regions on a trial basis and could be gradually introduced to an expanded market in the future. On July 1, 2014, the new pollutants emission standards for thermal power plants and the dust emission standards in key regions will also come into effect. In September 2014, the NDRC, the Ministry of Ecology and Environment and China National Energy Administration jointly issued the 2014-2020 Action Plan for Energy Saving, Emission Reduction and Renovation of Coal-fired Generation Units, imposing more strict requirements for efficient and clean development of coal-fired generating plants. In December 2016, the State Council issued the Comprehensive Work Plan for Conserving Energy and Reducing Emissions for the 13th Five-Year, putting forward new goals and requirements for energy saving and emission reduction. All of our plants in east coastal regions have completed the renovation.

In order to meet the requirements of the New Emission Standards, we have installed flue gas desulphurization ("FGD") facilities and denitrification facilities with all of our newly constructed generating units. We have also carried out sulfur disposal reform on the existing generating units. As of the end of 2012, we have installed and operated desulphurization facilities on all our existing coal-fired generating units. By the end of 2014, all coal-fired generating units of the Company have been renovated to include denitrification facilities.

In order to reduce fly ash, we use very high-efficiency electrostatic precipitators and conduct efficiency improvement and renovations according to increasingly strict state and local emission standards. Each power plant is also equipped with a wastewater treatment facility to treat water used by the power plant before it is released into the river or the sea. We pay discharge fees on the basis of measurements made at discharge points of each plant where waste is released. All of the disposal equipment and facilities for sulfur dioxide, nitrogen oxides, smoke dust, wastewater and noise in our existing power plants completely satisfy the existing national standards.

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 as planned for all coal-fired generating units in 2018, completing the task required by the State early.

We believe we have implemented systems that are adequate to control environmental pollution caused by our facilities. In addition to the measures identified above, each power plant has its own environment protection staff responsible for monitoring and operating the environmental protection equipment. The environmental protection departments of the local governments monitor the level of emissions, sometimes through online monitoring devices recognized by such local governments, and base their fee assessments on the results of their tests.

We believe our environmental protection systems and facilities for the power plants are adequate for us to comply with the currently effective national and local environmental protection regulations. It is expected that the PRC Government will impose additional and stricter regulations to implement the emission plan which would require additional expenditure in compliance with environmental regulations.

Environmental Regulation in Singapore

Tuas Power's generation operations are subject to Singapore's Environmental Protection and Management Act and Environmental Public Health Act. The former sets out requirements pertaining to control of pollution and management of hazardous substance while the latter focuses mainly on proper waste management.

Tuas Power Station

To address the environmental concerns and regulatory requirements, Tuas Power Station has put in place an environmental management system, which is certified to ISO14001 standard. All generating units are equipped with pollution control facilities. Stage I steam plant burn low sulfur content fuel oil and employ an electro-precipitator to control sulfur dioxide and particulate emissions. Stage II combined-cycle plants burn natural gas and are fitted with low-nitrogen oxide burners to control nitrogen oxide emissions. Source emission tests are conducted annually by National Environment Agency (NEA) accredited contractors and the results are submitted to NEA Pollution Control Department.

Tuas Power Station has a dedicated wastewater treatment plant to treat its oily wastewater and process wastewater prior to discharge into the sea. The treatment processes are automated to prevent accidental adverse discharge and critical parameters are monitored on a real-time basis. Trade effluent testing is performed annually and the results are shared with the Pollution Control Department.

Land contamination is prevented through well-designed storage and containment procedures. Specific areas for storage of waste and hazardous substances are designated within the power plant.

Waste generated in Tuas Power Station plants is identified and managed accordingly. Waste with residual value, such as waste oil, is resold to licensed collectors for reuse while other waste is disposed through licensed disposal contractors.

Hazardous substances which have potential to cause environmental pollution are controlled within the power plant compound. A hazardous substance permit, issued by the Pollution Control Department, is required to store the hazardous substances in the premises. Our personnel who handle these chemicals are properly trained and our storage facility for hazardous substances are specifically designed to prevent and mitigate the likelihood and impact of any abnormal releases. Regular audits are conducted to ensure these hazardous substances are managed properly and the findings and recommendations for improvements are reported to the Pollution Control Department.

TMUC

TMUC utilizes an efficient cogeneration process where up to 80% of the useful energy from the plant is used to produce steam for industrial customers and the remaining energy is converted to electricity for internal use and transmission to the national grid. In 2018, the energy split between heat and power is 48% and 52% respectively, and the overall plant efficiency averaged at 61%.

The TMUC plant is designed to comply with stringent environmental standards set by the local authority. TMUC has put in place a robust environmental management system and it is certified to ISO14001 standard. TMUC adopts the circulating fluidized bed boiler technology that enables use of high percentage of carbon neutral biomass (palm kernel shell and woodchips) co-fired with clean coal (low sulphur and low ash) to reduce carbon footprint significantly to the same level as oil-fired plant and with lower sulphur and nitrogen oxides emission. High efficiency bag filters are installed to ensure low particulates emission.

Coal, biomass and ash handling, transfer and storage systems at TMUC are fully enclosed to prevent any fugitive dust during unloading, storage and handling operation. Coal and ash are stored in silo while biomass is stored in enclosed warehouse.

Fly ash and bed ash generated from the CFB boilers are fully recycled and processed for industrial use in cement and concrete applications.

Oily wastewater, coal/ash washing wastewater and industrial wastewater received from customers are treated prior to discharge. Online monitoring of oil-in-water, suspended solids (through turbidity meter) and chemical oxygen demand (COD) are carried out for oily wastewater, coal/ash washing wastewater and industrial wastewater respectively to ensure compliance with environmental regulation. Chemical/regeneration wastewater is neutralized prior to discharge. Online monitoring of pH is conducted to prevent accidental discharge. Stop-gates are strategically installed at drain to prevent accidental discharge of poor quality effluent/water to the sea.

Insurance

We currently maintain property all-risks insurance and machinery-breakdown insurance for all of our power plants, and construction all-risks insurance or erection all-risks insurance for all of our newly built and expansion projects as well as large-scaled upgrading projects. Our current insurance coverage on our property, plant and equipment (including construction all-risk insurance) is mainly maintained with Yongcheng Property and Casualty Insurance Company, which amounted to approximately RMB571.27 billion. In 2018, we renewed the liabilities insurance for our directors and officers with coverage of US$10 million.

We do not maintain any third-party liability insurance to cover claims in respect of bodily injury or property or environment damage arising from accidents on our property or relating to our operation other than the third-party additional risk insurance included in construction all-risk insurance or erection all-risk insurance. We do not usually carry business interruption insurance either, which is not customarily carried by power companies in the PRC. We believe that our insurance coverage is adequate and is standard for the power industry in China. Please refer to the section entitled "Risk factors – Risks relating to our business and the PRC's power industry – Operation of power plants involves many risks and we may not have enough insurance to cover the economic losses if any of our power plant's ordinary operation is interrupted."

Tuas Power purchases key insurance policies, such as industrial all-risks insurance (including business interruption insurance coverage), public and products liability insurance, directors' and officers' liability insurance, pollution legal liability insurance and marine cargo insurance. Total insured value under the industrial all-risks insurance is US$3.0 billion for 2019.

ITEM 4A UNRESOLVED STAFF COMMENTS

None.

ITEM 5 OPERATING AND FINANCIAL REVIEWS AND PROSPECTS

A. General

The principal activities of the Company are development in and construction, operation and management of power plants in China. The Company provides consistent and reliable electricity supply to customers through grid operators where its operating plants are located. The Company is committed to scientific development through increasing economic efficiency, enhancing returns for shareholders, conserving resources and protecting the environment. The Company

also attaches importance to social responsibilities and makes an active contribution to the building of a harmonious society.

Since its incorporation, the Company has continued to expand its operational scale. The Company has been a leader in its industry in terms of competitiveness, resource utilization efficiency and environmental protection. The Company is Asia's largest listed power producer and China's most dynamic power generator. Its power generation operations are widely located with coverage in the Northeast China Grid, the Northern China Grid, the Northwest China Grid, the Eastern China Grid, the Central China Grid, the Southern China Grid, and the overseas market in Singapore.

In 2018, the Company proactively adapted to the changes in the market and anticipated the dynamics of the reforms in national economy and power market system to promptly realign our operating strategy. Throughout the year, we maintained stable operation of safe and clean production, constantly optimised the power structure, realised increases in both quantity and price in power generation, achieved excellent marketing results, effectively controlled the fuel cost, and steadily carried out capital operation. As a result, we have satisfactorily achieved our annual business objectives and maintained our leading position in the industry.

Critical accounting policies

The Company and its subsidiaries have identified the policies below as critical to our business operations and the understanding of our results of operations. The impact of and any associated risks related to these policies on the business operations are discussed throughout the Operating and Financial Reviews and Prospects where such policies affect our reported and expected financial results. For a detailed discussion on the application of these and other accounting policies, see Note 2 to the Financial Statements in Item 18 of this Annual Report on Form 20-F. Note that our preparation of this Annual Report on Form 20-F requires us to make estimates and assumptions that affect the reported amount of assets and liabilities, disclosure of contingent assets and liabilities at the date of our financial statements, and the reported amount of revenue and expenses during the reported periods. There can be no assurance that actual results will not differ from those estimates.

Depreciation of property, plant and equipment

Depreciation of property, plant and equipment is provided based on book value of assets less estimated residual value over estimated useful life using straight-line method. For these impaired property, plant and equipment, depreciation is provided based on book value after deducting the impairment provision over estimated useful life of asset. The estimated useful lives are as follows:

	2018
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

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 an adjustment when necessary.

Useful life of power generation license

The Company and its subsidiaries acquired the power generation license as part of the business combination with 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.

Impairment of non-financial assets

The carrying amounts of property, plant and equipment, intangible assets with definite useful lives, land use rights, mining 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, indefinite-lived intangible assets and intangible assets not yet available for use 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 generate 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.

Impairment losses are recognized in profit or loss. Impairment losses recognised 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 the prior year. Reversals of impairment losses are credited to profit or loss in the year in which the reversals are recognized.

Deferred income tax

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 utilized. 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 legally 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.

Business combination

For the business combinations undertaken by the Company and its subsidiaries, the Company recognises the assets acquired and the liabilities assumed based on their estimated fair value on the date of acquisition. Any excess of purchase consideration over the estimated fair values of acquired identifiable net assets is recorded goodwill. 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.

New accounting pronouncements

For a detailed discussion of new accounting pronouncements, see Note 2(ag) to the Financial Statements.

B. Operating results

Our financial statements are prepared under IFRS as issued by IASB. The following management's discussion and analysis is based on the financial information prepared under IFRS.

Year ended December 31, 2018 compared with year ended December 31, 2017

	For the Year Ended December 31,		
	2018	2017 (Note)	Increased/ (Decreased)
	RMB'000	RMB'000	%
Operating revenue	169,550,624	152,459,444	11.21
Tax and levies on operations	(1,788,998)	(1,376,312)	29.98
Operating expenses			
Fuel	(105,736,173)	(92,737,304)	14.02
Maintenance	(4,393,335)	(4,347,723)	1.05
Depreciation	(20,466,423)	(20,180,830)	1.42

	For the Year Ended December 31,		
	2018 RMB'000	2017 (Note) RMB'000	Increased/ (Decreased) %
Labor	(11,845,280)	(10,590,084)	11.85
Service fees on transmission and transformer facilities of HIPDC	(96,721)	(95,894)	0.86
Purchase of electricity	(4,678,431)	(3,787,032)	23.54
Others	(10,430,998)	(10,160,875)	2.66
Total operating expenses	(157,647,361)	(141,899,742)	11.10
Profit from operations	10,114,265	9,183,390	10.14
Interest income	234,604	198,906	17.95
Financial expenses, net			
Interest expense	(10,486,412)	(9,749,004)	7.56
Exchange (loss) / gain and bank charges , net	(160,899)	144,359	(211.46)
Total financial expenses, net	(10,647,311)	(9,604,645)	10.86
Share of profits less losses of associates and joint ventures	1,823,415	425,215	328.82
Gain on fair value changes of financial assets / liabilities	726,843	856,786	(15.17)
Other investment (loss) / income	(278,669)	1,742,081	(116.00)
Profit before income tax expense	1,973,147	2,801,733	(29.57)
Income tax expense	(643,173)	(1,217,526)	(47.17)
Net Profit	1,329,974	1,584,207	(16.05)
Attributable to:			
-Equity holders of the Company	734,435	1,579,836	(53.51)
-Non-controlling interests	595,539	4,371	13,524.78

Note: The Company and its subsidiaries have initially applied IFRS 15 and IFRS 9 at January 1, 2018. Under the transition methods chosen, comparative information is not restated. See Note 2(b) to Financial Statements.

Total power generated by the Company’s domestic operating power plants for the year on consolidated basis amounted to 430.457 billion kWh, representing an increase of 9.12% year-on-year. The electricity sold amounted to 405.943 billion kWh, representing an increase of 9.30% year-on-year. The increase in the Company’s power generation for the year was mainly attributable to the following reasons: (i) the growth of the national total electricity consumption was greater than anticipated at the beginning of the year, especially the electricity consumption by the tertiary industry and urban and rural residents maintained at a double-digit growth; (ii) affected by factors such as increased demand and reduced water supply, the Company’s thermal power utilization hours rebounded significantly; and (iii) the new gas turbine, wind-power and photovoltaic units contributed to the growth of power generation.

The annual average utilization hours of the Company's domestic power plants reached 4,208 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.

The power generation of the Company's domestic power plants for the year ended December 31, 2018 is listed below (in billion kWh):

	Power Generation		Electricity Sold	
Region	2018	Change	2018	Change
Heilongjiang Province	13.398	1.72 %	12.562	1.97 %
Coal-fired	12.282	0.26 %	11.466	0.47 %
Wind-power	1.039	12.74 %	1.021	12.50 %
PV	0.077	–	0.076	–
Jilin Province	10.053	16.94 %	9.504	17.18 %
Coal-fired	8.743	17.40 %	8.243	17.61 %
Wind-power	0.975	13.39 %	0.949	13.58 %

Hydro-power	0.076	21.38 %	0.074	20.91 %
PV	0.039	231.73%	0.038	231.41%
Biomass power	0.220	2.40 %	0.199	3.23 %

Region	Power Generation 2018	Change	Electricity Sold 2018	Change
Liaoning Province	19.548	-0.79 %	18.168	-1.23 %
Coal-fired	18.984	-1.40 %	17.612	-1.87 %
Wind-power	0.350	5.02 %	0.348	5.07 %
Hydro-power	0.059	50.06 %	0.058	49.80 %
PV	0.155	95.97 %	0.151	93.96 %
Inner Mongolia	0.243	6.38 %	0.240	6.39 %
Wind-power	0.243	6.38 %	0.240	6.39 %
Hebei Province	13.423	0.17 %	12.601	0.13 %
Coal-fired	13.125	-0.05 %	12.315	-0.23 %
Wind-power	0.241	5.36 %	0.231	13.54 %
PV	0.057	43.20 %	0.055	46.22 %
Gansu Province	11.820	18.97 %	11.220	19.19 %
Coal-fired	9.819	17.84 %	9.273	17.90 %
Wind-power	2.000	24.88 %	1.947	25.78 %
Ningxia	0.022	111.02%	0.021	115.47%
PV	0.022	111.02%	0.021	115.47%
Beijing	8.521	37.98 %	8.086	45.39 %
Coal-fired	1.692	26.36 %	1.499	28.90 %
Combined Cycle	6.829	41.20 %	6.588	49.74 %
Tianjin	7.504	3.18 %	7.042	2.93 %
Coal-fired	5.793	2.39 %	5.380	2.09 %
Combined Cycle	1.708	5.84 %	1.659	5.64 %
PV	0.003	111.87%	0.003	112.26%
Shanxi Province	10.916	11.24 %	10.196	11.00 %
Coal-fired	8.807	25.19 %	8.143	25.36 %
Combined Cycle	2.033	-25.88 %	1.977	-25.89 %
PV	0.076	116.85%	0.076	242.30%
Shandong Province	97.700	9.20 %	91.654	9.39 %
*Coal-fired	96.481	8.59 %	90.491	8.81 %
*Wind-power	0.835	89.49 %	0.785	78.58 %
PV	0.384	105.94%	0.378	104.27%
Henan Province	27.074	21.89 %	25.516	21.93 %
Coal-fired	25.201	21.90 %	23.689	21.83 %
Combined Cycle	1.750	22.90 %	1.712	22.86 %
Wind-power	0.098	15.29 %	0.090	17.28 %
PV	0.025	98.97 %	0.025	98.90 %
Jiangsu Province	42.653	-0.21 %	40.445	-0.02 %
Coal-fired	34.804	-4.45 %	32.762	-4.75 %
Combined Cycle	6.009	15.59 %	5.892	17.61 %
Wind-power	1.747	62.49 %	1.701	69.37 %
PV	0.093	110.43%	0.090	107.50%

	Power Generation		Electricity Sold	
Region	2018	Change	2018	Change
Shanghai	18.180	-1.64 %	17.185	-1.74 %
Coal-fired	16.325	-3.60 %	15.373	-3.78 %
Combined Cycle	1.855	19.69 %	1.813	19.78 %
Chongqing	9.951	16.32 %	9.224	16.31 %
Coal-fired	8.558	15.84 %	7.873	16.01 %
Combined Cycle	1.360	15.79 %	1.327	16.01 %
Wind-power	0.032	–	0.024	–
Zhejiang Province	27.090	-1.81 %	26.002	-1.83 %
Coal-fired	26.356	-2.71 %	25.281	-2.76 %
Combined Cycle	0.674	50.05 %	0.660	50.73 %
PV	0.062	24.66 %	0.061	23.79 %
Hubei Province	17.519	18.89 %	16.386	18.46 %
Coal-fired	16.736	18.31 %	15.674	18.61 %
Wind-power	0.458	75.31 %	0.396	38.24 %
Hydro-power	0.303	-9.85 %	0.294	-9.53 %
PV	0.022	271.80 %	0.022	269.60 %
Hunan Province	11.410	22.58 %	10.696	22.81 %
Coal-fired	10.509	23.98 %	9.808	24.33 %
Wind-power	0.545	2.54 %	0.539	2.52 %
Hydro-power	0.325	13.95 %	0.319	14.04 %
PV	0.032	98.30 %	0.031	93.50 %
Jiangxi Province	21.106	6.59 %	20.188	6.73 %
Coal-fired	20.720	6.10 %	19.812	6.12 %
Wind-power	0.385	41.32 %	0.376	53.35 %
Anhui Province	6.151	3.59 %	5.873	3.45 %
Coal-fired	5.776	1.09 %	5.506	0.94 %
Wind-power	0.298	136.37 %	0.290	133.56 %
Hydro-power	0.077	-22.01 %	0.077	-22.07 %
Fujian Province	12.495	20.37 %	11.800	20.52 %
Coal-fired	12.482	20.34 %	11.787	20.44 %
PV	0.012	69.23 %	0.012	199.78 %
Guangdong Province	25.648	19.58 %	24.539	19.76 %
Coal-fired	25.626	19.61 %	24.517	19.78 %
PV	0.022	-1.37 %	0.022	-1.33 %
Guangxi Province	0.339	1052.18 %	0.325	–
Combined Cycle	0.339	1052.18 %	0.325	–
Yunnan Province	4.450	20.66 %	4.146	22.00 %
Coal-fired	3.885	18.80 %	3.596	19.99 %
Wind-power	0.565	35.17 %	0.549	36.94 %
Guizhou Province	0.197	240.83 %	0.194	260.17 %
Wind-power	0.197	240.83 %	0.194	260.17 %

	Power Generation		Electricity Sold	
Region	2018	Change	2018	Change
Hainan Province	13.044	11.99 %	12.129	12.21 %
Coal-fired	12.635	11.54 %	11.725	11.72 %
Combined Cycle	0.024	21.22 %	0.023	21.34 %
Wind-power	0.097	-16.50 %	0.095	-16.47 %
Hydro-power	0.228	48.80 %	0.226	49.20 %
PV	0.060	97.20 %	0.059	97.67 %
Total	430.457	9.12 %	405.943	9.30 %

Note: The statistics marked * comprise newly acquired power plants of the Company that were included in the consolidated financial statements in early August 2018. The comparison figures thereof are solely for reference purposes.

For the year ended December 31, 2018, the accumulated power generation of Tuas Power Ltd., the Company’s wholly owned subsidiary in Singapore, accounted for a market share of 21.1% in Singapore, representing a decrease of 0.8% compared to the same period last year of 21.9%.

In respect of the tariff, the Company's average tariff of domestic power plants for the year ended December 31, 2018 was RMB418.48 per MWh, up by RMB4.47 per MWh from the year ended December 31, 2017. SinoSing Power's average tariff for 2018 was RMB648.74 per MWh, representing an increase of 19.22% from the same period last year.

In respect of fuel costs, there was a huge increase in fuel costs. Compared with 2017, the Company's fuel cost per unit of power sold of domestic power plant increased by 4.85% to RMB236.89 per MWh.

Combining the foregoing factors, for the year ended December 31, 2018, the Company recorded an operating revenue of RMB169.551 billion, representing an increase of 11.21% from RMB152.459 billion of last year, and the net profit attributable to equity holders of the Company of RMB0.734 billion, representing a decrease of 53.51% from RMB1.580 billion of last year.

For the year ended December 31, 2018, the net profit attributable to equity holders of the Company from domestic operations was RMB1.429 billion, representing a decrease of RMB0.628 billion from RMB2.057 billion for the same period last year. The decrease was primarily attributable to the increase in fuel costs and financial expenses, and decrease in investment gains. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB695 million, representing a loss increase of RMB218 million compared to the same period last year, which is principally attributable to Tuas Power's decreased profit by RMB320 million (about S$65 million) from the disposal of fuel oil and impairment provision for fuuel oil.

Operating revenue and tax and levies on operations

Operating revenue mainly consists of revenue from electricity sold. For the year ended December 31, 2018, the consolidated operating revenue of the Company and its subsidiaries amounted to RMB169.551 billion, representing an increase of 11.21% from RMB152.459 billion for the year ended December 31, 2017. The operating revenue from domestic operations of the Company increase by RMB15.166 billion over the same period of last year, while the operating revenue generated from newly acquired entities and newly operated generating units was RMB5.592 billion. In 2018, the operating revenue from the operations of the Company in Singapore increased by RMB1.925 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 increased on-grid tariff compared to the same period of last year.

The following table sets forth the average tariff rate of the Company, as well as percentage changes from 2017 to 2018.

Region/type of power generation	Average tariff rate (VAT inclusive) (RMB/MWh)		
	2018	2017	Change
Heilongjiang Province			
Coal-fired	393.28	376.88	4.35%
Wind-power	516.82	595.75	-13.25%
PV	750.90	–	N/A
Jilin Province			
Coal-fired	385.18	383.75	0.37%
Wind-power	518.74	551.80	-5.99%
Hydro-power	426.74	426.63	0.03%
PV	834.14	879.95	-5.21%
Biomass power	754.58	750.02	0.61%
Liaoning Province			
Coal-fired	398.85	370.25	7.73%
Wind-power	572.25	583.79	-1.98%
Hydro-power	330.00	330.00	0.00%
PV	898.76	907.54	-0.97%
Inner Mongolia			
Wind-power	461.87	452.91	1.98%
Hebei Province			
Coal-fired	378.05	366.23	3.23%
Wind-power	522.09	541.30	-3.55%
PV	801.90	978.48	-18.05%
Gansu Province			
Coal-fired	289.85	246.89	17.40%
Wind-power	403.12	459.23	-12.22%
Ningxia			
PV	805.11	800.00	0.64%
Beijing			
Coal-fired	463.40	749.82	-38.20%
Combined Cycle	667.36	674.07	-1.00%
Tianjin			
Coal-fired	397.46	393.82	0.92%
Combined Cycle	708.05	699.14	1.27%
PV	881.64	879.99	0.19%
Shanxi Province			
Coal-fired	326.40	317.52	2.80%
Combined Cycle	684.65	678.32	0.93%
PV	908.91	1,370.19	-33.67%
Shandong Province			
*Coal-fired	404.01	397.13	1.73%
*Wind-power	564.46	625.68	-9.78%
PV	862.56	881.74	-2.18%
Henan Province			
Coal-fired	349.86	370.27	-5.51%
Combined Cycle	640.53	600.00	6.76%
Wind-power	551.34	610.00	-9.62%

PV	380.00	375.34	1.24%
Jiangsu Province			
Coal-fired	438.53	401.57	9.21%
Combined Cycle	590.83	599.85	-1.50%
Wind-power	724.53	679.60	6.61%
PV	929.01	957.89	-3.02%

Region/type of power generation	Average tariff rate (VAT inclusive) (RMB/MWh)		
	2018	2017	Change
Shanghai			
Coal-fired	411.76	398.00	3.46%
Combined Cycle	848.25	911.36	-6.93%
Chongqing			
Coal-fired	412.66	392.74	5.07%
Combined Cycle	746.10	811.53	-8.06%
Wind-power	615.26	–	N/A
Zhejiang Province			
Coal-fired	418.61	421.15	-0.60%
Combined Cycle	867.83	912.07	-4.85%
PV	1,054.58	1,128.38	-6.54%
Hubei Province			
Coal-fired	422.40	402.46	4.96%
Wind-power	630.28	676.00	-6.76%
Hydro-power	381.98	378.04	1.04%
PV	887.76	880.00	0.88%
Hunan Province			
Coal-fired	463.72	455.94	1.71%
Wind-power	610.84	606.72	0.68%
Hydro-power	376.07	376.17	-0.03%
PV	907.78	879.57	3.21%
Jiangxi Province			
Coal-fired	420.96	411.82	2.22%
Wind-power	612.62	610.00	0.43%
Anhui Province			
Coal-fired	380.70	371.86	2.38%
Wind-power	613.38	610.00	0.55%
Hydro-power	384.40	376.74	2.03%
Fujian Province			
Coal-fired	400.15	375.59	6.54%
PV	985.72	980.00	0.58%
Guangdong Province			
Coal-fired	415.14	431.23	-3.73%
PV	986.49	980.00	0.66%
Guangxi Province			
Combined Cycle	547.20	–	N/A
Yunnan Province			
Coal-fired	514.50	577.23	-10.87%
Wind-power	470.14	478.37	-1.72%
Guizhou Province			
Wind-power	608.00	599.76	1.37%
Hainan Province			
Coal-fired	441.68	431.33	2.40%
Combined Cycle	1,565.26	1,619.97	-3.38%
Wind-power	612.15	608.99	0.52%
Hydro-power	402.62	399.53	0.77%

PV	958.71	991.44	-3.30%
Domestic total	418.48	414.01	1.08%
SinoSing Power	648.74	544.15	19.22%

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

Note 2: The statistics marked * comprise newly acquired power plants of the Company that were included in the consolidated financial statements in early August 2018. The comparison figures thereof are solely for reference purposes.

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 December 31, 2018, the tax and levies on operations of the Company and its subsidiaries were RMB1.789 billion, representing an increase of RMB413 million from RMB1.376 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 RMB18 million.

Operating expenses

For the year ended December 31, 2018, the total operating expenses of the Company and its subsidiaries was RMB157.647 billion, representing an increase of 11.10% from the same period last year. The operating expenses in domestic operations of the Company increased by RMB13.638 billion, or 10.36%, from the same period last year, of which the newly acquired entities and the new generating units accounted for RMB1.530 billion; the costs attributable to the existing entities increased by RMB12.108 billion, which was primarily attributable to the increased fuel cost for domestic operations in China.

The operating expenses from operations in Singapore operations increased by RMB2.109 billion, or 20.55%, from the same period last year, which was mainly due to increased gas price attributable to the rise of international oil price.

Fuel costs

Fuel costs account for the majority of the operating expenses for the Company and its subsidiaries. For the year ended December 31, 2018, fuel costs of the Company and its subsidiaries increased by 14.02% to RMB105.736 billion from the RMB92.737 billion for the year ended December 31, 2017. The fuel costs from domestic operations of the Company and its subsidiaries increased by RMB12.307 billion, which was primarily attributable to the increase of the fuel price. The fuel costs of the newly acquired entities and new generating units were RMB0.890 billion and the fuel costs of the existing generating units increased by RMB11.417 billion from same period last year. Fuel costs in Singapore increased by RMB0.692 billion from the same period last year, mainly due to increased fuel costs arising from increased natural gas prices. For the year ended December 31, 2018, the average price (excluding tax) of natural fuel coal consumed of the Company and its domestic subsidiaries was RMB551.35 per ton, representing a 0.61% increase from RMB548.02 per ton for the year ended December 31, 2017. The fuel cost per unit of power sold by the Company's domestic power plants increased by 4.85% to RMB236.89/MWh from RMB225.92/MWh in 2017.

Maintenance

For the year ended December 31, 2018, the maintenance expenses of the Company and its subsidiaries amounted to RMB4.393 billion, representing an increase of RMB45 million from RMB4.348 billion for the year ended December 31, 2017. The maintenance expenses of the Company's domestic operations increased by RMB54 million compared to the same period last year. The maintenance expenses of operations in Singapore decreased by RMB9 million compared to the same period last year.

Depreciation

For the year ended December 31, 2018, depreciation expenses of the Company and its subsidiaries increased by 1.41% to RMB20.466 billion, compared to RMB20.181 billion for the year ended December 31, 2017; the increase is mainly due to the newly acquired entities and new generating units put into operation. The depreciation expenses of domestic operations increased by RMB0.369 million compared to the same period last year, of which the depreciation costs incurred by the newly acquired entities and new generating units was RMB0.320 million. The depreciation expenses of the operations in Singapore increased by RMB84 million compared to the same period last year.

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 December 31, 2018, the labor costs of the Company and its subsidiaries amounted to RMB11.845 billion, representing an increase of RMB1.255 million from RMB10.590 billion for the year ended December 31, 2017. This is mainly attributable to good operating results of the Company's domestic plants and the raise of the Company's annuity contribution percentage. Labor costs for Singapore operations increased by RMB17 million compared to the same period last year.

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 gains or losses on disposal of non-current assets. For the year ended December 31, 2018, other operating expenses (including electricity power purchase costs and service fees paid to HIPDC) of the Company and its subsidiaries was RMB15.206 billion, representing an increase of RMB1.162 billion from RMB14.044 billion for the year ended December 31, 2017. The other operating expenses from the Company's domestic operations decreased by RMB0.365 billion, mainly due to decreased exchange of tariff quota and change of environmental protection fee into the tax and levies on operations.

Other operating expenses of the operations in Singapore increased by RMB1.527 million compared to the same period last year.

Financial expenses, net

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

Interest expenses

For the year ended December 31, 2018, the interest expenses of the Company and its subsidiaries were RMB10.486 billion, representing an increase of 7.56% from RMB9.749 billion for the year ended December 31, 2017. The interest expenses from the Company's domestic operations increased by RMB0.723 billion. The interest expenses from the newly acquired entities and new generating units were RMB0.210 million and those incurred by the existing entities in China increased by RMB0.513 billion, which is largely attributable to increased debts scale The interest expenses of Singapore operations decreased by RMB14 million compared to the same period last year.

Net exchange differences and bank charges

For the year ended December 31, 2018, the Company and its subsidiaries recorded a net loss of RMB161 million in net exchange difference and bank charges, while a net gain of RMB144 million was recorded for the year ended December 31, 2017, mainly due to the weakened exchange rate of RMB against U.S. dollar.

The operations in Singapore recorded net loss of RMB25 million from net exchange difference and bank charges, representing an increase of RMB8 million from the net loss of RMB17 million for the year ended December 31, 2017, mainly due tothe strengthened exchange rate of U.S. dollar against Singapore dollar.

Share of profits less losses of associates and joint ventures

For the year ended December 31, 2018, the share of profits less losses of associates and joint ventures was RMB1.823 billion, representing an increase of RMB1.398 million from RMB0.425 billion from last year, mainly due to ncreased profit of associates and joint ventures.

Income tax expenses

For the year ended December 31, 2018, the Company and its subsidiaries recognized income tax expense of RMB0.643 billion, representing a decrease of RMB0.575 billion from RMB1.218 billion for the year ended December 31, 2017. The income tax expenses for the domestic operations decreased by RMB0.540 billion primarily attributable to increase in coal price from same period last year, which reduced the profitability of the Company’s coal-fired power plants.

The income tax expenses of the operations in Singapore decrease by RMB35 million.

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

For the year ended December 31, 2018, the Company and its subsidiaries achieved a net profit of RMB1.330 billion, representing a decrease of RMB0.254 billion, or 16.04% from RMB1.584 billion for the year ended December 31, 2017; the net profit attributable to equity holders of the Company was RMB0.734 billion, representing a decrease of RMB0.846 billion from RMB1.580 billion for the year ended December 31, 2017.

The net profit attributable to equity holders of the Company from its domestic operations decreased by RMB0.628 billion, mainly attributable to rising fuel prices, increased financial costs and reduced investment income. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB695 million, representing an increase of RMB218 million from the same period last year. This was mainly due to Tuas Power's loss on disposal of fuel oil of about RMB59million (S$12 million) and impairment provision of fuel oil of about RMB255 million (S$52 million).

The Company's recorded net profit attributable to non-controlling interests increased to RMB596 million for the year ended December 31, 2018 from RMB4 million for the year ended December 31, 2017, mainly attributable to the increases of the profit of non-wholly owned subsidiaries.

Year ended December 31, 2017 compared with year ended December 31, 2016

	For the Year Ended December 31,		
	2017 RMB'000	2016 RMB'000	Increased/ (Decreased) %
Operating revenue	152,459,444	113,814,236	33.95
Tax and levies on operations	(1,376,312)	(1,177,818)	16.85
Operating expenses			
Fuel	(92,737,304)	(56,617,542)	63.80
Maintenance	(4,347,723)	(4,343,349)	0.10
Depreciation	(20,180,830)	(14,815,620)	36.21
Labor	(10,590,084)	(8,043,406)	31.66
Service fees on transmission and transformer facilities of HIPDC	(95,894)	(138,038)	-30.53
Purchase of electricity	(3,787,032)	(3,066,415)	23.50
Others	(10,160,875)	(7,234,308)	40.45
Total operating expenses	(141,899,742)	(94,258,678)	50.54
Profit from operations	9,183,390	18,377,740	-50.03
Interest income	198,906	147,063	35.25
Financial expenses, net			
Interest expense	(9,749,004)	(6,817,526)	43.00
Exchange gain / (loss) and bank charges , net	144,359	(250,076)	-157.73
Total financial expenses, net	(9,604,645)	(7,067,602)	35.90
Share of profits less losses of associates and joint ventures	425,215	1,298,889	-67.26
Gain / (loss) on fair value changes of financial assets / liabilities	856,786	(12,986)	-66.98
Other investment income	1,742,081	1,070,034	62.81
Profit before income tax expense	2,801,733	13,813,138	-79.72
Income tax expense	(1,217,526)	(3,465,151)	-64.86
Net Profit	1,584,207	10,347,987	-84.69
Attributable to:			
-Equity holders of the Company	1,579,836	8,520,427	-81.46
-Non-controlling interests	4,371	1,827,560	-99.76

Total power generated by the Company's domestic operating power plants for the year on consolidated basis amounted to 394.481 billion kWh, representing an increase of 25.8% year-on-year. The electricity sold amounted to 371.399 billion kWh, representing an increase of 25.6% year-on-year. Newly acquired entities and newly operated generating units mainly contributed to the power generation growth of the Company, meanwhile the power generation by power plants in the regions of central China, east China and Guangdong provinces increased.

The annual average utilization hours of the Company's domestic power plants reached 3,951 hours. In most of the areas where the Company's coal-fired power plants are located, the utilization hours of the Company was in a leading position within those areas.

The power generation of the Company's domestic power plants for the year ended December 31, 2017 is listed below (in billion kWh):

	Power Generation		Electricity Sold	
Region	2017	Change	2017	Change
*Heilongjiang Province	13.172	3.53 %	12.320	3.52 %
*Coal-fired	12.250	1.58 %	11.412	1.43 %
*Wind-power	0.922	38.89 %	0.907	39.75 %
Jilin Province	8.596	13.44 %	8.111	13.81 %
*Coal-fired	7.448	10.69 %	7.009	10.76 %
*Wind-power	0.860	48.17 %	0.836	51.24 %
*Hydro-power	0.062	0.75 %	0.061	0.79 %
*PV	0.0116	-	0.0115	-
*Biomass power	0.215	3.62 %	0.193	4.35 %
Liaoning Province	19.704	-0.60 %	18.395	-1.25 %
*Coal-fired	19.253	-1.15 %	17.947	-1.84 %
*Wind-power	0.333	12.13 %	0.331	12.19 %
*Hydro-power	0.039	14.43 %	0.039	14.00 %
*PV	0.0790	392.78%	0.0778	396.67%
Inner Mongolia	0.228	4.84 %	0.226	4.50 %
Wind-power	0.228	4.84 %	0.226	4.50 %
Hebei Province	13.400	2.58 %	12.585	2.40 %
Coal-fired	13.132	1.55 %	12.343	1.43 %
Wind-power	0.228	96.82 %	0.204	87.01 %
PV	0.0399	153.60%	0.0375	208.25%
Gansu Province	9.935	2.25 %	9.413	0.08 %
Coal-fired	8.333	-1.30 %	7.865	-3.91 %
Wind-power	1.602	25.80 %	1.548	26.78 %
Ningxia	0.0103	-	0.0099	-
PV	0.0103	-	0.0099	-
Beijing	6.176	-18.12 %	5.562	-20.61 %
Coal-fired	1.339	-60.68 %	1.163	-60.79 %
Combined Cycle	4.836	16.92 %	4.399	8.87 %
Tianjin	7.273	0.27 %	6.843	0.01 %
Coal-fired	5.658	7.15 %	5.271	7.18 %
Combined Cycle	1.614	-18.22 %	1.570	-18.39 %
PV	0.0015	-	0.0015	-
Shanxi Province	9.813	-8.35 %	9.185	-8.75 %
Coal-fired	7.035	-13.80 %	6.495	-14.46 %
Combined Cycle	2.743	7.75 %	2.668	7.87 %
PV	0.0350	-	0.0221	-
Shandong Province	89.487	116.39%	83.787	115.24%
Coal-fired	88.848	114.85%	83.162	113.63%

*Wind-power	0.452	8.82	%	0.440	9.13	%
*PV	0.1865	266.61	%	0.1851	276.54	%

	Power Generation		Electricity Sold	
Region	2017	Change	2017	Change
Henan Province	22.210	3.53 %	20.927	7.58 %
Coal-fired	20.696	-3.44 %	19.457	0.02 %
*Combined Cycle	1.424	-8.13 %	1.393	-8.18 %
Wind-power	0.077	309.51%	0.076	513.65%
PV	0.0128	-	0.0126	-
Jiangsu Province	42.761	-0.61 %	40.452	-1.05 %
Coal-fired	36.441	-6.38 %	34.395	-6.70
Combined Cycle	5.199	47.79 %	5.010	45.02 %
Wind-power	1.077	86.12 %	1.004	79.52 %
PV	0.0442	-	0.0436	-
Shanghai	18.484	1.91 %	17.490	1.80 %
Coal-fired	16.934	2.70 %	15.976	2.60 %
Combined Cycle	1.550	-5.99 %	1.513	-5.94 %
Chongqing	8.563	-14.51 %	7.930	-14.86 %
Coal-fired	7.388	-9.40 %	6.787	-9.52 %
Combined Cycle	1.175	-36.90 %	1.144	-36.94 %
Zhejiang Province	27.589	11.65 %	26.487	11.74 %
Coal-fired	27.090	12.08 %	26.000	12.18 %
Combined Cycle	0.449	-13.30 %	0.438	-13.46 %
PV	0.0496	130.26%	0.0492	128.47%
Hubei Province	14.781	4.94 %	13.833	4.73 %
Coal-fired	14.147	4.00 %	13.215	3.64 %
Wind-power	0.292	54.86 %	0.287	64.88 %
Hydro-power	0.336	14.36 %	0.325	14.80 %
PV	0.0059	-	0.0059	-
Hunan Province	9.308	11.94 %	8.709	11.28 %
Coal-fired	8.476	13.86 %	7.889	13.23 %
Wind-power	0.531	-1.11 %	0.525	-1.16 %
Hydro-power	0.285	-14.68 %	0.280	-14.77 %
PV	0.0162	-	0.0159	-
Jiangxi Province	19.801	13.53 %	18.915	13.67 %
Coal-fired	19.529	12.66 %	18.670	12.88 %
Wind-power	0.272	153.43%	0.245	142.93%
Anhui Province	5.940	1.60 %	5.677	1.82 %
Coal-fired	5.714	1.73 %	5.454	1.88 %
Wind-power	0.127	42.14 %	0.124	52.18 %
Hydro-power	0.099	-29.68 %	0.098	-29.81 %
Fujian Province	10.380	35.22 %	9.791	35.45 %
Coal-fired	10.373	35.12 %	9.787	35.39 %
PV	0.0073	-	0.0041	-
Guangdong Province	21.448	22.89 %	20.491	22.75 %
Coal-fired	21.425	22.81 %	20.468	22.66 %
PV	0.0225	217.25%	0.0225	250.68%
Guangxi	0.029	-	-	-
Combined Cycle	0.029	-	-	-
Yunnan Province	3.688	-5.01 %	3.398	-4.89 %
Coal-fired	3.270	-8.76 %	2.997	-9.05 %

Wind-power	0.418	40.04	%	0.401	44.53 %
Guizhou Province	0.058	28.88	%	0.054	43.36 %
Wind-power	0.058	28.88	%	0.054	43.36 %
Hainan Province	11.647	-2.36	%	10.809	-2.62 %
Coal-fired	11.327	-1.74	%	10.495	-2.02 %
Combined Cycle	0.020	-84.64	%	0.019	-84.29 %
Wind-power	0.117	15.47	%	0.114	15.39 %

	Power Generation		Electricity Sold	
Region	2017	Change	2017	Change
Hydro-power	0.153	-6.37 %	0.151	-6.33 %
PV	0.0305	267.36%	0.0301	268.30%
Total	394.481	25.76 %	371.399	25.56 %

Note: The remark * represented the regional companies or power plants involved in the new acquisition by the Company at the end of 2016. They had been incorporated in the Company's financial statements since 1 January 2017, and the year-on-year data of which is for information only.

For the year ended December 31, 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% in Singapore, representing an increase of 0.4% compared to the same period last year of 21.5%.

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

In respect of fuel costs, there was a huge increase in fuel costs. 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 foregoing factors, for the year ended December 31, 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 December 31, 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 huge increase in the coal price, which severely impacted our profitability. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB477 million, representing an increase of RMB237 million compared to the same period last year.

Operating revenue and tax and levies on operations

Operating revenue mainly consists of revenue from electricity sold. For the year ended December 31, 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 December 31, 2016. The operating revenue from domestic operations of the Company increase 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.

In 2017, 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 proactive competition strategy we employed in the Singapore market and the increase in the tariff.

The following table sets forth the average tariff rate of the Company's power plants, as well as percentage changes from 2016 to 2017.

	Average tariff rate (VAT inclusive) (RMB/MWh)		
Power Plant			Change
	2017	2016	(%)
Heilongjiang Province			
Xinhua Power Plant	368.12	-	-
Hegang Power Plant	368.09	-	-
Daqing Co-generation	403.09	-	-

Power Plant	Average tariff rate (VAT inclusive) (RMB/MWh)		Change
	2017	2016	(%)
Yichun Co-generation	374.75	-	-
Sanjiangkou Wind Power	596.28	-	-
Linjiang Jiangsheng Wind Power	595.34	-	-
Jilin Province			
Jiutai Power Plant	385.03	-	-
Changchun Co-generation	381.50	-	-
Nongan Biomass	750.02	-	-
Linjiang Jubao Hydropower	438.53	-	-
Zhenlai Wind Power	566.31	-	-
Siping Wind Power	569.21	-	-
Tongyu Tuanjie Wind Power	535.27	-	-
Liaoning Province			
Dalian	367.97	346.76	6.12
Dandong	392.97	352.52	11.47
Yingkou	365.73	344.71	6.10
Yingkou Co-generation	368.11	331.39	11.08
Wafangdian Wind Power	586.87	603.72	(2.79)
Suzihe Hydropower	330.00	332.67	(0.80)
Changtu Wind Power	582.51	626.09	(6.96)
Dandong Photovoltaic	950.00	950.00	0.00
Yingkon Co-generation Photovoltaic	950.00	950.00	0.00
Yingkou Xianrendao Co-generation Power	880.00	-	-
Jianchang Bashihan Photovoltaic	880.00	-	-
Chaoyang Heiniuyingzi Photovoltaic	347.25	-	-
Inner Mongolia Autonomous Region			
Huade Wind Power	452.91	471.22	(3.89)
Hebei Province			
Shang'an	366.23	358.48	2.16
Kangbao Wind Power	660.42	554.60	19.08
Kangbao Photovoltaic	982.50	784.95	25.17
Zhuolu Phase I Dabao Wind Power	519.45	-	-
Gansu Province			
Pingliang	246.89	207.63	18.91
Jiuquan Wind Power	437.85	367.54	19.13
Jiuquan II Wind Power	449.50	402.36	11.72
Yumen Wind Power	430.53	390.06	10.38
Yigang Wind Power	554.72	447.65	23.92
Beijing Municipality			
Beijing Co-generation (Coal-fired)	689.91	454.99	51.63
Beijing Co-generation (Combined Cycle)	674.07	687.33	(1.93)
Tianjin Municipality			
Yangliuqing Co-generation	393.95	370.82	6.24
Lingang Co-generation CCGT	699.14	726.44	(3.76)
Chenxi Photovoltaic	879.99	-	-
Shanxi Province			

Yushe	323.54	253.01	27.88
Zuoquan	314.64	252.96	24.38
Dongshan CCGT	678.32	682.40	(0.60)
Yushe Photovoltaic	1370.19	-	-
Shandong Province			
Dezhou	401.45	389.78	2.99

Power Plant	Average tariff rate (VAT inclusive) (RMB/MWh)		Change
	2017	2016	(%)
Jining	395.54	372.57	6.17
Xindian	397.61	381.58	4.20
Weihai	404.81	382.53	5.82
Rizhao Phase II	391.43	372.08	5.20
Zhanhua Co-generation	437.74	389.33	12.43
Baiyanghe Power Plant	400.42	-	-
Rizhao Power Plant Phase I	458.82	-	-
Jiaxiang Power Plant	388.05	-	-
Jining Co-generation	395.19	-	-
QufuCo-generation	390.16	-	-
Huangtai Power Plant	390.59	-	-
Yantai Power Plant	409.84	-	-
Linyi Power Plant	402.16	-	-
Jining Yunhe Power Plant	403.84	-	-
Liaocheng Co-generation	390.49	-	-
Zhongtai Power Plant	371.67	-	-
Laiwu Power Plant	384.36	-	-
Muping Wind Power	627.56	-	-
Penglai Wind Power	569.97	-	-
Rushan Wind Power	634.98	-	-
Changdao Wind Power	635.20	-	-
Rongcheng Wind Power	622.69	-	-
Dongying Wind Power	623.54	-	-
Boshan Photovoltaic	1,000.00	-	-
Sishui Photovoltaic	1,109.60	-	-
Gaozhuang Photovoltaic	592.44	-	-
Jining Co-generation Photovoltaic	592.44	-	-
Weihai Haibu Photovoltaic	830.00	-	-
Zhanhua Qingfenghu Photovoltaic	1,080.00	-	-
Henan Province			
Qinbei	374.82	354.30	5.79
Luoyang Co-generation	364.95	365.91	(0.26)
Luoyang Yangguang	376.26	316.83	18.76
Mianchi Co-generation	349.95	328.10	6.66
Zhumadian Wind Power	610.00	610.00	0.00
Zhongyuan CCGT	600.00	-	-
Jiangsu Province			
Nantong	417.42	407.55	2.42
Nanjing	428.37	400.81	6.88
Taicang I	372.74	349.31	6.71
Taicang II	372.74	349.31	6.71
Huaiyin	487.47	433.30	12.50
Jinling Coal-fired	366.53	348.86	5.07
Jinling Combined-Circle	593.09	708.41	(16.28)
Jinling Combined-Cycle Cogeneration	604.16	617.12	(2.10)

Suzhou Thermal Power	465.86	453.42	2.74
Qidong Wind Power	556.03	553.91	0.38
Rudong Wind Power	609.29	606.24	0.50
Nanjing Thermal Power	469.99	445.21	5.57
Tongshan Wind Power	610.00	610.00	0.00
Rudong Offshore Wind Power	850.00	-	-
Luhe Wind Power	610.00	-	-

Power Plant	Average tariff rate (VAT inclusive) (RMB/MWh)		Change
	2017	2016	(%)
Guanyun Power	433.00	-	-
Suzhou CCGT	612.79	-	-
Shanghai Municipality			
Shidongkou I	401.11	395.18	1.50
Shidongkou II	397.96	380.60	4.56
Shanghai CCGT	911.36	382.31	138.38
Shidongkou Power	395.75	899.62	(56.01)
Chongqing Municipality			
Luohuang	392.74	376.92	4.20
Liangjiang CCGT	811.53	649.74	24.90
Zhejiang Province			
Yuhuan	418.58	403.82	3.66
Changxing	429.18	420.54	2.05
Tongxiang Combined-cycle	912.07	887.70	2.75
Changxing Photovoltaic	1,252.38	1,208.23	3.65
Hongqiao Photovoltaic	1,119.24	980.00	14.21
Huzhou Distributed Photovoltaic	1,009.06	-	-
Hunan Province			
Yueyang	456.55	449.87	1.48
Xiangqi Hydropower	376.17	610.00	(38.33)
Subaoding Wind Power	605.55	610.00	(0.73)
Guidong Wind Power	605.55	404.19	49.82
Hubei Province			
Enshi Maweigou Hydropower	383.42	380.43	0.79
Jingmen Thermal Power	403.50	378.97	6.47
Yingcheng Thermal Power	405.69	392.73	3.30
Wuhan Power	401.70	376.53	6.68
Dalongtan Hydropower	370.00	376.38	(1.70)
Jieshan Wind Power	676.00	610.00	10.82
Suizhou Zengdufuhe Photovoltaic	880.00	-	-
Jiangxi Province			
Jinggangshan	409.42	399.06	2.60
Jianggongling Wind Power	610.00	610.00	0.00
Ruijin Power	411.81	399.27	3.14
Anyuan Power	415.17	400.98	3.54
Anhui Province			
Chaohu Power	371.86	351.24	5.87
Hualiangting Hydropower	376.74	385.60	(2.30)
Huaining Wind Power	610.00	610.00	0.00
Fujian Province			
Fuzhou	375.59	348.95	7.63
Changle Photovoltaic	980.00	-	-
Guangdong Province			
Shantou Coal-fired	448.26	464.69	(3.54)
Haimen	425.50	440.21	(3.34)

Haimen Power	428.41	444.53	(3.63)
Shantou Photovoltaic	980.00	980.00	0.00
Yunnan Province			
Diandong Energy	358.12	513.58	(30.27)
Yuwang Energy	329.35	1,394.49	(76.38)
Fuyuan Wind Power	478.37	494.71	(3.30)

Power Plant	Average tariff rate (VAT inclusive) (RMB/MWh)		Change
	2017	2016	(%)
Guizhou Province			
Panxian Wind Power	599.76	610.00	(1.68)
Hainan Province			
Haikou	429.17	420.45	2.07
Dongfang	432.70	420.90	2.80
Nanshan Combined Cycle	1,619.97	672.26	140.97
Gezhen Hydropower	399.53	400.07	(0.13)
Wenchang Wind Power	608.99	609.78	(0.13)
Dongfang Photovoltaic	1,010.00	1,010.00	0.00
Domestic total	414.01	396.60	4.39
Singapore			
SinoSing Power	544.15	514.00	5.87

Note: The tariff of combined-cycle power plants in Shanghai and Zhejiang consists of on-grid settlement price and capacity subsidy income. Changdao Wind Power has been shut down.

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 December 31, 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.

Operating expenses

For the year ended December 31, 2017, the total operating expenses of the Company and its subsidiaries was RMB141.900 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 cost for domestic operations in China.

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

Fuel costs

Fuel costs account for the majority of the operating expenses for the Company and its subsidiaries. For the year ended December 31, 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 December 31, 2016. The fuel costs from domestic operations of the Company and its subsidiaries increased by RMB35.387 billion, which was primarily attributable to the increase of the 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 the increase in the gas price.

For the year ended December 31, 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 RMB376.30 per ton for the year ended December 31, 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.

Maintenance

For the year ended December 31, 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 December 31, 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 RMB16.00 million compared to the same period last year.

Depreciation

For the year ended December 31, 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 December 31, 2016; the increase is mainly due to the increase in the power generation by the newly acquired entities and new generating units. The depreciation expenses of domestic operations increased by RMB5,288 million 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 million. The depreciation expenses of the operations in Singapore increased by RMB77 million compared to the same period last year.

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 December 31, 2017, the labor costs of the Company and its subsidiaries amounted to RMB10.590 billion, representing an increase of RMB2,547 million from RMB8.043 billion for the year ended December 31, 2016. This is mainly attributable to the increase in the power generation by the newly acquired entities and new generating units. Labor costs for Singapore operations increased by RMB14 million compared to the same period last year.

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 December 31, 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 December 31, 2016. The other operating expenses from the Company's domestic operations increased by RMB2.845 billion, mainly due to the increase in the power generation by the newly acquired entities and new generating units. Other operating expenses of the operations in Singapore increased by RMB760 million compared to the same period last year.

Financial expenses

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

Interest expenses

For the year ended December 31, 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 December 31, 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 million and those incurred by the existing entities in China increased by RMB0.451 billion, which is largely attributable to increased interest rate and debt scale. The interest expenses of Singapore operations decreased by RMB30 million compared to the same period last year.

Net exchange differences and bank charges

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

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

Share of profits less losses of associates and joint ventures

For the year ended December 31, 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 a decreased profit of associates and joint ventures.

Income tax expenses

For the year ended December 31, 2017, the Company and its subsidiaries recognized income tax expense of RMB1.218 billion, representing a decrease of RMB2.247 billion from RMB3.465 billion for the year ended December 31, 2016. The income tax expenses for the domestic operations decreased by RMB2.192 billion primarily attributable to the increase of the coal price in 2017 drove down our profitability and decreased our income tax.

The income tax expenses of the operations in Singapore decrease by RMB55 million.

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

For the year ended December 31, 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 December 31, 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 December 31, 2016.

The net profit attributable to equity holders of the Company from its domestic operations decreased by RMB6.703 billion, mainly attributable to the huge increase in the coal price drove down our profitability. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB477 million, representing an increase of RMB237 million from the 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 December 31, 2017 from RMB1,828 million for the year ended December 31, 2016, mainly attributable to the huge increase of the coal price from same period last year, which significantly reduced the profitability of the Company owned coal-fired power subsidiaries.

C. Financial position

Comparison of asset items

As of December 31, 2018, consolidated total assets of the Company and its subsidiaries were RMB419.903 billion, representing an increase of 5.88% from RMB396.590 billion as of December 31, 2017; total assets of the domestic operations increased by RMB10.230 billion to RMB378.859 billion, including a net decrease of RMB0.437 billion in non-current assets, which is mainly attributable to the newly acquired entities and the capital expenditure on construction projects.

As of December 31, 2018, for overseas operation, total assets of the operations in Singapore were RMB27.258 billion, representing a decrease of RMB703 million from the same period last year. Non-current assets increased by RMB4 million to RMB23.813 billion. Total assets of the operations in Pakistan were RMB13.786 billion, non-current assets were RMB10.485 billion.

Comparison of liability items

As of December 31, 2018, consolidated total liabilities of the Company and its subsidiaries were RMB303.782 billion, representing an increase of 5.12% from RMB288.975 billion as of December 31, 2017.

As of December 31, 2018, interest-bearing debts of the Company and its subsidiaries totaled RMB254.170 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 RMB2.279 billion.

As of December 31, 2018, for overseas operation, the total liabilities of the operations in Singapore were RMB15.309 billion, representing an increase of 1.40% from RMB15.098 billion as of December 31, 2017. The total liabilities of the operations in Pakistan were RMB11.158 billion.

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 December 31, 2018, including an increase impact arising from the issuance of Yingda insurance financing plan at face value of RMB5 billion in September, 2018, an increase of post-tax impact of RMB1 million arising from fair value changes of other equity instrument investment held by the Company and its subsidiaries, a decrease of post-tax impact of RMB0.260 billion arising from changes in other comprehensive income of the Company's investees accounted for under equity method, a decrease of post- tax impact of RMB0.470 billion arising from fair value changes of cash flow hedge instruments, an increase of RMB0.335 billion from translation difference of the financial statements of foreign operations. Non-controlling interests as of 31 December 2018 increased by RMB1.713 billion.

Major financial position ratios

	2018	2017
Current ratio	0.45	0.31
Quick ratio	0.38	0.26
Ratio of liability to equity holders' equity	3.22	3.30
Multiples of interest earned	1.13	1.23

Formula of the financial ratios:

Current ratio = balance of current assets as of the year end / balance of current liabilities as of the year end

Quick ratio = (balance of current assets as of the year end – net inventories as of the year end) / balance of current liabilities as of the year end

Ratio of liabilities to equity holders' equity = balance of liabilities as of the year end / balance of equity holders' equity (excluding non-controlling interests) as of the year end

Multiples of interest earned = (profit before tax + interest expense) / interest expenditure (inclusive of capitalized interest)

The current ratio increased as of December 31, 2018 compared to that of December 31, 2017 mainly due to increase of current assets especially inventories and bank balances and cash. The ratio of liabilities to equity holders' equity as of 31 December 2018 decreased compared to that of 31 December 2017 mainly due to the issuance of Yingda insurance financing plan at face value of RMB5 billion. The multiples of interest earned decreased mainly due to reduced pre-tax profit for the year ended 31 December 2018.

D. Liquidity and cash resources

The primary sources of funding for the Company and its subsidiaries have been cash provided by internal funds from operating activities, short-term and long-term loans and proceeds from issuances of bonds, and the

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primary use of funds have been for working capital, capital expenditure and repayments of short-term and long-term borrowings.

Cash flows from operating activities

	For the Year Ended December 31,		
	2018	2017	2016
	RMB'000	RMB'000	RMB'000
Cash flows from operating activities			
Profit before income tax expense	1,973,147	2,801,733	13,813,138
Non-cash items adjustments	30,593,272	28,980,725	21,255,080
Changes in working capital	(2,391,540)	(718,218)	1,050,309
Interest received	173,986	136,134	84,806
Income tax expense paid	(1,620,887)	(2,003,011)	(4,692,509)
Net cash provided by operating activities	28,727,978	29,197,363	31,510,824

For the year ended 31 December 2018, net cash provided by operating activities of the Company and its subsidiaries was RMB28.728 billion, representing a decrease of 1.61% from last year, which is principally because that the Company's revenue increase from electricity growth and rising electricity prices in the reporting period was offset by the increase in fuel purchase costs. Net cash provided by operating activities in Singapore was RMB830 million.

For the year ended December 31, 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 RMB830 million.

For the year ended December 31, 2016, net cash provided by operating activities of the Company and its subsidiaries was RMB31.511 billion, representing a decrease of 25.62% from last year, mainly attributable to reduced operating revenue as a result of a decrease of power generation and tariff. Net cash provided by operating activities in Singapore was RMB772 million.

Cash flows used in investing activities

	For the Year Ended December 31,		
	2018	2017	2016
	RMB'000	RMB'000	RMB'000
Cash flows used in investing activities			
Payment for the purchase of property, plant and equipment	(20,613,314)	(25,798,009)	(20,144,903)
Proceeds from disposals of property, plant and equipment	127,182	286,609	144,346
Prepayments of land use rights	(94,684)	(213,928)	(89,430)
Payment for the purchase of other non-current assets	30,107	(33,498)	(50,653)
Cash dividend received	618,592	1,419,380	1,057,642
Payment for investment in associates and joint ventures	(463,259)	(301,916)	(276,118)
Cash paid for acquiring available-for-sale financial assets	—	(5,600)	-
Cash paid for acquiring other equity instrument investments	(450)	—	—
Cash consideration paid for acquisitions of subsidiaries, net of cash acquired	(674,845)	(10,817,107)	157,421
Cash received from disposal of available-for-sale financial assets	—	2,186,758	1,474,301
Cash received from disposal of a subsidiary	-	530,437	-
Others	694,789	998,049	77,748
Net cash used in investing activities	(20,375,882)	(31,748,825)	(17,649,646)

Net cash used in investing activities was RMB20.376 billion, representing an decrease of 35.82% from last year, which is mainly due to less cash outflows from relatively smaller acquisitions during this year.

Net cash used in investing activities was RMB31.749 billion for the year ended December 31, 2017, representing an increase of 79.88% from last year, mainly due to consideration paid for newly acquired entities in 2017.

Net cash used in investing activities was RMB17.650 billion for the year ended December 31, 2016, representing a decrease of 46.54% from last year, mainly due to consideration paid for newly acquired entities in 2015.

Cash flows from financing activities

	For the Year Ended December 31,		
	2018 RMB'000	2017 RMB'000	2016 RMB'000
Cash flows from financing activities			
Issuance of short-term bonds	40,000,000	30,988,679	32,982,340
Repayments of short-term bonds	(39,500,000)	(47,000,000)	(25,000,000)
Proceeds from short-term loans	77,005,025	107,564,128	85,689,874
Repayments of short-term loans	(98,345,708)	(96,378,054)	(77,904,489)
Proceeds from long-term loans	48,859,376	32,706,327	15,978,023
Repayments of long-term loans	(34,269,623)	(17,390,982)	(20,702,421)
Issuance of long-term bonds	13,999,807	7,800,000	4,200,000
Repayment of long-term bonds	(4,000,000)	(3,300,000)	(11,500,000)
Interest paid	(10,987,871)	(10,080,102)	(7,344,781)
Net proceeds from the issuance of new Shares	3,245,330	-	-
Net proceeds from the issuance of other equity instruments	5,000,000	4,999,950	-
Net capital injection from non-controlling interests of the subsidiaries	725,683	838,084	285,620
Dividends paid to shareholders of the Company	(1,520,038)	(4,352,973)	(7,206,220)
Dividends paid to non-controlling interests of the subsidiaries	(1,265,451)	(2,184,145)	(2,695,378)
Government grants	-	590,629	233,276
Payment for finance leasing	(637,026)	(695,019)	(571,485)
Others	(552,574)	(93,342)	(46,209)
Net cash (used in) / generated from financing activities	(2,243,070)	4,013,180	(13,601,850)

Net cash used in financing activities was RMB2.243 billion, while it was net cash inflow of RMB4.013 billion in 2017. This was mainly due to repayment of more borrowings by the Company in this year compared to last year.

Net cash generated from financing activities was RMB4.013 billion for the year ended December 31, 2017, 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.

Net cash used in financing activities was RMB13.602 billion for the year ended December 31, 2016, representing a decrease of 3.81% from last year.

Cash and cash equivalents

	For the Year Ended December 31,		
	2018 RMB'000	2017 RMB'000	2016 RMB'000
Effect of exchange rate	26,266	10,171	72,923
Net increase in cash and cash equivalents	6,135,292	1,471,889	332,251
Cash and cash equivalents, beginning of the year	9,282,390	7,810,501	7,478,250
Cash and cash equivalents as of the end of the year	15,417,682	9,282,390	7,810,501

As of December 31, 2018, the cash and cash equivalents of the Company and its subsidiaries denominated in RMB, Singapore dollar, U.S. dollar, Pakistan Rupee were RMB14.317 billion, RMB927 million, RMB141 million and RMB33 million, respectively.

As of December 31, 2017, the cash and cash equivalents of the Company and its subsidiaries denominated in Renminbi, Singapore dollar and U.S. dollar were RMB8.130 billion, RMB836 million and RMB316 million, respectively.

As of December 31, 2016, the cash and cash equivalents of the Company and its subsidiaries denominated in Renminbi, Singapore dollar and U.S. dollar were RMB6.620 billion, RMB870 million and RMB320 million, respectively.

Capital expenditure and cash resources

Capital expenditures for infrastructure construction and renovation projects

The capital expenditures for the year ended 31 December 2018 were RMB20.707 billion, mainly for construction and renovation of projects, including RMB2.931 billion for Shandong Power project, RMB1.679 billion for Yancheng Dafeng New Energy project, RMB1.114 billion for ShangAn Power Plant project, RMB789 million for Heilongjiang Power Generation project, RMB746 million for Anyang Energy project, RMB711 million for Dongguan Combined Cycle project, RMB661 million for Luoyuan Power Generation project, RMB598 million for Nanjing Xingang Integrated Energy project, RMB505 million for Kangbao Wind Power project, RMB451 million for Jiangxi Clean Energy project, RMB450 million for Rudong Baxianjiao Offshore Wind Power project, RMB435 million for Zhongxiang Wind Power project, RMB406 million for Hainan Power Generation project, RMB346 million for Fengjie Wind Power project, RMB343 million for Beijing Thermal Power project, RMB335 million for Dalian Thermal Power project, RMB303 million for Jiuquan Wind Power project, RMB278 million for Guigang Clean Energy project, RMB267 million for Huaining Wind Power project, RMB257 million for Jiangyin Combined Cycle project, RMB243 million for Mianchi Clean Energy project, RMB222 million for Diandong Energy project, RMB216 million for ilin Power Generation project, RMB207 million for Fuyuan wind power project, RMB206 million for Luoyuan Port project, RMB205 million for Luohuang Power Generation project, RMB198 million for Dezhou Power Plant, RMB194 million for Yizheng Wind Power project, RMB171 million for Dalian Power Plant project, RMB167 million for Shanxi Comprehensive Energy project, RMB165 million for Suzhou Co-generation Power project, RMB159 million for Changxing Power Plant project, RMB159 million for Fuzhou Power Plant project, RMB146 million for Panzhou Wind Power project, RMB146 million for Huaiyin Power project, RMB144 million for Diandong Yuwang Energy project, RMB141 million for Chaohu Power project, RMB139 million for Weihai Power project, RMB119 million for Luoyang Co-generation Power project and RMB119 million for Tongshan Wind Power. The capital expenditures of the Company’s operations in Singapore were RMB180 million. The expenditures on other projects were RMB3.456 billion.

The above capital expenditures are sourced mainly from internal capital, cash flows provided by operating activities, and debt and equity financing. In the next few years, the Company will maintain its leading position in clean and efficient traditional energy, make further efforts to develop new energy and promote structural adjustment. It is expected that there will still be significant capital expenditures. The Company expects to finance the above capital expenditures through 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 for the next year are as following:

Capital Expenditure Project	Capital expenditure Plan for 2019 (RMB100 million)	Cash resources arrangements	Financing costs and note on use
Thermal power projects	41.70	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Hydropower projects	0.23	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Wind power projects	239.54	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Coal mining projects	7.40	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Photovoltaic power projects	0.74	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Port	2.04	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC
Technology renovation	62.47	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of the PBOC

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 December 31, 2018, the undrawn banking facilities available to the Company and its subsidiaries amount to approximately RMB268.8 billion, which are granted by Bank of China, China Construction Bank and Agricultural Bank of China.

The Company completed issuances of unsecured super short-term bonds in 16 installments on February 24, March 2, March 21, March 23, May 2, May 2, May 18, May 30, June 1, August 24, October 19, November 16, November 22, November 23, November 28 and December 6 of 2018, at principal amount of RMB4 billion, RMB2 billion, RMB2 billion, RMB4 billion, RMB2.5 billion, RMB4 billion, RMB2 billion, RMB2 billion, RMB4 billion, RMB2 billion, RMB2.5 billion, RMB2 billion, RMB2 billion, RMB2 billion, RMB2 billion and RMB1 billion, with nominal annual interest rates of 4.35%, 4.35%, 4.40%, 4.45%, 4.25%, 4.08%, 3.98%, 3.80%, 4.05%, 2.80%, 3.20%, 2.78%, 3.10%, 3.05%, 2.78% and 3.30%, respectively. Each installment of the bonds was denominated in RMB, issued at par value, and would successively mature in 90 days, 90 days, 150 days, 180 days, 180 days, 150 days, 180 days, 90 days, 180 days, 90 days, 180 days, 90 days, 180 days, 180 days, 90 days and 270 days from the value date.

The Company issued two tranches of unsecured medium-term notes of RMB3 billion and RMB2 billion on May 2 and July11, 2018 with nominal annual interest rates of 4.80% and 4.41%, respectively. The notes were denominated in RMB and issued at par value with maturity of three years from the date of issue.

The Company issued unsecured non-public debt financing instrument of RMB2.5 billion on July 26, 2018 with a nominal annual rate of 4.68%. The instrument was denominated in RMB and issued at par value with maturity of in three years from the value date.

The Company issued two tranches of unsecured corporate bonds on April 4 and September 10, 2018, at a principal amount of RMB1.5 billion and RMB5 billion, respectively, with nominal annual interest rates of 4.90% and 5.05%, respectively. The bonds were denominated in RMB and issued at face value with maturity of three and ten years from the date of issue, respectively.

As of December 31, 2018, short-term loans of the Company and its subsidiaries were RMB61.039 billion (2017: RMB80.251 billion). Loans from banks were charged at annual interest rates ranging from 3.30% to 11.51% per annum (2017: 3.74% to 5.50%).

As of December 31, 2018, short-term bonds payable by the Company and its subsidiaries were RMB11.541 billion (2017: RMB11.068 billion).

As of December 31 2018, long-term loans (including those maturing within a year) of the Company and its subsidiaries were RMB150.169 billion (2017: RMB125.129 billion), of which RMB loans were RMB126.844 billion (2017: RMB110.073 billion), US dollar loans were approximately US$1.548 billion (2017: US$348 million), and Euro loans were approximately €22 million (2017: €30 million), Singapore dollar loans were S$2.472 billion (2017: S$2.539 billion), Japanese yen loans were 2.482 billion (2017: 2.593 billion). Among them, US dollar loans and Singapore dollar loans are all floating rate loans, and other foreign currency loans are fixed rate loans. For the financial year ended 31 December 2018, the annual interest rates of long-term bank loans were between 0.75% to 7.29% per annum (2017: 0.75% to 6.03%).

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 equity holders.

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 2018, the Company expects to pay a cash dividend of RMB1.570 billion.

Maturity profile of loans and bonds

The following table sets forth the maturity profile of the Company's borrowings as of December 31, 2018.

Maturity Profile

(RMB 100 million)	2019	2020	2021	2022	2023
Principal amount planned for repayment	971.60	315.01	465.98	199.14	113.13
Interest amount planned for repayment	102.93	64.67	49.72	33.97	25.16
Total	1,074.53	379.68	515.70	233.11	138.29

Note: This table was prepared by the principal and interest amount actually repaid accordingly to contracts already signed. The amount of principle to be paid in 2019 is relatively large because this includes expected repayment of short- term loans and short-term bonds.

E. Trend information

The major trend of the electricity power market

Regarding the electricity market, considering market environment at home and abroad, assuming no occurrence of far-reaching extreme climate changes in 2019, total electricity consumption nationwide will grow by 5.5%, with newly installed generation capacity of approximately 110 million kW, of which thermal generation units will represent a slight increased percentage from last year. In 2019, annual utilization hours of thermal generating units are estimated to be 4,400 hours, representing slight increase from last year. In 2019, the Company will actively participate in the reform of power market, strengthen research and study of power supply and demand and market competition, and design flexible and effective marketing strategies. The Company will also actively participate in power market transactions, attach importance to power sales business, actively participate in the building of electricity trading market and auxiliary service market, continuously explore new business opportunities, make

focused efforts to offer value-added services so as to consolidate high-quality client base and improve client stickiness, with the view to gradually transitioning from traditional energy vendor to integrated energy supplier, further enhancing the Company’s market competitiveness, and strengthening the Company’s position in the industry and market.

The trend of the fuel supply

In the coal market, coal supply is expected to be sufficient with increased production from operation of new and expansion coal production projects which have been approved by competent Chinese government agencies, while the effect of environmental protection and safety production inspections, though continuing to weigh upon coal production, will be lessened in 2019. In spite of coal demand from large-scale infrastructure and other projects, consumption of coal by thermal power generators is expected to decrease due to the soft macro-economic conditions, uncertainty of China-U.S. trade relations, industrial transformation and upgrading, as well as increased supply of UHV-based clean energy and nuclear power. The railway capacity continues to increase as the operation of Menghua Railway is expected to ease the resources shortage in “two lakes and one river.” The general supply and demand in the electricity and coal market in 2019 will be eased compared with the tight balance in 2018, with the price moving downward and volatility further reduced. The Coal prices will gradually move to the green range.

The trend of capital market and foreign exchange

In terms of capital market, the Chinese government is expected to implement active fiscal policies and sound monetary policies. The fiscal policies would be focused on reducing taxes and other fiscal levies with the view to addressing, in collaboration with the implementation of monetary polies, funding difficulties and prohibitive funding prices encountered by business enterprises. The sound monetary policies would be implemented to underscore overall economic stability, strengthen counter-cyclical monetary administration, optimize credit structure, and maintain reasonably adequate liquidity. Accordingly, it is expected that the market would have reasonably sufficient funding in 2019 and funding costs are expected to be consistent with slight decline.

F. Employee benefits

As of December 31, 2018, the Company and its subsidiaries had 57,970 employees within and outside the PRC. The Company and its subsidiaries provide employees with competitive remuneration and link 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.

All employees of the Company have entered into labor contracts with the Company. The Company's standard contract includes description of the position, responsibilities, compensations and causes of termination. The terms of the labor contracts vary and they generally range from one to five years. The contracts are typically renewable upon expiration by mutual agreement of the Company and the relevant employee.

The Company is unionized, both at its head office and with respect to all power plants. Labor unions are intended to protect the rights of employees, while allowing the Company to achieve economic objectives. They encourage employees' participation in the Company's decision-making process, and serve as mediators in any dispute between the Company and its employees. The Company has experienced no occurrence of any strike or labor dispute which has impact upon the Company's operations. The Company believes that the Company and its employees are in a good relationship.

Compensation of our employees consists of salaries, bonuses and allowances. Compensation is linked to performance of the Company as well as the individual employees. Our employees are also entitled to certain education, healthcare and other benefits and allowances provided by the Company.

The Company maintains social security schemes for its employees pursuant to government regulations. These social security benefits are subject to changes in the relevant law and policy.

Based on the development plans of the Company and its subsidiaries and the requirements of individual positions, together with the 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 have enhanced the comprehensive skills of the employees.

G. Guarantees for loans and restricted assets

As of December 31, 2018, the Company provided guarantees of approximately RMB12.273 billion for the long-term bank loans of Tuas Power.

As of December 31, 2018, the details of secured loans of the Company and its subsidiaries were as follows:

As of December 31, 2018, short-term loans of RMB461 million (2017: RMB24 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 of December 31, 2018, long-term loans of RMB0.986 billion (2017: RMB4.605 billion) of the Company and its subsidiaries were secured by certain property, plant and equipment with net book value of approximately RMB1.756 billion (2017: RMB5.166 billion).

As of December 31, 2018, long-term loans of approximately RMB8.938 billion (2017: RMB10.559 billion) were secured by future electricity and heating revenue of the Company and its subsidiaries.

As of December 31, 2018, the restricted bank deposits of the Company and its subsidiaries were RMB430 million (2017: RMB82 million).

As of December 31, 2018, the property, plant and equipment leased under finance lease of the Company and its subsidiaries with net book value amounted to RMB1.774 billion (2017: RMB2.565 billion).

H. Off-balance sheet arrangements

As of December 31, 2018, there were no off-balance sheet arrangements which have or are reasonably likely to have an effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

I. Performance of significant investments and their prospects

The Company acquired 25% equity interest in Shenzhen Energy Group for RMB2.39 billion on April 22, 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 equity holders 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 2018, Shenzhen Energy distributed RMB0.80 of cash dividend out of every 10 shares to its equity holders, and the Company held 992 million shares of Shenzhen Energy by December 31, 2018. These investments brought a net profit attributable to the equity holders of the Company of RMB148 million for the year ended December 31, 2018 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 December 31, 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 RMB111 million for the year ended 31 December 2018 under IFRS. This investment is expected to provide steady returns to the Company.

J. Tabular disclosure of contractual obligations and commercial commitments

A summary of payments due by period of our contractual obligations and commercial commitments as of December 31, 2018 is shown in the tables below. A more complete description of these obligations and commitments is included in the Notes to Financial Statements as referenced below.

Contractual Cash Obligations

(RMB in millions)	2019	2020-2021	2022-2023	Thereafter	Total
Long-term loans from Huangeng Group and its subsidiaries(1)	610	1,866	902	1,347	4,725
Long-term bank loans and other loans(1)	20,010	61,419	25,325	38,690	145,444
Long-term bonds(2)	4,000	14,800	5,000	6,200	30,000
Interest payments	6,496	9,160	5,127	5,290	26,073
Operating Lease – Head Office(3)	72	-	-	-	72
Operating Lease – Huabei Branch(3)	9	-	-	-	9
Operating Lease – Shanghai Branch(3)	23	26	6	-	55
Operating Lease – Guangxi Branch(3)	1	1	-	-	2
Operating Lease – Guizhou Branch(3)	2	5	2	-	9
Operating Lease – Chongqing Branch(3)	-	1	-	-	1
Operating Lease – Guangxi Clean Power Branch(3)	-	1	-	-	1
Operating Lease – Nanjing Power Plant(3)	2	5	4	55	66
Operating Lease – Heinongjiang Power(3)	28	52	49	96	225
Operating Lease – Shandong Power(3)	3	7	5	34	49
Operating Lease – Suzhou Thermal Power(3)	1	1	1	-	3
Operating Lease – Zhumadian Fengdian Power(3)	24	8	-	-	32
Operating Lease – Mianchi Clean Power(3)	-	4	-	-	4
Operating Lease – Anyang Energy(3)	4	-	-	-	4
Operating Lease – Ruzhou Clean Power(3)	-	2	-	-	2
Operating Lease – Henan Puyang Clean Energy(3)	-	3	-	-	3
Operating Lease – Shanxi Comprehensive Energy(3)	2	4	4	38	48
Operating Lease – Tuas Power Generation Pte Ltd.(3)	23	48	52	939	1,062
	31,310	87,413	36,477	52,689	207,889

Other commercial commitments

(RMB in millions)	2019	2020-2021	2022-2023	Thereafter	Total
Long – term gas purchase contract(4)	14,311	28,840	24,583	47,417	115,151

Notes:

(1) See Note 25 to the Financial Statements, "Long-term Loans."

(2) See Note 26 to the Financial Statements, "Long-term Bonds."

(3) See Note 40 and 43 to the Financial Statements, "Commitments" and "Subsequent Events."

(4) The numbers shown in the table above were calculated based on the minimum purchases stipulated in the long-term gas contracts disclosed in Note 40 to the Financial Statements.

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 December 31, 2018, 2017 and 2016, the annual rentals were approximately RMB34 million.

The Company and its subsidiaries have various defined contribution plans in accordance with the local conditions and practices in the provinces in which they operate. The Company and its subsidiaries pay fixed contributions into separate entities (funds) and will have no further payment obligations if the funds do not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods.

Disclosures of the pension plans, including the contribution amounts, are included in Note 38 to the Financial Statements.

K. Impairment sensitivity analysis

Goodwill impairment

The Company and its subsidiaries conducts impairment test on each individually recognized goodwill every year. In 2018, the management recognized goodwill impairment of approximately RMB409 million 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 2018, 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 goodwill by approximately RMB900 million and RMB3,915 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 further recognize impairment against goodwill by approximately RMB421 million and RMB3,185 million, respectively.

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 2018, impairment losses for certain property, plant and equipment and mining rights of approximately RMB990 million and RMB135 million have been recognized, respectively. Factors leading to the impairment include lower than expected operating results of subsidiaries in 2018 due to oversupply and fierce competition within the electricity market. In addition, as a result of the low demand of coal-fired power in local market and site selection issues, management estimated the possibility of further development of a coal-fired power project and a wind power project was remote. Therefore the project under construction of two subsidiaries with a carrying value of RMB14 million and 8 million were fully impaired in 2018.

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 2018, 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, land use rights and mining rights by approximately RMB460 million and RMB5,599 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 RMB46 million and RMB1,598 million, respectively.

L. Prospects for 2019

In 2019, the Company will thoroughly implement development strategies and proactively seize market opportunities. Based on safety and environmental protection, focusing on quality and efficiency, and driven by reform and innovation, it will further promote quality improvement, efficiency enhancement, transformation and upgrading. The Company will focus on its objective of building an internationally 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 power generation, the Company will endeavor to implement the state's plans on safe production and strengthen the accountability of all employees. It will strengthen grading-based risk management and control, hazard investigation and management, as well as anti-violation governance, so as to prevent personal injury and death. It will strengthen the maintenance of generating units and quality evaluation and assessment to maintain a sound overall excellence rate in the overhaul. It will concretely procure "no unplanned outage" 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.
In respect of the power marketing, the Company will take a market-oriented approach and strengthen research on policies and trading mechanism to grasp market opportunities. It will create differentiated competitive advantages, optimize regional power generation structure, and strive to expand the scale of transactions. It will actively explore the spot market, accelerate the establishment of the decision-making process for bidding and quoting, the risk control mechanism and the information support system, and push forward the construction of integrated operation centres in pilot areas. It will centrally plan and coordinate cross-provincial and cross- regional transactions and strive to increase transaction prices. It will aim at delivering a domestic power generation of approximately 440.0 billion kWh and average utilization of around 4,200 hours for the year. In areas with low heat prices, it will make active efforts to increase the heat prices. It will further increase the recovery rate of electricity and heat fee.
In respect of fuel, the Company will reinforce policy research and market analysis, and enhance the insights and stability in fuel procurement. The Company will establish a firm and effective fuel supply chain and dynamically optimize long- term contract resources based on the structural outlay and region characteristics of resources. Leveraging on its advantages in scale procurement, the Company will strengthen strategic cooperation with large-scale coal enterprises to strive for a more reasonable pricing mechanism. The Company will further improve the fuel management system, strengthen the management of coal yards, and continuously improve the mixing capability to strictly control fuel costs.
In respect of capital, the Company will closely monitor the changes in the domestic capital market and give full play to its management advantages. In addition to ensuring the efficiency of the main financing channel (i.e. credit financing), the Company will seize the cost advantages presented by the proactive fiscal policy and prudent monetary policy to innovate new financing means and to expand the scale and channels of direct financing, so to ensure the security of funds while striving to reduce capital cost.
The Company will adhere to the new development philosophy, 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.

ITEM 6 DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

A. Directors, members of the supervisory committee and senior management

Directors

The table below sets forth certain information concerning our directors as of March 31, 2019. The current term for all of our directors is three years commencing from the signing of the director service contracts.

Name	Age	Position with us
Shu Yinbiao	60	Chairman of the Board of Directors
Huang Jian	56	Director
Wang Yongxiang	53	Director

Mi Dabin	50	Director
Guo Hongbo	50	Director
Cheng Heng	55	Director
Lin Chong	55	Director
Yue Heng	44	Independent Director
Xu Mengzhou	68	Independent Director
Liu Jizhen	67	Independent Director
Xu Haifeng	63	Independent Director
Zhang Xianzhi	61	Independent Director

SHU Yinbiao, aged 60, is the Chairman and Secretary of the Party Committee of the Company, the Chairman and the Secretary of the Leading Party Members' Group of Huaneng Group. He was the Chairman of State Grid Corporation of China. He graduated from Wuhan University, majoring in Electric Power System and Its Automation. He holds a doctor degree in engineering. He is a professor-grade senior engineer.

HUANG Jian, aged 56, is a Director of the Company, a dedicated Director and Supervisor appointed by Huaneng Group, a dedicated director of HIPDC, a dedicated director of Shandong Power Generation Co., Ltd., and the Chairman of the Supervisory Committee of Huaneng Renewables Corporation Limited. He was an assistant to the President of Huaneng Group and Chairman of Huaneng Capital Services Co., Ltd. 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 53, is a Director of the Company, the Chairman and Party Secretary of HIPDC, the Chief of Power Development Business Division and the Shale Gas Exploitation and Utilization Office of Huaneng Group, and the president of GreenGen Co., Ltd. He was the Chairman of Huaneng Lancangjiang Hydropower Co., Inc. and the President of Yunnan branch of Huaneng Group. He graduated from Tsinghua University where he majored in hydraulic engineering and holds a postgraduate degree of master in engineering. He is a professor-grade senior engineer.

MI Dabin, aged 50, is a Director of the Company, the Vice President and a Standing Committee Member of the Party Committee of Hebei Construction & Investment Group Co., Ltd., the Chairman of Hebei Construction& Energy Investment Co., Ltd., the Chairman of Hebei Xingtai Power Generation Limited, the Chairman of Huihai Financing and Leasing Co., Ltd., and the Chairman of CIC Hebei Heat Cogeneration Co., Ltd.. He was the Chief Engineer, Vice President and President of Qinhuangdao Power Generation Co., Ltd., the President of Qinhuangdao Thermal Power Generation Co., Ltd., an assistant to the President and the Head of Production and Operation Department of Hebei Construction & Investment Group Co., Ltd., the President of Qinhuangdao Power Generation Co., Ltd. and Qinhuangdao Thermal Power Generation Co., Ltd. He graduated from North China Electric Power University, majoring in power engineering, and holds a master's degree. He is a senior engineer.

GUO Hongbo, aged 50, is a Director of the Company, the Chairman and the Secretary of the Party Committee of Liaoning Energy Investment (Group) Limited Liability Company, the director of ShenyangJinshan Energy Limited, and the vice chairman of Liaoning Haitong New Energy Low-Carbon Industrial Equity Investment Fund Limited. He was the president and vice chairman of Liaoning Energy Investment (Group) Limited Liability Company. Mr. Guo graduated from Jilin University with a master's degree in administrative management, and holds an MBA degree. He is a professor-grade senior engineer.

CHENG Heng, aged 55, is a Director of the Company, the Vice President (group department president level) of the Energy Department of Jiangsu Guoxin Investment Group Limited, the Vice Chairman of Jiangsu Changshu Electric Power Generating Company Limited, the Vice Chairman of Jiangsu Ligang Electric Power Co., Ltd., the Vice Chairman of Jiangsu Ligang Power Generating Co., Ltd., and the Vice Chairman of Yangcheng International Electric Power Co., Ltd.. He previously served as the deputy manager of the Planning Department of Jiangsu International Trust and Investment Corporation, Vice President of Changshu Power Generation Co., Ltd., President of Energy Investment Division 2 of Jiangsu Provincial Investment Management Co., Ltd., and the Vice President of Jiangsu Provincial Investment Management Co., Ltd. He is a university graduate with College education and an economist.

LIN Chong, aged 55, is a Director of the Company, the Vice President and a Member of CPC Committee of Fujian Investment & Development Group Co., Ltd., the Chairman of Zhongmin Offshore Wind Power Co., Ltd., the Vice Chairman of Fujian Mindong Electric Power Limited Company, the Vice Chairman of Fujian Sanming Nuclear Power Co., Ltd., the Vice Chairman of Chinalco Southeast Copper Co., Ltd., the director of Fujian Motor Industry Group Co., Ltd., the director of Fujian Fuqing Nuclear Power Co., Ltd. and the director of King Long Motor Group. Mr. Lin has formerly served as the assistant to the general manager of Fujian Investment & Development Group Co., Ltd., the Director of the Preparatory Office for Fuzhou Baiyun Pumped Storage Hydropower Station, and the Chairman of Fujian Zhongmin Energy Investment Co., Ltd. He graduated from Chongqing University where he majored in electric power system and its automation and holds a master's degree of science in engineering (postgraduate diploma). Mr. Lin is a senior engineer.

YUE Heng, aged 44, 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 68, is an Independent Director of the Company, a professor of RUC Law School of Renmin University of China (RUC), an Independent Director of Shandong Hualu-Hengsheng Chemical Co., Ltd., ENN Ecological Holdings Co. Ltd., and an Independent Director of iHandy Group (non-listed company). He served as a professor of International Studies of Renmin University of China. He graduated from the RUC, with a doctor's degree in Economic Laws.

LIU Jizhen, aged 67, 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 is a professor, a doctoral supervisor and an academician of the Chinese Academy of Engineering.

XU Haifeng, aged 63, 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 61, 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

The table below sets forth certain information concerning our supervisors as of March 31, 2019. The current term for all of our supervisors is three years, which will expire in 2020.

Name	Age	Position with us
Ye Xiangdong	51	Chairman of the Board of Supervisors
Mu Xuan	43	Vice Chairman of the Board of Supervisors
Zhang Mengjiao	54	Supervisor
Gu Jianguo	52	Supervisor
Zhang Xiaojun	52	Supervisor
Zhang Xiancheng	55	Supervisor

YE Xiangdong, aged 51, is the Chairman of the Supervisory Committee of the Company and the Vice President and a Member of the Leading Party Members' Group of Huaneng Group. He was the Executive Director and President of Huaneng Hulun Buir 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 43, is the Vice Chairman of the Supervisory Committee of the Company, the Vice President and a Member of CPC Committee 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 54, is a Supervisor of the Company and the Deputy Chief Accountant of HIPDC. She was the Deputy Manager of the Finance Department of the Company and the Manager of the Finance Department of HIPDC. 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 52, is a Supervisor of the Company, the Chairman of Nantong Investment & Management Limited Company, and the Vice President of Nantong City Construction Group Co., Ltd.. He was the Chief of Nantong Investment Management Centre, Director and President of Nantong Investment & Management Limited Company. He graduated from Nanjing University of Aeronautics and Astronautics with a bachelor’s degree. He is an economist. He holds a Master of Business Administration from Antai College of Economics and Management (ACEM) at Shanghai Jiao Tong University.

ZHANG Xiaojun, aged 52, is a Supervisor and Manager of the Discipline Inspection, Supervision and Audit Department of the Company. She was Deputy Manager of the Administration Department and the Vice Chairman of Labour Union 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.

ZHANG Xiancheng, aged 54, is a Supervisor and the Manager of Party Building Work Department of the Company. He was the Manager of the Political Work Department of the Company. He graduated from Northeast Agriculture University, majoring in business administration, and holds a bachelor’s degree in economics. He is a senior economist.

Other Executive Officers

ZHAO Keyu, aged 52, is the President and Deputy Party Secretary of the Company. He was the Chief of the Planning and Development Department, Chief of Office, and Director and Secretary of the Party Office of Huaneng Group. He graduated from Wuhan University, majoring in software engineering, and is postgraduate with a master's degree in engineering. He is a senior political work specialist.

ZHAO Ping, aged 56, is the Vice President and the Deputy Party Secretary 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 professor-grade senior engineer. He enjoyed special government allowance of the State Council.

WU Senrong, aged 57, is currently the Vice President and a Member of Party Committee of the Company. He was a Member of the Party Committee and the Secretary of the Discipline Inspection commission of the Company. He graduated from the Economic Management School of Tsinghua University with an EMBA degree. He is a professor-grade senior engineer.

SONG Zhiyi, aged 58, is the Vice President and a Member of Party Committee of the Company. He graduated from the Guanghua Management Institute of Peking University, with an MBA degree. He is a senior engineer.

LI Jianmin, aged 57, is a Member of Party Committee and Vice President 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 professor-grade senior engineer.

LIU Ranxing, aged 56, is the Vice President, a Member of Party Committee and the Secretary of the Discipline Inspection commission 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 professor-grade senior engineer.

HUANG Lixin, aged 52, is currently the Chief accountant and a Member of Party Committee of the Company. He was the Manager of the Finance Department of the Company and Director 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.

HUANG Chaoquan, aged 53, is currently the Secretary to the Board and Manager of the Administration Department of the Company. He was the 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.

B. Compensation for Directors, Supervisors and Executive Officers

The table below sets forth the compensation on individual basis for the directors, supervisors and other executive officers for the year ended December 31, 2018:

Name	Position with the Company	Pre-tax Remuneration Paid by the Company in 2018[1] (RMB in thousand)
Directors		
Huang Jian	Director	-
Wang Yongxiang	Director	-
Mi Dabin	Director	-
Guo Hongbo	Director	-
Cheng Heng	Director	-
Lin Chong	Director	-
Yue Heng	Independent Director	74
Xu Mengzhou	Independent Director	74
Liu Jizhen	Independent Director	74
Xu Haifeng	Independent Director	74
Zhang Xianzhi	Independent Director	74
Cao Peixi[2]	Former Chairman of the Board of Directors	-
Liu Guoyue[3]	Former Executive Director and President	-
Fan Xiaxia[4]	Former Director	-
Sub-total		370
Supervisors		
Ye Xiangdong	Chairman of the Board of Supervisors	-
Mu Xuan	Vice Chairman of the Board of Supervisors	-
Zhang Mengjiao	Supervisor	-
Gu Jianguo	Supervisor	-
Zhang Xiaojun	Supervisor	760
Zhang Xiancheng[5]	Supervisor	145
Zhu Daqing	Former Supervisor	379
Sub-total		1,284
Other Executive officers		
Zhao Keyu[6]	President	409
Zhao Ping	Vice President	856
Wu Senrong	Head of Discipline Inspection Group	856
Song Zhiyi	Vice President	856
Li Jianmin	Vice President	856
Liu Ranxing	Vice President	856
Huang Lixin	Chief Accountant	855
Huang Chaoquan	Secretary to the Board of Directors	757
Zhou Hui[7]	Former Vice President	198
He Yong[8]	Former Chief Engineer	264
Sub-total		6,763
Total		9,027

Notes:

The remuneration paid by the Company in 2018 includes fees, basic salaries, performance salaries and pension.

(1) Please see Note 38 to the Item 18 Financial Statements, "Directors', supervisors' and senior management's emoluments."
(2) Mr. Cao Peixi resigned on January 30, 2019.
(3) Mr. Liu Guoyue resigned on May 15, 2018.
(4) Mr. Fan Xiaxia resigned on February 28, 2018.

(5) Mr. Zhang Xiancheng was elected on October 30, 2018.
(6) Mr. Zhao Keyu was appointed as the President on July 31, 2018.
(7) Ms. Zhou Hui resigned in March 2018.
(8) Mr. He Yong resigned in April 2018.

The total remuneration paid to our directors, supervisors and executive officers is comprised of basic salaries, performance salaries and pension. Of these, performance salaries account for approximately 50% of the total remuneration. In addition, directors and supervisors who are also officers or employees of the Company receive certain other benefits, such as subsidized or free health care services, housing and transportation, which are customarily provided by large enterprises in the PRC to their employees. Each of the Company's independent directors receives annual after-tax cash compensation of RMB60,000. We do not have any service contract with any director that provides for benefits upon termination of employment. The Company does not grant options or the stock-based incentive awards to its directors, supervisors and executive officers.

C. Board practice

We, in accordance with the resolutions passed at a shareholders' general meeting, have set up four board committees, namely, the Audit Committee, the Strategy Committee, the Nomination Committee, and the Remuneration and Appraisal Committee, and formulated the working regulations for each committee in accordance with relevant rules and regulations. All committees operate in accordance with the working rules and utilize their members' specific backgrounds, experience and industry expertise to provide advice to the board, so as to enhance our operation efficiency and to make the decision-making process better informed.

The main duties of the Audit Committee are to assist our board in performing its statutory and fiduciary duties of supervising our accounting, financial reporting, internal control and compliance, including but not limited to, assisting our board in ensuring (i) the authenticity of our financial statements; (ii) our compliance with the applicable laws and regulations; (iii) the qualification and independence of our independent auditors; (iv) the performances of our independent auditors and internal auditing department and (v) the control and management of the related-party transactions of the Company.

The main duties of the Strategy Committee are to advise on, and conduct research in relation to, our long-term development strategies and decisions regarding significant investments.

The main duties of the Nomination Committee are to conduct research and provide advice in relation to the requirements for selection of directors and managers and the relevant procedures based on the actual need of our operation, to search for qualified candidates for the positions of director and manager, to examine the candidates for the positions of director and manager and to advise matters in relation thereto.

The main duties of the Remuneration and Appraisal Committee are to conduct research on the appraisal guidelines for directors and managers, to carry out performance appraisals and provide advice accordingly, and to conduct research on the remuneration policies and proposals regarding the directors and senior management.

The members of Audit Committee are Mr. Yue Heng (Chairman), Mr. Xu Mengzhou, Mr. Liu Jizhen, Mr. Xu Haifeng and Mr. Zhang Xianzhi.

The members of Strategy Committee are Mr. Shu Yinbiao (Ad hoc Chairman), Mr. Huang Jian, Mr. Wang Yongxiang, Mr. Liu Jizhen and Mr. Xu Haifeng.

The members of Nomination Committee are Mr. Liu Jizhen (Chairman), Mr. Mi Dabin, Mr. Lin Chong, Mr. Yue Heng, Mr. Xu Mengzhou and Mr. Zhang Xianzhi.

The members of Remuneration and Appraisal Committee are Mr. Zhang Xiangzhi (Chairman), Mr. Guo Hongbo, Mr. Cheng Heng, Mr. Yue Heng, Mr. Liu Jizhen and Mr. Xu Haifeng.

D. Employees

As of December 31, 2018, we had 57,960 employees. Of these, 124 were headquarters management staff, 18,139 were management and technical staff of our subsidiaries, and the remainder was workers, ancillary service personnel and others. Approximately 77% of our work force graduated from university or technical college. As of December 31, 2016 and 2017, we had 42,210 and 53,962 employees, respectively.

We conduct continuing education programs for our employees at our head office and at each power plant. We provide training in foreign language, computer, operating and other areas to our managerial professionals and technicians in their relevant fields. Employees are trained in accordance with the different requirements for professional and managerial positions.

Our labor force is employed through individual labor contracts. Currently, all employees are employed under labor contracts, which specify the employee's position, responsibilities, remuneration and grounds for termination. Short-term labor contracts have fixed terms of typically one to five years, at the end of which they may be renewed by agreement of both the Company and the employee.

The contract system imposes discipline, provides incentives to adopt better work methods, and provides us with a greater degree of management control over our work force. We believe that, by linking remuneration to productivity, the contract system has also improved employee morale.

Each of our power plants has a trade union and the employees of our headquarters are also members of a trade union. These trade unions protect employees' rights, aim to fulfill our economic objectives, encourage employees to participate in management decisions and mediate disputes between us and union members. We have not been subject to any strikes or other labor disturbances interfering with our operations, and we believe that our relationships with our employees are good.

Total remuneration of our employees includes salaries, bonuses and allowances. The remuneration level of each employee is linked to the performance of our company as well as the individual employee himself/herself. The employees also receive certain benefits in the form of education and health services subsidized by the Company and other miscellaneous subsidies.

In compliance with the relevant regulations, we and our employees participate in the local government pension plan under which all the employees are entitled to pension payments upon retirement. See Note 38 to the Financial Statements. The Company also participates in the social insurance program administered by the social security institution, under which all employees are entitled to certain social insurance benefits, subject to adjustments in accordance with relevant PRC regulations. The Company is in compliance with all social insurance regulations and has no overdue obligations for any social insurance contribution.

E. Share ownership

None of our directors, supervisors or senior management owns any of our shares.

ITEM 7 MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

A. Major shareholders

Our outstanding ordinary shares consist of A Shares and H Shares, each with a par value of RMB1.00 per share. The following table sets forth certain information regarding our major shareholders as of March 31, 2019.

Shareholder	Number of shares	Approximate percentage in the total issued domestic share capital %	Approximate percentage in the total issued share capital %
Huaneng International Power Development Corporation	5,066,662,118	46.07	32.28
China Huaneng Group Co. Ltd.(1)	1,629,264,402	14.81	10.38

Shareholder	Number of shares	Approximate percentage in the total issued domestic share capital %	Approximate percentage in the total issued share capital %
China Hua Neng Hong Kong Company Limited	472,000,000[2]	10.04[2]	3.01

Notes:

(1) Of the 1,629,264,402 shares, 74,139,853 domestic shares through its controlling subsidiary, Huaneng Finance Corporation Limited.

(2) 472,000,000 shares are H Shares and represent 10.04% of the total issued H Shares of the Company and 3.01% of the total issued share capital of the Company.

In 2006, all of our shareholders of non-tradable domestic shares except HIPDC transferred a total of approximately 1.1 billion shares to Huaneng Group, representing 9.24% of our total issued shares. Among others, HPCIC transferred approximately 301 million shares to Huaneng Group, and decreased its shareholdings in the Company to 5.00%.

On April 19, 2006, we carried out our reform plan to convert all non-tradable domestic shares into tradable domestic shares. According to the plan, Huaneng Group and HIPDC transferred a total of 150 million A Shares to our shareholders. As a result, the direct shareholdings of Huaneng Group and HIPDC decreased to 8.75% and 42.03%, respectively.

In June and July of 2008, through its wholly owned subsidiary, China Hua Neng Hong Kong Company Limited, Huaneng Group acquired 20 million H Shares from the open market. As a result, the shareholding of Huaneng Group increased to 8.92%.

In 2010, we increased our share capital through non-public issuances of new shares, including A shares and H Shares. With the approval of shareholders and relevant PRC governmental authorities, we were authorized to issue (i) not exceeding 1,500 million new A shares by way of placement to not more than 10 designated investors, including Huaneng Group, which would subscribe for no more than 500 million new A shares, and (ii) no more than 500 million new H Shares to China Hua Neng Hong Kong Company Limited ("Hua Neng HK"). On December 23, 2010, we completed the non-public issuance of 1,500 million new A shares (ordinary shares with a par value of RMB1 per share) to 10 designated investors, including Huaneng Group, at the issuance price of RMB5.57 per share. The shares subscribed by Huaneng Group are subject to a lock-up period of 36 months.

On December 28, 2010, we completed the placement of 500 million H Shares (ordinary shares with a par value of RMB1 per share) to Hua Neng HK at the subscription price of HK$4.73 per share.

On November 13, 2014, we completed the placement of 365 million H Shares at the price of HK$8.60 per share.

On November 20, 2015, we completed the placement of 780 million H Shares at the price of HK$7.32 per share.

On October 15, 2018, we completed the non-public issuance of 497,709,919 A Shares at the price of RMB6.55 per share.

Before we were established in 1994, HIPDC and seven other promoters entered into the Shareholders' Agreement dated May 31, 1994 (the "Shareholders' Agreement") which, among other things, grants to HIPDC the right to vote all the shares owned by each of the other promoters so as to enable HIPDC to have majority voting rights in general meetings for so long as we are in existence. In addition, directors designated by HIPDC will have majority representation on our board of directors and each of the other promoters will have one representative designated by it appointed as a member of our board of directors. The Shareholders' Agreement also provides that for so long as we are in existence (i) HIPDC and the other signatories to the Shareholders' Agreement will maintain

their combined shareholdings to ensure their collective majority control of the Company, (ii) HIPDC has certain priority rights to purchase the shares held by the other signatories to the Shareholders' Agreement, (iii) if HIPDC does not exercise its priority rights to purchase such shares, each of the signatories to the Shareholders' Agreement other than HIPDC shall have a priority right to purchase such shares on a pro rata basis, and (iv) no shares may be sold or transferred unless their transferees agree to abide by the terms of the Shareholders' Agreement. As a result of the Shareholders' Agreement, HIPDC holds 70.09% of the total voting rights of the outstanding shares and, subject to the Shareholders' Agreement, has the power to control the election of all of our directors and to direct our management and policies.

On May 12, 2006, HIPDC and other promoters (including the shareholders who assumed the rights and obligations of original promoters as a result of share transfer) entered into an amendment to the Shareholders' Agreement, pursuant to which each promoter shall be entitled to exercise its own voting rights at the shareholders' general meeting. Consequently, HIPDC currently holds 35.14% of our total voting rights. Since HIPDC's parent company, Huaneng Group, currently holds, directly or indirectly, 14.87% of our total voting rights, HIPDC is able to exert control over us when acting in concert with Huaneng Group.

Huaneng Group and HIPDC had previously given a non-compete undertaking to us during our initial public offering of A shares in 2001, in order to support our business development, to integrate relevant quality assets and to avoid business competition. In September 2010, we received from Huaneng Group an undertaking on relevant matters for further avoidance of business competition. While Huaneng Group will continue to perform its undertakings previously given, Huaneng Group further undertakes that: (i) it shall treat us as the only platform for ultimate integration of the conventional energy business of Huaneng Group; (ii) with respect to the conventional energy business assets of Huaneng Group located in Shandong Province, Huaneng Group undertakes that it will take approximately 5 years to improve the profitability of such assets and when the terms become appropriate, it will invest those assets into us. We have 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; (iii) with respect to the other non-listed conventional energy business assets of Huaneng Group located in other provincial administrative regions, Huaneng Group undertakes that it will take approximately 5 years, and upon such assets meeting the conditions for listing, it will invest such assets into us in order to support our sustainable and stable development; and (iv) Huaneng Group will continue to perform each of its undertakings to support the development of its subordinated listed companies.

On June 28, 2014, pursuant to Guideline No. 4 for the Supervision of Listed Companies No.4 - Commitments and Their Fulfillment by Listed Companies and Their Actual Controllers, Shareholders, Related Parties and Acquirers issued by CSRC, Huaneng Group strengthened its aforementioned non-competing undertaking in the following ways: (i) it shall treat us as the only platform for integrating the conventional energy business of Huaneng Group; (ii) with respect to the conventional energy business assets of Huaneng Group located in Shandong Province, Huaneng Group undertakes that by the end of 2016, it will inject such assets into the our Company when the profitability of such assets has been improved and meets our internal requirements for the listing of our assets, which include clear delineation of assets and shares ownership between our Company and Huaneng Group, absence of decrease in earnings per share of the Company after the injection and any unlawful events of significance, appreciation of state-owned assets, and certain waivers of shareholder rights by Huaneng Group; (iii) with respect to the other non-listed conventional energy business assets of Huaneng Group in other provincial administrative regions, Huaneng Group undertook that by the end of 2016, upon such assets meeting the our aforementioned internal requirements, the Group will inject such assets into the Company, with a view to supporting the Company's continuous and stable development; and (iv) Huaneng Group will continue to perform each of its undertakings to support the development of its subordinated listed companies. The period of such undertakings is between June 28, 2014 and December 31, 2016.

Huaneng Group has diligently examined and analyzed its performance on the 2014 undertakings, of which items (i) and (iv) are long-term undertaking and are being currently performed.

As of December 31, 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 (ii) was completed within the term of the undertaking period.

As of December 31, 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 (iii) was completed.

Huaneng Group continued to perform the undertaking as made previously that it would 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 after completion of the asset disposal transaction announced on September 30, 2017 by Shandong Xinneng Taishan Power Generation Co., Ltd. On July 31, 2018, Shandong Company (a subsidiary of the Company) and Taishan Power (a subsidiary of Huaneng Energy and Transportation (Holding) Company Limited) entered into an agreement, pursuant to which Shandong Company acquired from Taishan Power its power assets which were formerly purchased from Shandong Xinneng Taishan Power Generation Co Ltd. Huaneng Group. Therefore our abovementioned undertaking has been fulfiled.

B. Related party transactions

Guarantees

The table below sets forth information on guarantees provided by Huaneng Group, HIPDC and the Company to the related parties in 2018 for the purposes of financing their operation, construction and renovation.

Guarantor	Guarantee	Interest Rate	Largest Amount Outstanding in 2018	Amount Outstanding as of December 31,2018
		%	(RMB)	(RMB)
Huaneng Group	Yangliuqing Power Company[(1)]	2.15	172,568,290.63	142,006,568.31
	Hainan Power[(1)]	4.17	250,000,000.00	125,000,000.00
	Nongan Biomass[(1)]	4.41	42,578,800.00	19,354,500.00
	Shandong Power[(1)]	6.03	1,210,000,000.00	605,000,000.00
	Ruyi Pakistan Energy[(1)]	6.86	3,205,792,390.58	2,136,747,553.68
HIPDC	The Company	5.00	2,000,000,000.00	2,000,000,000.00
	Ruijin Power[(1)]	4.41	99,600,000.00	57,200,000.00
The Company	Tuas Power Company[(1)]	SIBOR+1.65	10,807,738,211.20	10,702,964,205.78
	Tuas Power Company[(1)]	SIBOR+1.65	1,584,928,085.55	1,569,563,236.72

Note:

(1) These entities are subsidiaries of the Company.

Loans

The table below sets forth the loans made by Huaneng Group and subsidiaries of Huaneng Group, and the Company to the related parties in 2018 for the purposes of financing their operation, construction and renovation.

Lender	Borrower	Interest Rate	Largest Amount Outstanding in 2018	Outstanding Balance as of December 31, 2018
		%	(RMB)	(RMB)
Huaneng Finance	Weihai Power Plant	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Huaiyin II Power	4.1325	300,000,000.00	300,000,000.00
Huaneng Finance	Suzhou Industrial Park	4.1325	70,000,000.00	70,000,000.00
Huaneng Finance	Qinbei Power Plant	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Qinbei Power Plant	4.1325	200,000,000.00	200,000,000.00

Huaneng Finance	Yushe Power Plant	4.35	330,000,000.00	330,000,000.00

Lender	Borrower	Interest Rate %	Largest Amount Outstanding in 2018 (RMB)	Outstanding Balance as of December 31, 2018 (RMB)
Huaneng Finance	Xindian Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Xindian Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Luohuang Power Plant	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Luohuang Power Plant	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Luohuang Power Plant	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Pingliang Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Pingliang Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Pingliang Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Pingliang Power Plant	4.75	100,000,000.00	100,000,000.00
Huaneng Finance	Yangliuqing Co-generation	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Yangliuqing Co-generation	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Yangliuqing Co-generation	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Xiangqi Hydropower	4.1325	50,000,000.00	50,000,000.00
Huaneng Finance	Xiangqi Hydropower	4.1325	50,000,000.00	50,000,000.00
Huaneng Finance	Yingkou Co-generation	4.1325	300,000,000.00	300,000,000.00
Huaneng Finance	Qingdao Port	4.1325	60,000,000.00	60,000,000.00
Huaneng Finance	Qingdao Port	4.5125	40,000,000.00	40,000,000.00
Huaneng Finance	Taicang Port	4.1325	150,000,000.00	150,000,000.00
Huaneng Finance	Tongxiang CCGT	4.35	200,000,000.00	200,000,000.00
Huaneng Finance	Qingdao Co-generation	4.655	195,000,000.00	187,000,000.00
Huaneng Finance	Luoyang Co-generation Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Luoyang Yangguang Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Fuyuan Wind Power	4.1325	15,000,000.00	15,000,000.00
Huaneng Finance	Panzhou Wind Power	4.655	200,000,000.00	200,000,000.00

Huaneng Finance	Dongshan CCGT	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Tongshan Wind Power	4.1325	142,000,000.00	142,000,000.00
Huaneng Finance	Nanjing Thermal Power	4.2195	70,000,000.00	70,000,000.00
Huaneng Finance	Nanjing Thermal Power	4.35	150,000,000.00	150,000,000.00
Huaneng Finance	Luhe Wind Power	4.5125	28,000,000.00	28,000,000.00
Huaneng Finance	Lingang Co-generation CCGT	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Lingang Co-generation CCGT	4.1325	170,000,000.00	170,000,000.00
Huaneng Finance	Mianchi Co-generation	4.35	200,000,000.00	200,000,000.00
Huaneng Finance	Mianchi Co-generation	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Yingkou Xianrendao Co-generation Power	4.35	15,000,000.00	15,000,000.00
Huaneng Finance	Yingkou Xianrendao Co-generation Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Changxing Photovoltaic	4.5125	35,000,000.00	35,000,000.00
Huaneng Finance	Zhongxiang Hujiawan Wind Power	4.655	200,000,000.00	191,000,000.00
Huaneng Finance	Zhumadian Wind Power	4.1325	180,000,000.00	180,000,000.00
Huaneng Finance	Wuhan Power	4.1325	200,000,000.00	200,000,000.00

Lender	Borrower	Interest Rate %	Largest Amount Outstanding in 2018 (RMB)	Outstanding Balance as of December 31, 2018 (RMB)
Huaneng Finance	Wuhan Power	4.1325	150,000,000.00	150,000,000.00
Huaneng Finance	Wuhan Power	4.1325	150,000,000.00	150,000,000.00
Huaneng Finance	Anyuan Power	4.35	200,000,000.00	200,000,000.00
Huaneng Finance	Hualiangting Hydropower	4.1325	8,000,000.00	8,000,000.00
Huaneng Finance	Chaohu Power	4.5125	150,000,000.00	150,000,000.00
Huaneng Finance	Jingmen Thermal Power	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Jingmen Thermal Power	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Suzhou CCGT	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Suzhou CCGT	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Suzhou CCGT	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Ruijin Power	4.1325	200,000,000.00	200,000,000.00
Huaneng Finance	Yingcheng Thermal Power	4.2195	150,000,000.00	150,000,000.00
Huaneng Finance	Yingcheng Thermal Power	4.2195	150,000,000.00	150,000,000.00
Huaneng Finance	Suizhou Power Plant	4.655	100,000,000.00	95,500,000.00
Huaneng Finance	Dongguan CCGT	4.655	200,000,000.00	200,000,000.00
Huaneng Finance	Yueyang Xingang Photovoltaic	4.1325	10,000,000.00	10,000,000.00
Huaneng Finance	Lvyuan Wind Power	4.35	20,000,000.00	20,000,000.00
Huaneng Finance	Lvyuan Wind Power	4.5125	30,000,000.00	30,000,000.00
Huaneng Finance	Hegang Power Plant	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Hegang Power Plant	4.35	80,000,000.00	80,000,000.00
Huaneng Finance	Tongjiang Wind Power	4.1325	50,000,000.00	50,000,000.00
Huaneng Finance	Xinhua Power Plant	4.5125	50,000,000.00	50,000,000.00
Huaneng Finance	Jilin Power	4.75	200,000,000.00	200,000,000.00
Huaneng Finance	Dongying New Energy	4.41	244,500,000.00	232,000,000.00

Huaneng Finance	Jiaxiang Power	4.35	40,000,000.00	40,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Jiaxiang Power	4.35	50,000,000.00	50,000,000.00
Huaneng Finance	Laiwu Power	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Laiwu New Energy	4.75	20,000,000.00	20,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.35	60,000,000.00	60,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.35	60,000,000.00	60,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.35	60,000,000.00	60,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.5125	100,000,000.00	100,000,000.00
Huaneng Finance	Liaocheng Co-generation	4.5125	60,000,000.00	60,000,000.00
Huaneng Finance	Linyi Power	4.1325	100,000,000.00	100,000,000.00

Lender	Borrower	Interest Rate %	Largest Amount Outstanding in 2018 (RMB)	Outstanding Balance as of December 31, 2018 (RMB)
Huaneng Finance	Qufu Co-generation	4.35	261,000,000.00	261,000,000.00
Huaneng Finance	Ruyi Helan Rooftop Photovoltaic	4.41	72,000,000.00	71,500,000.00
Huaneng Finance	Yantai Bajiao	4.35	200,000,000.00	200,000,000.00
Huaneng Finance	Yantai Bajiao	4.655	200,000,000.00	200,000,000.00
Huaneng Finance	Baiyanghe Power Plant	4.1325	40,000,000.00	40,000,000.00
Huaneng Finance	Baiyanghe Power Plant	4.1325	100,000,000.00	100,000,000.00
Huaneng Finance	Baiyanghe Power Plant	4.1325	110,000,000.00	110,000,000.00
Huaneng Finance	Baiyanghe Power Plant	4.1325	60,000,000.00	30,000,000.00
Huaneng Finance	Muping Wind Power	4.5125	6,000,000.00	6,000,000.00
Huaneng Finance	Penglai Wind Power	4.1325	30,000,000.00	30,000,000.00
Huaneng Finance	Penglai Wind Power	4.41	193,000,000.00	187,000,000.00
Huaneng Finance	Penglai Wind Power	4.513	50,000,000.00	50,000,000.00
Huaneng Finance	Yantai Power Plant	4.1325	450,000,000.00	433,000,000.00
Huaneng Finance	Yantai Power Plant	4.5125	100,000,000.00	100,000,000.00
Huaneng Finance	Yantai Power Plant	4.5125	50,000,000.00	50,000,000.00
Huaneng Finance	Sishui Photovoltaic	4.275	10,000,000.00	10,000,000.00
Huaneng Finance	Weishan New Energy	4.35	100,000,000.00	100,000,000.00
Huaneng Finance	Weishan New Energy	4.655	200,000,000.00	140,000,000.00
Huaneng Finance	Huaneng Information Company	4.5125	6,000,000.00	6,000,000.00
Huaneng Finance	Zhanhua Photovoltaic	4.41	447,000,000.00	346,000,000.00
Huaneng Finance	Boshan Photovoltaic	4.75	10,000,000.00	10,000,000.00
Huaneng Finance	Liaocheng Changrun	4.35	90,000,000.00	90,000,000.00
Huaneng Finance	Liaocheng Changrun	4.75	1,000,000.00	1,000,000.00
Huaneng Finance	Laiwu Thermal Power	4.1325	70,000,000.00	70,000,000.00
Huaneng Finance	Liaocheng Thermal Power	4.5125	50,000,000.00	50,000,000.00
Huaneng Finance	Liaocheng Thermal Power	4.5125	50,000,000.00	50,000,000.00
Huaneng Finance	Liaocheng Thermal Power	4.5125	50,000,000.00	50,000,000.00
Huaneng Finance	Rizhao Power Plant	4.1325	150,000,000.00	150,000,000.00
Huaneng Finance	Yantai 500	4.75	50,000,000.00	50,000,000.00
Huaneng Finance	Zhongyuan CCGT	4.5125	200,000,000.00	100,000,000.00
Huaneng Finance	Zhongyuan CCGT	4.5125	200,000,000.00	100,000,000.00
Huaneng Finance	Zhongyuan CCGT	4.75	200,000,000.00	100,000,000.00
Huaneng Group	The Company	4.75	24,530,000.00	24,530,000.00
Huaneng Group	The Company	4.75	640,694,600.00	640,694,600.00
Tiancheng Financial Leasing	Pingliang Power Plant	4.4175	65,000,000.00	45,000,000.00
Tiancheng Financial Leasing	Pingliang Power Plant	4.4175	177,894,736.82	123,157,894.70

Tiancheng Financial Leasing	Zhumadian Wind Powe	4.75	18,876,560.00	18,876,560.00
Tiancheng Financial Leasing	Anyang Energy	4.75	184,500,000.00	102,500,000.00
Tiancheng Financial Leasing	Mianchi Clean Energy	4.75	53,200,000.00	53,200,000.00
Tiancheng Financial Leasing	Shuangyu Photovoltaic	4.03	79,910,354.10	70,051,643.19
Tiancheng Financial Leasing	Zhaodong Dechang Photovoltaic	4.03	50,922,522.00	50,741,853.02
Huaneng Yuncheng Commercial Factoring (Tianjin) Co., Ltd.	Ruijin Power Plant	6.9	50,000,000.00	50,000,000.00

Lease Agreement

On August 2, 2016, we entered into a leasing agreement and a property management agreement with Huaneng Property Co., Ltd., pursuant to which a total area of 30,465.70 square meters in Huaneng Mansion will be leased to us and the annual rent (including the property management fee) is RMB 114.54 million, effective from July 1, 2016 to June 30, 2019. On December 18, 2018, we have entered into an amendment agreement with Huaneng Property Co., Ltd., pursuant to which the lease area was amended as 19,210.00 square meters and the annual rent was amended as RMB 72.22 million.

Transactions with Huaneng Group

On December 12, 2017, we entered into the Huaneng Group Framework Agreement with Huaneng Group, for a term commencing on January 1, 2018 and expiring on December 31, 2018. Pursuant to the Huaneng Group Framework Agreement, we will conduct, among other things, the following transactions with Huaneng Group and its subsidiaries and associates: (i) purchase of ancillary equipment and parts; (ii) purchase of fuel and transportation services; (iii) leasing of facilities, land and office spaces; (iv) technical services, engineering contracting services and other services; (v) provision of entrusted sale services; (vi) sale of products; (vii) purchase of electricity; (viii) sale of electricity; and (ix) purchase of heat. Such transactions will be conducted on an on-going basis.

Entrusted Management Agreement with Huaneng Group

On January 29, 2015, we have entered into certain entrusted management agreement with Huaneng Group for a term of three years in connection with mutual management of electricity assets. Services under such entrusted management arrangements include preliminary project planning, annual budget and comprehensive planning, power marketing, production management of power plants, construction management, financial management, human resources and labor wages management, administration management, legal service management, assets operation and shareholding management, risk management and internal control management, information disclosure management, related party transaction management, general supervision, comprehensive affairs management and reporting/co-ordination management. By entering into these entrusted management arrangements, we aim to further improve the overall and management efficiency of our electricity assets in several provinces via the provincial level management system of Huaneng Group.

Coal purchases and service fee occurred for transportation

In 2017, we paid RMB18,850.31million, RMB435.43 million, RMB1,962.03 million and RMB2,377.30 million, respectively, to China Huaneng Group Fuel Co., Ltd., Huaneng Energy & Communications Holdings Co., Ltd. and its subsidiaries, Gansu Huating Coal Power Co., Ltd. and Shanghai Time Shipping for coal purchase and service fees incurred for transportation.

In 2018, we paid RMB20,777.60 million, RMB879.65 million, RMB3,210.18 million, RMB1,942.47 million and RMB2,087.60 million, respectively, to China Huaneng Group Fuel Co., Ltd., Huaneng Energy & Communications Holdings Co., Ltd. and its subsidiaries, Gansu Huating Coal Power Co., Ltd., Shanghai Time Shipping and Huaneng Hulunbuir Energy Development Company Ltd. for coal purchase and service fees incurred for transportation.

Transaction with Tiancheng Financial Leasing

On December 5, 2016, we entered into the Financial Leasing Agreement with Huaneng Tiancheng Financial Leasing Co., Ltd., or Tiancheng Financial Leasing, a subsidiary of Huaneng Group, for a term commencing on January 1, 2017 and expiring on December 31, 2019. The Financial Leasing Agreement provided the upper limit of the leasing transaction under the agreement between 2017 through 2019, and requires the internal approval and information disclosure for the proposed transactions. Pursuant to the Financial Leasing Agreement, the maximum outstanding balance of the financial lease, on a daily basis, will not exceed RMB12.000 billion, and the

interest, on an annual basis, shall not exceed RMB800 million. As of December 31, 2018, the maximum outstanding balance we had at Tiancheng Financial Leasing was RMB 4.267 billion, and our annual interest was RMB145 million.

Transactions with Huaneng Finance

On December 31, 2016, we entered into the Huaneng Finance Framework Agreement with Huaneng Finance, a subsidiary of Huaneng Group, for a term commencing on January 1, 2017 and expiring on December 31, 2019. Pursuant to the Huaneng Finance Framework Agreement, we will enter into the following transactions with Huaneng Finance: (i) placing cash deposits by us with Huaneng Finance; (ii) provision of discounting services by Huaneng Finance to us; and (iii) provision of loan advancement by Huaneng Finance to us. Such transactions will be conducted on an on-going basis and will constitute continuing connected transactions under the Hong Kong Listing Rules. During the period from 2017 to 2019, the maximum outstanding balance of the deposits to be placed with Huaneng Finance under the Huaneng Finance Framework Agreement, on a daily basis, will not exceed RMB13.000 billion. As of December 31, 2018, we placed with Huaneng Finance current deposits of approximately RMB10,915 million, which bore interest rates ranging from 0.35% to 1.35% per annum.

Transaction with Hebei Hanfeng Power Generation Limited Liability Company

On September 12, 2017, we entered into an agreement with Hebei Hanfeng Power Generation Limited Liability Company, ("Hebei Hanfeng") for an effective period from January 1, 2018 to December 31, 2018. Pursuant to the transfer agreement, we and our subsidiaries shall purchase electricity from Hebei Hanfeng and its subsidiary and associates. The cap of the transaction amount for purchase of electricity by us and our subsidiaries from Hebei Hanfeng and its subsidiaries and associates is estimated to be RMB600 million.

Capital Increase in Tiancheng Leasing

On February 12, 2018, the Company entered into a capital increase agreement with the existing shareholders of Tiancheng Financial Leasing, pursuant to which the Company and the existing shareholders of Tiancheng Financial Leasing agreed to subscribe by way of cash for the new registered capital of Tiancheng Financial Leasing pro rata to their respective proportion of shareholding in Tiancheng Financial Leasing. The Company paid to Tiancheng Leasing an amount of not more than RMB270 million as the consideration of the capital increase, which sum was funded by the Company's internal cash resources.

Acquisition of Equity Interests in Liaocheng Thermal Power, Laizhou Wind Power, Laiwu Thermal Power and Laiwu Power Generation

On July 31, 2018, Shandong Power (a subsidiary of the Company) and Taishan Power entered into the Transfer Agreement, pursuant to which Shandong Power shall acquire from Taishan Power (i) 75% interests in the registered capital of Shandong Huaneng Liaocheng Thermal Power Company Limited ("Liaocheng Thermal Power"), (ii) 80% interests in the registered capital of Shandong Huaneng Laizhou Wind Power Generation Company Limited ("Laizhou Wind Power"), (iii) 80% interests in the registered capital of Shandong Huaneng Laiwu Thermal Power Company Limited ("Laiwu Thermal Power"), and (iv) 15% interests in the registered capital of Huaneng Laiwu Power Generation Limited ("Laiwu Power Generation") at the consideration of RMB1,800,020,000. Upon completion of the Transfer, Liaocheng Thermal Power, Laizhou Wind Power, and Laiwu Thermal Power will become subsidiaries of Shandong Company.

Formation of Joint Venture

On October 23, 2018, Jiangsu Company (a branch of the Company) entered into the joint venture and cooperation agreement with Hua Neng HK and CSIC Haizhuang (Beijing) Renewables Energy Investment Co., Ltd. ("Haizhuang Renewables"). Pursuant to the terms and conditions of the joint venture and cooperation agreement, the Company would jointly establish Huaneng Shengdong Rudong Offshore Wind Power Co., Ltd. ("Shengdong") with Hua Neng HK and Haizhuang Renewables. The Company would subscribe for the registered capital of no more than RMB790 million by cash with its own fund; Hua Neng HK would subscribe for the registered capital of RMB200 million (or its equivalent) by cash; and Haizhuang Renewables would subscribe for the registered capital of RMB10 million by injecting net assets of its wholly-owned subsidiary Shengdong Rudong Offshore Wind Power Co., Ltd. with value of RMB10 million after valuation.

For a detailed discussion of related party transactions, see Note 37 to the Financial Statements.

C. Interests of experts and counsel

Not applicable.

ITEM 8 FINANCIAL INFORMATION

A. Consolidated statements and other financial information

See pages F-1 to F-144.

Legal proceedings

As of December 31, 2018, we are not a defendant in any material litigation or arbitration and no litigation or claim of material importance is known to us or any member of the Board of directors of us to be pending or threatened against us.

Dividend distribution policy

Our articles of association clearly define our cash dividend policy, i.e. when our earnings and accumulative undistributable profits for the current year are positive, and on the condition that our cash flow can satisfy our normal operation and sustainable development, we shall adopt a cash dividend appropriation policy on the principle that the cash dividend payout will not be less than 50% of the distributable profit realized in the then-current year's consolidated financial statement.

In addition, in order to allow all shareholders to better benefit from 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 shareholders 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. pursuant 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 realized distributable profits stated in the consolidated financial statement that year and such dividend shall be no less than RMB0.1 per share.

Our Board of Directors will determine the payment of dividends, if any, with respect to our shares on a per share basis. Any final dividend for a financial year shall be subject to shareholders' approval. The Board may declare interim and special dividends at any time under general authorization by a shareholders' ordinary resolution. A decision to declare or to pay any dividends in the future, and the amount of any dividends, will depend on our results of operations, cash flows, financial condition, future prospects and other factors which our Directors may determine as important.

For holders of our H Shares, cash dividend payments, if any, shall be declared by our Board of Directors in Renminbi and paid in HK Dollars. The depositary will convert the HK Dollar dividend payments and distribute them to holders of ADSs in U.S. dollars, less expenses of conversion.

Dividends may be paid only out of our distributable profits (less allocation to the statutory funds of 10% of our net income determined in accordance with PRC GAAP) and may be subject to any applicable PRC withholding tax. Our Articles of Association limit our distributable profits to the lower of the amounts determined in accordance with PRC GAAP, and IFRS. Subject to the above, we expect to carry a positive, balanced and stable dividend distribution policy.

On March 19, 2019 the Board of Directors proposed a cash dividend of RMB0.10 per share, totaling approximately RMB1,569.81 million. This proposal is subject to the approval of the shareholders at the annual general meeting.

On May 3, 2018, upon the approval from the annual general meeting of the shareholders, we declared 2017 final dividend RMB0.10 (2016: RMB0.29) per ordinary share, totaling approximately RMB1,520 million (2016: RMB4,408 million).

B. Significant changes

Except as disclosed elsewhere in this annual report, we have not experienced any significant changes since the date of our audited consolidated financial statements included in this annual report.

ITEM 9 THE OFFER AND LISTING

A. Offer and listing details and markets

The Company's ADSs have been listed on the New York Stock Exchange since October 6, 1994. The table below sets forth, for the periods indicated, the high and low closing prices of the ADSs on the New York Stock Exchange. Each ADS represents 40 H Shares. As of March 31, 2019, there were 107 registered holders of American Depositary Receipts evidencing ADS.

On January 21, 1998, we listed our H Shares on the Hong Kong Stock Exchange. On February 26, 1998, we placed 250 million H Shares at the price of HK$4.40 per H Share or US$22.73 per ADS. In May 2004, we effected a two-for-one stock split by way of a stock dividend for all our outstanding shares including H Shares. As of March 31, 2019, there were 439 registered holders of H Shares.

ITEM 10 ADDITIONAL INFORMATION

A. Share capital

Not applicable.

B. Memorandum and articles of association

The following is a brief summary of certain provisions of our Articles of Association, as amended, the Company Law and certain other applicable laws and regulations of the PRC. Such summary does not purport to be

complete. For further information, you and your advisors should refer to the text of our Articles of Association, as amended, and to the texts of the applicable laws and regulations.

Objects and Purposes

We are a joint stock limited company established in accordance with the Standard Opinion for Joint Stock Limited Companies (the "Standard Opinion") and certain other relevant laws and regulations of the PRC. We are registered with the PRC State Administration for Industry and Commerce with business license number Qi Gu Guo Zi No. 000496. Article 10 of our Articles of Association provides that our scope of businesses includes, among other things, investment, construction, operation and management of power plants; development, investment and operation of other export-oriented enterprises related to power plants; production and sale of thermal heat and electricity.

Directors

Our directors shall be elected at our shareholders' general meeting. Because the shares do not have cumulative voting rights, a holder of a majority of the shares is able to elect all of the directors. Our directors shall be elected for a term of three years and may serve consecutive terms upon re-election, except that independent directors may only serve a maximum of two consecutive terms of six years. Our directors are not required to hold any shares in us, and there is no age limit requirement for the retirement or non-retirement of our directors.

Where a director is materially interested, directly or indirectly, in a contract, transaction or arrangement (including any proposed contract, transaction or arrangement) with us, he or she shall declare the nature and extent of his or her interests to the board of directors at the earliest opportunity, whether or not such contract, transaction or arrangement is otherwise subject to the approval of the board. A director shall not vote, and shall not be counted in the quorum of the meeting, on any resolution concerning any contract, transaction or arrangement where the director owns material rights or interests therein. A director is deemed to be interested in a contract, transaction or arrangement in which his associate (as defined by Article 133 of the Articles of Association) is interested.

Unless the interested director discloses his interests to the board and the contract, transaction or arrangement in which the director is materially interested is approved by the board at a meeting in which the director neither votes nor is counted in the quorum, such contract, transaction or arrangement may be revoked by us except with respect to a bona fide party thereto who does not have notice of the director's interests.

We are prohibited from making loans or providing guarantees to our directors and their associates except where such loan or guarantee is made or provided under a service contract as approved by our shareholders at the shareholders' general meeting and to meet expenditure requirement incurred or to be incurred by the director for the purposes of the Company or for the purpose of enabling the director to perform his or her duties properly.

Matters relating to the remuneration of our directors shall be determined by the shareholders' general meeting.

Dividends

Distribution of dividends may be proposed by our board of directors for approval by an ordinary resolution of our shareholders at the shareholders' general meeting. The Articles of Association allows for cash dividends, stock dividends and combination of cash and stock dividends.

Dividends may only be distributed after allowance has been made for:

- recovery of losses, if any;
- allocations to the statutory surplus reserve fund; and
- allocations to a discretionary surplus reserve fund.

The allocation to the statutory surplus reserve fund is 10% of our net income determined in accordance with the PRC accounting rules. Where the accumulated statutory surplus reserve fund has reached 50% or more of our registered capital, no allocation is needed.

The Articles of Association require that cash dividends and other distribution with respect of H Shares be declared in Renminbi and paid by the Company in U.S. dollars or Hong Kong dollar in terms of the H Shares listed on the Hong Kong Stock Exchange. The Articles of Association further stipulate that for dividends and other distributions paid in currencies other than Renminbi, we shall use an exchange rate equal to the median closing exchange rate of Renminbi for such currencies announced by the PBOC for two working days in the week preceding the date on which such dividends or other distributions are declared.

We will appoint receiving agents to receive, on behalf of the holders of H Shares, any dividend distributions and all other money owing by us in respect of such shares (Receiving Agents). The Receiving Agents will comply with the laws and regulations of the applicable stock exchanges on which our shares are listed. Any Receiving Agent appointed on behalf of the holders of H Shares listed on the Hong Kong Stock Exchange will be a company registered as a trust corporation under the Trustee Ordinance of Hong Kong.

Dividends payments may be subject to PRC withholding tax.

Voting Rights and Shareholders' Meetings

Our board of directors shall convene a shareholders' annual general meeting once every year and within six months from the end of the preceding financial year. Our board shall convene an extraordinary general meeting within two months after the occurrence of any one of the following events:

- where the number of directors is less than the number required by the PRC Company Law or two-thirds of the number specified in our Articles of Association;
- where our unrecovered losses reach one-third of the total amount of our share capital;
- where shareholder(s) holding 10% or more of our issued shares so request(s);
- whenever our board deems necessary or our supervisory committee so requests; or
- other circumstances as provided in the Articles of Association.

Resolutions proposed by shareholder(s) holding 3% or more of the total number of voting shares shall be included in the agenda for the relevant annual general meeting if (i) they are submitted to the board of directors no later than 10 days before the annual general meeting is to be held and (ii) they are matters which fall within the scope of the functions and powers of shareholders' general meeting and have clear subject and concrete terms to be voted upon. The board of directors shall publish a supplementary notice of annual general meeting specifying the resolutions proposed to other shareholders. Upon publication of the supplementary notice, no alteration to the proposed resolutions or addition of other proposed resolutions will be accepted.

All shareholders' meetings must be convened by our board by written notice given to shareholders not less than 45 days before the meeting. Based on the written replies received by us 20 days before a shareholders' meeting, we shall calculate the number of voting shares represented by shareholders who have indicated that they intend to attend the meeting. When the number of voting shares represented by those shareholders amounts to more than one-half of our total voting shares, we shall convene the shareholders' general meeting. Otherwise, we shall, within five days before holding the shareholders' general meeting, inform the shareholders again of the motions to be considered and the date and venue of the meeting by way of a public announcement. After the announcement is made, the shareholders' meeting may be convened. The accidental omission by us to give notice of a meeting to, or the non-receipt of notice of a meeting by, a shareholder will not invalidate the proceedings at that shareholders' meeting.

Shareholders at meetings have the power, among other things, to examine and approve our profit distribution plans and plans to recover losses, the annual budget, an increase or reduction of registered share capital,

the reports of our board of directors and supervisory committee, the issuance of debentures, and the plans for merger, division, dissolution or liquidation; to elect or remove our directors and supervisors who are not elected as employees' representatives; and to review and amend our Articles of Association. In addition, the rights of a class of shareholders may not be modified or abrogated, unless approved by a special resolution of shareholders at a general shareholders' meeting and by a special resolution of shareholders of that class of shares at a separate meeting. Our Articles of Association enumerate, without limitation, certain amendments which would be deemed to be a modification or abrogation of the rights of a class of shareholders, including increasing or decreasing the number of shares of such class or the number of shares of a class with voting or distribution rights or privileges equal or superior to the shares of such class, removing or reducing rights to receive dividends in a particular currency, and creating shares with voting or distribution rights or privileges equal or superior to the shares of such class.

Each share is entitled to one vote on all such matters submitted to a vote of our shareholders at the shareholders' general meetings, except for meetings of a special class of shareholders where only holders of shares of the affected class are entitled to vote on the basis of one vote per share of the affected class.

Shareholders are entitled to attend and vote at meetings either in person or by proxy. Proxies must be in writing and deposited at our legal address, or such other place as is specified in the meeting notice, not less than 24 hours before the start of the meeting at which the proxy proposes to vote or the time appointed for the passing of the relevant resolution(s). When the instrument appointing a proxy is executed by the shareholder's attorney-in-fact, such proxy when deposited must be accompanied by a notary-certified copy of the relevant power of attorney or other authority under which the proxy was executed.

Except for those actions discussed below which require supermajority votes ("special resolutions"), resolutions of the shareholders are passed by a simple majority of the voting shares held by shareholders who are present in person or by proxy. Special resolutions must be passed by more than two-thirds of the voting shares held by shareholders who are present in person or by proxy.

The following decisions must be adopted by special resolution:

an increase or reduction of our registered share capital or the issuance of shares, including stock distributions, of any class, warrants and other similar securities;

issuance of debentures;

our division, merger, dissolution, liquidation and change of the legal form;

amendments to our Articles of Association;

acquisition or disposal of material assets or providing a guarantee in the amount exceeding 30% of our most recent audited total assets within one year;

adjustments to our profit distribution policy; and

any other matters our shareholders have resolved by way of an ordinary resolution at a general meeting to be of a nature which may have a material impact on us and should be adopted by special resolution.

In addition, amendments to the Articles of Association require the approval and consent of the relevant PRC authorities.

All other actions taken by the shareholders, including the appointment and removal of our directors and supervisors and the declaration of cash dividend payments, will be decided by an ordinary resolution of the shareholders.

Any shareholder resolution which is in violation of any laws or regulations of the PRC will be null and void.

Liquidation Rights

In the event of our liquidation, the ordinary shares held by overseas shareholders will rank pari passu with the ordinary shares held by the domestic shareholders, and any of our assets remaining after payments (in order of priority) of (a) the costs of liquidation (b) wages and social insurance fees payable to or for our employees for the past three years prior to the date of liquidation; (c) overdue taxes and tax surcharges, funds and other amounts payable pursuant to the applicable administrative regulations; and (d) bank loans, corporate bonds and other debts, will be divided among our shareholders in accordance with the class of shares and their proportional shareholdings.

Further Capital Call

Shareholders are not liable to make any further contribution to the share capital other than according to the terms, which were agreed to by the subscriber of the relevant shares at the time of subscription.

Increases in Share Capital and Preemptive Rights

The Articles of Association require the approval by a special resolution of the shareholders prior to authorizing, allotting, issuing or granting shares, securities convertible into shares or options, warrants or similar rights to subscribe for any shares or such convertible securities. New issues of shares must also be approved by the relevant PRC authorities.

Shareholders do not have preemptive rights with respect to new issues of shares of the Company.

Reduction of Share Capital and Purchase by Us of Our Shares and General Mandate to Repurchase Shares

We may reduce our registered share capital only upon obtaining the approval of the shareholders by a special resolution and, in certain circumstances, of relevant PRC authorities. The number of H Shares which may be purchased is subject to the Hong Kong Takeovers and Share Repurchase Codes.

Restrictions on Large or Controlling Shareholders

Our Articles of Association provide that, in addition to any obligation imposed by laws and administration regulations or required by the listing rules of the stock exchanges on which our shares are listed, a controlling shareholder shall not exercise his voting rights in a manner prejudicial to the interests of the shareholders generally or of some part of the shareholders:

to relieve a director or supervisor from his or her duty to act honestly in our best interests;

to approve the expropriation by a director or supervisor (for his or her own benefit or for the benefit of another person) of our assets in any way, including, without limitation, opportunities which may benefit us; or

to approve the expropriation by a director or supervisor (for his or her own benefit or for the benefit of another person) of the individual rights of other shareholders, including, without limitation, rights to distributions and voting rights (save according to a restructuring of our company which has been submitted for approval by the shareholders in a general meeting in accordance with our articles of association).

A controlling shareholder, however, will not be precluded by our Articles of Association or any laws and administrative regulations or the listing rules of the stock exchanges on which our shares are listed from voting on these matters.

A controlling shareholder is defined by our Articles of Association as a shareholder whose capital contribution represents 50% or more of the total capital of our Company, or a shareholder whose shares represent 50% or more of the total issued share capital of our Company, or a shareholder whose capital contribution or shares are less than 50% but obtains significant voting rights to influence the result of the shareholder's general meeting or the resolutions passed thereby.

Disclosure

The Listing Agreement imposes a requirement on us to keep the Hong Kong Stock Exchange, our shareholders and other holders of our listed securities informed as soon as reasonably practicable of any information relating to us and our subsidiaries, including information on any major new developments which are not public knowledge, which:

- is necessary to enable them and the public to appraise the position of us and our subsidiaries;
- is necessary to avoid the establishment of a false market in its securities; and
- might be reasonably expected to materially affect market activity in and the price of its securities.

There are also requirements under the Listing Rules for us to obtain prior shareholders' approval and/or to disclose to shareholders details of certain acquisitions or disposals of assets and other transactions (including transactions with controlling shareholders).

Sources of Shareholders' Rights

The PRC's legal system is based on written statutes and is a system in which decided legal cases have little precedent value. Prior to the effectiveness of the Company Law, the PRC did not have a comprehensive body of laws governing joint stock limited companies. The rights and obligations of our shareholders are principally contained in our constitutive documents and the Standard Opinion, under which we were established. In December 1993, the Standing Committee of the 8th National People's Congress adopted the PRC Company Law, which superseded the Standard Opinion. In accordance with Article 229 of the Company Law, we must comply with the relevant requirements of the Company Law within an unspecified time period. As a result, we amended our Articles of Association pursuant to the Company Law on June 6, 1995. On October 27, 2005, the Company Law was amended by the Standing Committee of the 10th National People's Congress, and came into force on January 1, 2006.

Currently, the primary sources of shareholder's rights are our Articles of Association, as amended, the PRC Company Law and the Listing Rules of the Hong Kong Stock Exchange, which, among other things, impose certain standards of conduct, fairness and disclosure on us, our directors and our controlling shareholders. To facilitate the offering and listing of shares of PRC companies overseas, and to regulate the behavior of companies whose shares are listed overseas, the State Council Securities Committee and the State Commission for Restructuring the Economic System issued on August 27, 1994 the Mandatory Provisions for Articles of Association of Company Listing Overseas (the "Mandatory Provisions"). These Mandatory Provisions become entrenched in that, once they are incorporated into the Articles of Association of a PRC Company, any amendment to those provisions will only become effective after approval by the State-owned Assets Supervision and Administration Commission of the State Council. The Listing Rules require a number of additional provisions to the Mandatory Provisions to be included in the Articles of Association of PRC companies listing H Shares on the Hong Kong Stock Exchange (the "Additional Provisions"). The Mandatory Provisions and the Additional Provisions have been incorporated into our Articles of Association.

In addition, upon the listing of and for so long as the H Shares are listed on the Hong Kong Stock Exchange, we are subject to the relevant ordinances, rules and regulations applicable to companies listed on the Hong Kong Stock Exchange, including the Listing Rules of the Hong Kong Stock Exchange, the Securities (Disclosure of Interests) Ordinance (the "SDI Ordinance"), the Securities (Insider Dealing) Ordinance and the Hong Kong Codes on Takeovers and Mergers and Share Repurchases (the "Hong Kong Takeovers and Repurchase Codes").

Enforceability of Shareholders' Rights

There has not been any public disclosure in relation to the enforcement by holders of H Shares of their rights under constitutive documents of joint stock limited companies or the Company Law or in the application or interpretation of the PRC or Hong Kong regulatory provisions applicable to the PRC joint stock limited companies.

The Company Law, as amended in October 2005 and effective in January 2006, has granted shareholders with the rights to bring derivative suits. Within the Company Law, shareholders holding more than 1 percent of the shares of the company for more than 180 consecutive days are entitled to request the supervisory committee (in terms of directors and senior management) or the board of directors (in terms of supervisors) to bring legal proceedings, or bring legal proceedings in their own name on behalf of the company where it is in emergency and the company will be subject to irreparable loss if not to do so, against directors, supervisors or senior management who fail to comply with the laws and regulations or the company's Articles of Association in the course of performing their duties and cause loss to the company;

Our Articles of Association provide that all differences or claims:

between a holder of H Shares and us;

between a holder of H Shares and any of our directors, supervisors, general managers or other senior officers; or

between a holder of H Shares and a holder of domestic ordinary shares, arising from any provision of our Articles of Association, any right or obligation conferred or imposed by the Company Law or any other relevant law or administrative regulation which concerns our affairs must, with certain exceptions, be referred to arbitration at either the China International Economic and Trade Arbitration Commission in the PRC or the Hong Kong International Arbitration Center. Our Articles of Association provide that such arbitration will be final and conclusive. In June 1999, an arrangement was made between the People's Courts of the PRC and the courts of Hong Kong to mutually enforce arbitration rewards rendered in the PRC and Hong Kong according to their respective laws. This new arrangement was approved by the Supreme Court of the PRC and the Hong Kong Legislative Council and became effective on February 1, 2000.

The holders of H Shares will not be able to bring actions on the basis of violations of the Listing Rules and must rely on the Hong Kong Stock Exchange to enforce its rules. The SDI Ordinance establishes certain obligations in relation to disclosure of shareholder's interests in Hong Kong listed companies, the violation of which is subject to prosecution by the Securities and Futures Commission of Hong Kong. The Hong Kong Takeovers and Repurchase Codes do not have the force of law and are the only standards of commercial conduct considered acceptable for takeover and merger transactions and share repurchases in Hong Kong as established by the Securities and Futures Commission and the securities and futures industry in Hong Kong.

We have appointed CT Corporation System, New York, as our agent to receive service of process with respect to any action brought against us in certain courts in New York under the United States federal and New York State's securities laws. However, as the PRC does not have treaties providing for the reciprocal recognition and enforcement of judgments of courts within the United States, the United Kingdom, Japan or most other of the Organization for Economic Cooperation and Development countries, administrative actions brought by regulatory authorities, such as the Commission, and other actions which result in foreign court judgments, could (assuming such actions are not required by PRC law and the Articles of Association to be arbitrated) only be enforced in the PRC on a reciprocal basis or according to relevant international treaties to which China is a party if such judgments or rulings do not violate the basic principles of the law of the PRC or the sovereignty, security and public interest of the society of the PRC, as determined by a People's Court of the PRC which has the jurisdiction for recognition and enforcement of judgments. We have been advised by our PRC counsel, Haiwen & Partners, that there is uncertainty as to the enforceability in the PRC of actions to enforce judgments of United States courts arising out of or based on the ownership of H Shares or ADSs, including judgments arising out of or based on the civil liability provisions of United States federal or state securities laws.

Restrictions on Transferability and the Share Register

As provided in the Articles of Associations we may refuse to register a transfer of H Shares listed on Hong Kong Stock Exchange unless:

a fee (for each instrument of transfer) of HK dollar 2.50, or any higher fee as agreed by the Hong Kong Stock Exchange, has been paid to us;

the instrument of transfer only involves H Shares;
the stamp duty chargeable on the instrument of transfer has been paid;
the relevant share certificate and upon the reasonable request of the board of directors, any evidence in relation to the right of the transferor to transfer the shares have been submitted;
if it is intended to transfer the shares to joint owners, then the maximum number of joint owners must not exceed four;
we do not have any lien on the relevant shares.

We are required to maintain an original share register for holders of H Shares in Hong Kong and a copy of the register at our legal address. Shareholders have the right to inspect and, for a reasonable charge, to copy the share register. No transfers of ordinary shares shall be recorded in our share register within 20 days prior to the date of a shareholders' general meeting or within 5 days prior to the record date established for the purpose of distributing a dividend.

We have appointed Hong Kong Registrars Limited to act as the registrar of our H Shares. This registrar maintains our register of holders of H Shares in Hong Kong and enters transfers of shares in such register upon the presentation of the documents described above.

C. Material contracts

See "Item 7. Major Shareholders and Related Party Transactions — B. Related Party Transactions" for certain arrangements we have entered into with HIPDC and Huaneng Group.

D. Exchange controls

The existing foreign exchange regulations have significantly reduced government foreign exchange controls for transactions under the current account, including trade and service related foreign exchange transactions and payment of dividends. We may undertake current account foreign exchange transactions without prior approval from the State Administration of Foreign Exchange or its local branch offices. The PRC Government has stated publicly that it intends to make the Renminbi freely convertible in the future. However, we cannot predict whether the PRC Government will continue its existing foreign exchange policy and when the PRC Government will allow free conversion of Renminbi to foreign currency.

Foreign exchange transactions under the capital account, under most circumstances, including principal payments in respect of foreign currency-denominated obligations, continue to be subject to significant foreign exchange controls and require the approval of the State Administration of Foreign Exchange or its local branch offices. These limitations could affect our ability to obtain foreign exchange through debt or equity financing, or to obtain foreign exchange for capital expenditures.

The conversion of Renminbi into foreign currencies, including U.S. dollars, is based on rates set by the PBOC. On July 21, 2005, the PRC government introduced a floating exchange rate system to allow the value of Renminbi to fluctuate within a regulated band based on market supply and demand and by reference to a basket of foreign currencies. Renminbi appreciated by more than 20% against the U.S. dollar between July 2005 and July 2008. Between July 2008 and June 2010, this appreciation halted and the exchange rate between the Renminbi and the U.S. dollar remained within a narrow band. On June 19, 2010, the PBOC decided to further promote the reform of the Renminbi exchange rate formation mechanism, and improve the flexibility of the Renminbi exchange rate. Since June 2010, Renminbi has regained steady appreciation against the U.S. dollar, which was reversed by slight depreciation of the Renminbi against the U.S. dollar at the turn to and early 2014. On March 15, 2014, the PBOC announced to further widen the Remninbi's daily trading band against the U.S. dollar from 1% to 2% on either side of the daily reference rate, allowing for greater fluctuations of the exchange rate. It is difficult to predict how market forces or PRC or U.S. government policy may impact the exchange rate between the Renminbi and the U.S. dollar in the future. There remains significant international pressure on the PRC Government to further liberalize its currency policy, which could result in further fluctuations in the value of the Renminbi against the U.S. dollar. However, there is no assurance that there will not be a devaluation of Renminbi in the future. If there is such a devaluation, our debt servicing cost will increase and the return to our overseas investors may decrease.

E. Taxation

The following is a summary of (i) certain tax consequences from acquiring, owning and disposing of the H Shares and ADSs based on tax laws of the PRC, the United States and the Income Tax Treaty between the PRC and the United States (the "Tax Treaty") as in effect on the date of this annual report, and is subject to changes in PRC or United States law, including changes that could have retroactive effect, and (ii) the principal PRC taxes to which we are subject. The following summary does not take into account or discuss the tax laws of any countries or regions other than the PRC and the United States, nor does it take into account the individual circumstances of an investor. This summary does not purport to be a complete technical analysis or examination of all potential tax effects relevant to an investment in the H Shares or ADSs and current and prospective investors in all jurisdictions of the H Shares or ADSs are advised to consult their tax advisors as to PRC, United States or other tax consequences of the purchase, ownership and disposition of the H Shares or ADSs. This summary also does not purport to be a complete technical analysis or examination of all potential PRC taxes that may be levied upon us.

PRC tax considerations

Tax on dividends

Individual investors

According to the current PRC tax regulations, dividends paid by PRC companies to individual investors are ordinarily subject to a PRC withholding tax levied at a flat rate of 20%. For a foreign individual who has no domicile or does not stay in the territory of China or who has no domicile but has stayed in the territory of China for less than one year, the receipt of dividends from a company in China is normally subject to a withholding tax of 20% unless reduced or exempted by applicable laws and tax treaties.

Enterprises

In accordance with the New Enterprise Income Tax Law that became effective on January 1, 2008, dividends derived from the revenues accumulated from January 1, 2008 and as amended on February 24, 2017 and paid by PRC companies to non-resident enterprises are generally subject to a PRC withholding tax levied at a rate of 10% unless exempted or reduced pursuant to an applicable double-taxation treaty or other exemptions. Dividends paid by PRC companies to resident enterprises, including enterprises established under the laws of non-PRC jurisdictions but whose "de facto management body" is located in the PRC, are not subject to any PRC withholding tax, unless the dividends are derived from the publicly traded shares which have not been held continuously by the resident enterprises for twelve months. According to the Notice on the Issues Concerning Withholding the Enterprise Income Tax on the Dividends Paid by Chinese Resident Enterprise to H Share Holders Which Are Overseas Non-resident Enterprises issued by the State Administration of Taxation on November 6, 2008, Chinese resident enterprises are required to withhold PRC enterprise income tax at the rate of 10% on dividends paid for 2008 and later years payable to their respective H Shares holders who are non-resident enterprises.

Capital gains tax on sales of shares

In accordance with the New Enterprise Income Tax Law, capital gains realized by foreign enterprises which are non-resident enterprises in China upon the sale of overseas shares are generally subject to a PRC withholding tax levied at a rate of 10%, unless exempted or reduced pursuant to an applicable double-taxation treaty or other exemptions. The capital gains realized by resident enterprises, including enterprises established under the laws of non-PRC jurisdictions but whose "de facto management body" is located in the PRC, upon the sales of overseas shares are subject to the PRC enterprise income tax.

Tax treaties

Non-PRC Investors residing in countries which have entered into double-taxation treaties with the PRC may be entitled to a reduction of the withholding tax imposed on the payment of dividends to such Foreign Holders of us. The PRC currently has double-taxation treaties with a number of countries, including Australia, Canada, France, Germany, Japan, Malaysia, the Netherlands, Singapore, the United Kingdom and the United States.

Stamp tax

Under the Provisional Regulations of The People's Republic of China Concerning Stamp Tax, which became effective in October 1988, PRC stamp tax should not be imposed on the transfer of H Shares or ADSs of PRC publicly traded companies.

Taxation of the Company

Income tax

Prior to January 1, 2008, according to the relevant income tax law, foreign invested enterprises were, in general, subject to a statutory income tax of 33% (30% enterprise income tax and 3% local income tax). If these enterprises are located in certain specified locations or cities, or are specifically approved by the State Administration of Taxation, a lower tax rate would be applied. Effective from January 1, 1999, in accordance with the practice notes on the PRC income tax laws applicable to foreign invested enterprises investing in energy and transportation infrastructure businesses, a reduced enterprise income tax rate of 15% (after the approval of State Administration of Taxation) was applicable across the country. We applied this rule to all of our wholly owned operating power plants after obtaining the approval of the State Administration of Taxation. In addition, certain power plants were exempted from the enterprise income tax for two years starting from the first profit-making year, after offsetting all tax losses carried forward from the previous years (at most of five years), followed by a 50% reduction of the applicable tax rate for the next three years. The statutory income tax was assessed individually based on each of their results of operations.

On March 16, 2007, the Enterprise Income Tax Law of PRC, or the New Enterprise Income Tax Law, was enacted, and became effective on January 1, 2008. The New Enterprise Income Tax Law imposes a uniform income tax rate of 25% for domestic enterprises and foreign invested enterprises. Therefore, our power plants that were subject to a 33% income tax rate prior to January 1, 2008 are subject to a lower tax rate of 25% starting on January 1, 2008. With regard to our power plants entitled to a reduced enterprise income tax rate of 15% prior to January 1, 2008, their effective tax rate is being gradually increased to 25% within a five-year transition period commencing on January 1, 2008. Accordingly, the effective tax rate of our wholly owned power plants will increase over time. In addition, although our power plants entitled to tax exemption and reduction under the income tax laws and regulations that are effective prior to the New Enterprise Income Tax Law will continue to enjoy such preferential treatments until the expiration of the same, newly established power plants will not be able to benefit from such tax incentives, unless they can satisfy specific qualifications, if any, provided by then effective laws and regulations on preferential tax treatment.

Pursuant to Measures for the Collection and Administration of Consolidated Payment of Enterprises Income Tax on Trans-Regional Operation, effective on January 1, 2013, the Company and its branches calculate and pay income tax on a combined basis according to relevant tax laws and regulations. The income tax of subsidiaries remains to be calculated individually based on their individual operating results.

Value-added tax

Since January 1, 1994, the government has implemented a turnover tax system applicable to FIEs. Under the turnover tax provisions, we have to collect from our electricity customers and pay to the PRC tax authorities a value-added tax ("VAT") on our sales. The tax rate on sales of electricity by us is 17% of total sales. The amount of VAT payable by us is the VAT on sales reduced by the VAT paid by us on our purchases of coal, fuel and other inputs.

Effective from January 1, 2009, VAT payers are allowed to credit against output VAT in respect of input VAT on fixed assets purchased or self-manufactured based on the relevant VAT credit receipts in accordance with the revised VAT regulations and its implementation rules.

In addition, effective from August 1, 2012, according to the relevant regulations of Ministry of Finance of PRC and State Administration of Taxation, nine pilot regions including Shanghai, Beijing, Tianjin, Jiangsu Province, Anhui Province, Zhejiang Province, Fujian Province, Hubei Province and Guangdong Province have been under the pilot program for the transformation from Business Tax to VAT since January 1, 2012 and all other regions have been since August 1, 2013 for specified industry. The applicable tax rate of VAT for the Company and its subsidiaries in respect of the lease of tangible movable properties, transportation industry and other modern services industries are 17%, 11% and 6%, respectively.

On March 23, 2016, the Ministry of Finance of PRC and the State Administration of Taxation issued the Circular of Full Implementation of Business Tax to VAT Reform which confirms that business tax will be completely replaced by VAT from May 1, 2016. With effect from May 1, 2016, our income is only subject to VAT and not business tax.

United States federal income tax considerations

The following discussion is a summary of United States federal income tax considerations relating to the ownership and disposition of our H Shares or ADSs by a U.S. Holder (as defined below). This discussion is based upon existing United States federal income tax law, which is subject to differing interpretations or change, possibly with retroactive effect. This discussion does not address all aspects of United States federal income taxation which may be important to particular holders in light of their particular circumstances, such as holders subject to special tax rules including: banks or other financial institutions, insurance companies, broker-dealers, traders in securities that elect mark-to-market treatment, partnerships and their partners, regulated investment companies, real estate investment trusts, cooperatives, pension plans, tax-exempt organizations (including private foundations), holders who are not U.S. Holders, holders who own (directly, indirectly, or constructively) 10% or more of the voting power or value of our stock, holders that hold H Shares or ADSs as part of a straddle, hedge, conversion, constructive sale, or other integrated transaction for United States federal income tax purposes, holders required to accelerate the recognition of any item of gross income with respect to H Shares or ADSs as a result of such income being recognized on an applicable financial statement, holders who acquired their ADSs or H Shares pursuant to any employee share option or otherwise as compensation, or holders that have a functional currency other than the United States dollar, all of whom may be subject to tax rules that differ significantly from those summarized below. In addition, this discussion does not address any state, local, non-United States, non-income tax (such as the United States federal gift and estate tax), or alternative minimum tax considerations or the Medicare tax. This discussion only addresses holders that hold their H Shares or ADSs as "capital assets" (generally, property held for investment) under the United States Internal Revenue Code of 1986, as amended (the "Code"). U.S. Holders are urged to consult their tax advisors regarding the United States federal, state, local, and non-United States income and other tax considerations relating to the ownership and disposition of our H Shares or ADSs.

For purposes of this summary, a U.S. Holder is a beneficial owner of H Shares or ADSs that is, for United States federal income tax purposes:

an individual who is a citizen or resident of the United States;

a corporation (or other entity treated as a corporation for United States federal income tax purposes) created in or organized under the laws of the United States or any State thereof or the District of Columbia;

an estate the income of which is includible in gross income for United States federal income tax purposes regardless of its source; or

a trust (a) the administration of which is subject to the primary supervision of a United States court and which has one or more United States persons who have the authority to control all substantial decisions of the trust or (b) a trust that has otherwise elected to be treated as a United States person under the Code.

If a partnership (including any entity treated as a partnership for United States federal income tax purposes) is a beneficial owner of H Shares or ADSs, the tax treatment of a partner in such partnership will depend upon the status of the partner and the activities of the partnership. Partnerships and partners of a partnership holding our H Shares or ADSs are urged to consult their tax advisors regarding the United States federal income tax considerations relating to the ownership and disposition of our H Shares or ADSs.

For United States federal income tax purposes, it is generally expected that a U.S. Holder of ADSs will be treated as the beneficial owner of the underlying shares represented by the ADSs. The remainder of this discussion assumes that a holder of ADSs will be treated in this manner. Accordingly, deposits or withdrawals of H Shares for ADSs will generally not be subject to United States federal income tax.

Passive Foreign Investment Company Considerations

A non-United States corporation, such as our Company, will be a "passive foreign investment company" (a "PFIC"), for United States federal income tax purposes for any taxable year, if either (a) 75% or more of its gross income for such year consists of certain types of "passive" income or (b) 50% or more of its average quarterly assets as generally determined on the basis of fair market value during such year produce or are held for the production of passive income. For this purpose, cash and assets readily convertible into cash are categorized as passive assets and the Company's unbooked intangibles are taken into account for determining the value of its assets. We will be treated as owning a proportionate share of the assets and earning a proportionate share of the income of any other corporation in which we own, directly or indirectly, 25% or more (by value) of the stock.

We do not believe that we were classified as a PFIC for the taxable year ended December 31, 2018. The determination of whether we will be or become a PFIC will depend, in part, upon the composition of our income and our assets (which are subject to change from year to year) and the market price of our ADSs (of which we cannot control). Although we do not expect that our business plans will change in a manner that will affect our PFIC status, no assurance can be given in this regard. Because there are uncertainties in the application of the relevant rules and PFIC status is a fact-intensive determination made on an annual basis, no assurance may be given with respect to our PFIC status for any taxable year.

The discussion below under "Dividends" and "Sale or Other Disposition of H Shares or ADSs" assumes that we will not be classified as a PFIC for United States federal income tax purposes. See the discussion below under the heading "Passive Foreign Investment Company Rules" for a brief summary of the PFIC rules.

Dividends

The gross amount of any cash distributions (including the amount of any tax withheld) paid on our H Shares or ADSs out of our current or accumulated earnings and profits, as determined under United States federal income tax principles, will be subject to tax as dividend income on the day actually or constructively received by a U.S. Holder, in the case of H Shares, or by the depositary bank, in the case of ADSs. Because we do not intend to determine our earnings and profits on the basis of United States federal income tax principles, any distribution paid will generally be reported as a "dividend" for United States federal income tax purposes. A non-corporate recipient of dividend income will generally be subject to tax on dividend income from a "qualified foreign corporation" at a reduced capital gains rate rather than the marginal tax rates generally applicable to ordinary income provided that certain holding period requirements are met.

A non-U.S. corporation (other than a corporation that is classified as a PFIC for the taxable year in which the dividend is paid or the preceding taxable year) generally will be considered to be a qualified foreign corporation (i) if it is eligible for the benefits of a comprehensive tax treaty with the United States which the Secretary of Treasury of the United States determines is satisfactory for purposes of this provision and which includes an exchange of information program or (ii) with respect to any dividend it pays on stock which is readily tradable on an established securities market in the United States. There is currently a tax treaty in effect between the United States and the People's Republic of China (the "U.S.-PRC Treaty") which the Secretary of Treasury of the United States

determined is satisfactory for these purposes and we believe that we are eligible for the benefits of such treaty. Additionally, our ADSs (but not our H Shares) trade on the New York Stock Exchange, an established securities market in the United States and the ADSs are expected to be readily tradable for so long as they continue to be listed on the New York Stock Exchange. Thus, while we presently believe that we are a qualified foreign corporation for purposes of the reduced tax rate, there can be no assurance that the dividends we pay on our H Shares or ADSs will meet the conditions required for the reduced tax rate in the current taxable year or future taxable years. Dividends received on H Shares or ADSs will not be eligible for the dividends received deduction allowed to corporations. U.S. Holders are urged to consult their tax advisors regarding the rate of tax that will apply to them with respect to dividends (if any) received from U.S.

Dividends paid in non-United States currency will be includible in income in a United States dollar amount based on the exchange rate prevailing at the time of receipt of such dividends by the depositary, in the case of ADSs, or by the U.S. Holder, in the case of H Shares held directly by such U.S. Holder, regardless of whether the non-United States currency is actually converted into United States dollars at that time. Gain or loss, if any, recognized on a subsequent sale, conversion or other disposition of the non-United States currency will generally be United States source income or loss.

Dividends received on H Shares or ADSs will generally be treated, for United States foreign tax credit purposes, as foreign source income and generally will constitute passive category income. A U.S. Holder may be eligible, subject to a number of complex limitations, to claim a foreign tax credit in respect of any non-United States withholding taxes imposed on dividends received on H Shares or ADSs. U.S. Holders who do not elect to claim a foreign tax credit for foreign income tax withheld may instead claim a deduction, for United States federal income tax purposes, in respect of such withholdings, but only for a year in which the U.S. Holder elects to do so for all creditable foreign income taxes. U.S. Holders are urged to consult their tax advisors regarding the availability of the foreign tax credit under their particular circumstances.

Sale or Other Disposition of H Shares or ADSs

A U.S. Holder will generally recognize capital gain or loss upon the sale or other disposition of H Shares or ADSs in an amount equal to the difference between the amount realized upon the disposition and the U.S. Holder's adjusted tax basis in such H Shares or ADSs. Any capital gain or loss will be long-term if the H Shares or ADSs have been held for more than one year and will generally be United States source gain or loss for United States foreign tax credit purposes. If any PRC tax were to be imposed on any gain from the disposition of H Shares or ADSs, however, a U.S. Holder that is eligible for the benefits of the U.S.-PRC Treaty may elect to treat the gain as non-United States source gain or loss. The deductibility of a capital loss may be subject to limitations. The rules governing the foreign tax credit are complex and their outcome depends in large part on the U.S. Holder's individual facts and circumstances. Accordingly, U.S. Holders should to consult their tax advisors regarding the availability of the foreign tax credit under their particular circumstances.

U.S. Holders that receive currency other than the United States dollar upon the sale or other disposition of H Shares will realize an amount equal to the United States dollar value of the non-United States currency on the date of such sale or other disposition, or if the shares are traded on an established securities market, in the case of cash basis and electing accrual basis taxpayers, the settlement date. U.S. Holders will recognize currency gain or loss if the United States dollar value of the currency received on the settlement date differs from the amount realized. U.S. Holders will have a tax basis in the currency received equal to the United States dollar amount at the spot rate on the settlement date. Generally, any gain or loss realized by U.S. Holders on a subsequent conversion or disposition of such currency will be United States source ordinary income or loss.

Passive Foreign Investment Company Rules

If we were to be classified as a PFIC in any taxable year, a special tax regime will apply to both (a) any "excess distribution" by us to a U.S. Holder (generally, the U.S. Holder's ratable portion of distributions in any year which are greater than 125% of the average annual distribution received by such U.S. Holder in the shorter of the three preceding years or the U.S. Holder's holding period for our H Shares or ADSs) and (b) any gain realized on the sale or other disposition of the H Shares or ADSs. Under this regime, any excess distribution and realized gain will be treated as ordinary income and will be subject to tax as if (a) the excess distribution or gain had been realized ratably over the U.S. Holder's holding period, (b) the amount deemed realized in each year had been subject to tax in

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each year of that holding period at the highest marginal rate for such year (other than income allocated to the current period or any taxable period before we became a PFIC, which would be subject to tax at the U.S. Holder's regular ordinary income rate for the current year and would not be subject to the interest charge discussed below), and (c) the interest charge generally applicable to underpayments of tax had been imposed on the taxes deemed to have been payable in those years. In addition, dividends made to a U.S. Holder will not qualify for the lower rates of taxation applicable to long-term capital gains discussed above under "Dividends."

The above results may be eliminated if a "mark-to-market" election is available and a U.S. Holder validly makes such an election. If the election is made, such holder generally will be required to take into account the difference, if any, between the fair market value and its adjusted tax basis in H Shares or ADSs at the end of each taxable year as ordinary income or ordinary loss (to the extent of any net mark-to-market gain previously included in income). In addition, any gain from a sale or other disposition of H Shares or ADSs will be treated as ordinary income, and any loss will be treated as ordinary loss (to the extent of any net mark-to-market gain previously included in income).

We do not intend to provide information necessary for U.S. Holders to make qualified electing fund elections, which, if available, would result in tax treatment different from (and generally less adverse than) the general tax treatment for PFICs described above.

As discussed above under "Dividends," dividends that we pay on the ADSs or our H Shares will not be eligible for the reduced tax rate that applies to qualified dividend income if we are a PFIC for the taxable year in which the dividend is paid or the preceding taxable year. In addition, if a U.S. Holder owns the ADSs or our H Shares during any taxable year that we are a PFIC, such holder would generally be required to file an annual IRS Form 8621. Each U.S. Holder is advised to consult its tax advisors regarding the potential tax consequences to such holder if we are or become a PFIC, including the possibility of making a mark-to-market election.

Information Reporting

U.S. Holders may be subject to information reporting to the United States Internal Revenue Service with respect to dividends on and proceeds from the sale or other disposition of our H Shares or ADSs. U.S. Holders are urged to consult their tax advisors regarding the application of the United States information reporting rules to their particular circumstances.

Certain U.S. Holders who hold "specified foreign financial assets," including stock of a non-U.S. corporation that is not held in an account maintained by a U.S. "financial institution," whose aggregate value exceeds $50,000 during the tax year, may be required to attach to their tax returns for the year certain specified information. An individual who fails to timely furnish the required information may be subject to a penalty. U.S. Holders are urged to consult their tax advisors regarding their reporting obligations under this legislation.

F. Dividends and paying agents

Not applicable.

G. Statement by experts

Not applicable.

H. Documents on display

We are subject to the information reporting requirements of the Securities Exchange Act of 1934 (the "Exchange Act") and, in accordance with the Act, file certain reports and other information with the SEC. You may read and copy any report, statement or other information filed by us at the SEC's public reference rooms in Washington, D.C., New York and Chicago, Illinois. Please call the SEC at 1-800-0330 for further information on the public reference rooms. Our reports and other information filed with the SEC are also available to the public from commercial document retrieval services and the website maintained by the SEC at http://www.sec.gov.

I. Subsidiary information

Not applicable.

ITEM 11 QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our primary market risk exposures are fluctuations of fuel prices, foreign exchange rates and interest rates.

Equity 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 to the financial statements.

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 to the financial statements for details.

Foreign exchange rate risk

The exchange rate of Renminbi to foreign currencies may fluctuate and is affected by, among other things, changes in China's political and economic conditions. The conversion of Renminbi into foreign currencies, including U.S. dollars, is based on rates set by the PBOC. On July 21, 2005, the PRC government introduced a floating exchange rate system to allow the value of Renminbi to fluctuate within a regulated band based on market supply and demand and by reference to a basket of foreign currencies. Renminbi appreciated by more than 20% against the U.S. dollar between July 2005 and July 2008. Between July 2008 and June 2010, this appreciation halted and the exchange rate between the Renminbi and the U.S. dollar remained within a narrow band. On June 19, 2010, the PBOC decided to further promote the reform of the Renminbi exchange rate formation mechanism, and improve the flexibility of the Renminbi exchange rate. Since June 2010, the Renminbi has regained steady appreciation against the U.S. dollar, which was reversed by a slight depreciation of Renminbi against the U.S. dollar at the turn to and early 2014. On March 15, 2014, the PBOC announced to further widen the Remninbi's daily trading band against the U.S. dollar from 1% to 2% on either side of the daily reference rate, allowing for greater fluctuations of the exchange rate. It is difficult to predict how market forces or PRC or U.S. government policy may impact the exchange rate between the Renminbi and the U.S. dollar in the future. There remains significant international pressure on the PRC Government to further liberalize its currency policy. We cannot assure you that any future movements in the exchange rate of the Renminbi against the U.S. dollar and other currencies will not adversely affect our results of operations and financial conditions.

SinoSing Power and its subsidiaries are exposed to foreign exchange risk on fuel purchases that is denominated primarily in U.S. dollars. They use forward exchange contracts to hedge almost all of their estimated foreign exchange exposure in respect of forecast fuel purchases over the following three months. The Company and its subsidiaries account for their forward foreign currency contracts as cash flow hedges.

The following table provides information, by maturity date, regarding our foreign currency sensitive financial instruments, which consist of bank balances and cash, short-term and long-term debt obligations, capital commitments and forward exchange contracts as of December 31, 2018 and average interest rates for the year ended December 31, 2018.

(RMB expressed in millions, except interest rate and exchange rate)

	As of December 31, 2018							
	Expected Maturity Date						Total	Fair Value
	2019	2020	2021	2022	2023	Thereafter		
On-balance sheet financial instruments								
Bank balances and cash:								
In U.S. Dollar	483	-	-	-	-	-	483	483
In Japanese Yen	0.197	-	-	-	-	-	0.197	0.197
In Pakistan Rupee	33	-	-	-	-	-	33	33
Debts								
Japanese Yen	7	7	7	7	7	119	154	100
Average interest rate	0.750	0.750	0.750	0.750	0.750	0.750	—	—
Euro	48	36	35	33	17	2	171	159
Average interest rate	2.050	2.103	2.106	2.142	2.135	2.000	—	—
U.S. Dollar	2,149	1,037	1,066	1,099	916	5,597	11,864	11,864
Average interest rate	4.142	4.976	5.038	5.106	5.980	7.292	—	—
Pakistan Rupee	322	-	-	-	-	-	322	322
Average interest rate	11.510	-	-	-	-	-	—	—
Gas purchase commitments (U.S. Dollar)	6,602	6,718	6,699	6,727	2,439	8,148	37,333	

	As of December 31, 2018							
	Expected Maturity Date						Total	Fair Value
	2019	2020	2021	2022	2023	Thereafter		
Forward exchange contracts								
(Receive US $ / Pay S$)								
Contract amount	2,596	459	91	18	-	-	3,164	(12)
Average Contractual Exchange Rate	1.35	1.35	1.33	1.33	-	-	—	—
(Receive JPY / Pay S$)								
Contract amount	45	-	-	-	-	-	45	-
Average Contractual Exchange Rate	0.01	-	-	-	-	-	—	—

	As of December 31, 2017							
	Expected Maturity Date						Total	Fair Value
	2018	2019	2020	2021	2022	Thereafter		
On-balance sheet financial instruments								
Bank balances and cash:								
In U.S. Dollar	316	-	-	-	-	-	316	316
In Japanese Yen	0.193	-	-	-	-	-	0.193	0.193
Debts								
Japanese Yen	6	6	6	6	6	118	148	95
Average interest rate	0.750	0.750	0.750	0.750	0.750	0.750	—	—
Euro	66	46	35	34	33	19	233	215
Average interest rate	2.079	2.048	2.014	2.010	2.008	2.026	—	—

U.S. Dollar	418	412	412	412	412	206	2,272	2,272
Average interest rate	1.748	1.740	1.740	1.740	1.740	1.740	—	—
Gas purchase commitments (U.S. Dollar)	5,943	5,943	5,934	5,918	6,065	12,343	42,146	

	As of December 31, 2017							
	Expected Maturity Date						Total	Fair Value
	2018	2019	2020	2021	2022	Thereafter		
Forward exchange contracts (Receive US $ / Pay S$)								
Contract amount	2,083	391	84	9	-	-	2,567	(68)
Average Contractual Exchange Rate	1.38	1.38	1.32	-	-	1.37	—	—

The outstanding balance of the Company's loans denominated in foreign currencies has changed continually as a result of repayments of the loans by the Company according to agreed-upon repayment schedules. The loans denominated in U.S. dollars increased from RMB2.272 billion as of December 31, 2017 to RMB11.864 billion as of December 31, 2018. The loans denominated in Euros decreased from RMB233 million as of December 31, 2017 to RMB171 million as of December 31, 2018.

Interest rate risk

We are exposed to interest rate risk primarily resulting from fluctuations in interest rates on our debts. Upward fluctuations in interest rates increase the cost of new variable rate debts and the interest cost of outstanding floating rate borrowings.

At present, the interest rate of the Company's loans denominated in RMB is subject to the change of the benchmark interest rate published and adjusted by the PBOC. Different interest rate levels correspond to loans with different terms. New loan contracts entered into hereafter will be subject to current benchmark interest rates. A portion of the Company's loans denominated in foreign currency are fixed rate loans, which are not subject to the changes in market interest rates. Due to the loans borrowed in relation to the acquisition of SinoSing Power, the portion of the loans denominated in foreign currency with floating interest rates increased, which subjects the finance cost of the Company to the fluctuation of market interest rates. In 2009, the Company entered into a floating-to-fixed interest rate swap agreement to hedge against the cash flow interest rate risk of part of the 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. The notional amount of the outstanding interest rate swap at December 31, 2018 was US$144 million.

In 2009, Tuas Power completed its refinancing, through which all of its outstanding loans denominated in U.S. dollars were refinanced through loans denominated in Singapore dollars, matching the functional currency of its operation. The loans borrowed by Tuas Power were denominated in Singapore dollars, and the majority of them are with floating interest rates, which subjects the finance cost of the Company to the fluctuation of market interest rates. In 2012 and 2013, TPG also entered into a number of floating-to-fixed interest rate swap agreements to hedge against the cash flow interest rate risk of the loan. According to these 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. The notional amount of the outstanding interest rate swap at December 31, 2018 was S$992 million.

The table below provides information about the Company and its subsidiaries' derivative financial instruments and other financial instruments that are sensitive to changes in interest rates, including interest rate swaps and debt obligations. For debt obligations, the table presents principal cash flows and related weighted average interest rates by expected maturity dates. For interest rate swaps, the table presents notional amounts and weighted average interest rates by expected (contractual) maturity dates. Notional amounts are used to calculate the contractual payments to be exchanged under the contract. Weighted average variable rates are based on implied forward rates in the yield curve at the reporting date.

(RMB expressed in millions, except interest rates)

	As of December 31, 2018							
	Expected Maturity Date						Total	Fair Value
	2019	2020	2021	2022	2023	Thereafter		
Debts								
Shareholder's, bank and other loans	81,660	28,701	34,583	14,914	11,313	40,037	211,208	210,800
Average interest rate	4.594	4.611	4.672	4.726	4.789	4.789	—	—
Short-term bonds	11,541	-	-	-	-	-	11,541	11,541
Average interest rate	3.855	-	-	-	-	-	—	—
Long-term bonds	3,993	2,799	11,984	5,001	-	6,200	29,978	30,218
Average interest rate	4.643	4.604	4.670	4.654	-	4.654	—	—

	As of December 31, 2018							
	Notional Amount Expected Maturity Date						Total	Fair Value
	2019	2020	2021	2022	2023	Thereafter		
Debts								
Interest Rate Derivatives (US$)								
Variable to Fixed	988	-	-	-	-	-	988	(4)
Average receive rate	3.79 %	-	-	-	-	-	—	—
Average pay rate	4.40 %	-	-	-	-	-	—	—
Interest Rate Derivatives (S$)								
Variable to Fixed	-	4,169	-	-	-	799	4,968	(145)
Average receive rate	-	1.93 %	-	-	-	2.19 %	—	—
Average pay rate	-	2.485 %	-	-	-	3.153 %	—	—

	As of December 31, 2017							
	Expected Maturity Date						Total	Fair Value
	2018	2019	2020	2021	2022	Thereafter		
Debts								
Shareholder's, bank and other loans	98,349	20,729	19,906	16,683	12,656	37,058	205,381	205,256
Average interest rate	3.960	3.850	3.743	3.643	3.525	3.525	—	—
Short-term bonds	11,068	-	-	-	-	-	11,068	11,068
Average interest rate	3.577	-	-	-	-	-	—	—
Long-term bonds	3,997	3,994	2,800	3,000	5,000	1,200	19,991	19,811
Average interest rate	4.629	4.381	4.204	4.553	4.553	3.982	—	—

	As of December 31, 2017							
	Notional Amount Expected Maturity Date						Total	Fair Value
	2018	2019	2020	2021	2022	Thereafter		
Debts								

Interest Rate Derivatives (US$)								
Variable to Fixed	209	941	-	-	-	-	1,150	(22)
Average receive rate	2.92 %	3.38 %	-	-	-	-	—	—
Average pay rate	4.40 %	4.40 %	-	-	-	-	—	—
Interest Rate Derivatives (S$)								
Variable to Fixed	1,003	-	4,215	-	-	-	5,218	(108)
Average receive rate	1.08 %	-	1.35 %	-	-	-	—	—
Average pay rate	2.289%	-	2.485%	-	-	-	—	—

As of December 31, 2018, the Company's loans denominated in foreign currency amounted to RMB12,511 million, most of which were denominated in U.S. dollars. In addition, SinoSing Power's loans denominated in Singapore dollars amounted to RMB12,374 million as of December 31, 2018. Given the current market situation, it is less likely that the U.S. and other major economies would further increase interest rates due to expected slowdown of the global economy. As the debts denominated in other currencies represent a small percentage in our total debts, the change of interest rates of foreign currencies are not expected to have material effect on the Company. We will closely watch the changes in domestic and overseas capital markets, and maintain its good reputation on the capital markets, make reasonable financing arrangements, timely adjust our financing strategy, explore new financing methods, manage the exchange rate fluctuation risks, and strive to control financing costs.

Commodity price risk

We are exposed to fuel price risk on fuel purchases. SinoSing Power and its subsidiaries use fuel oil swap to hedge against such risk. The table below provides information about the fuel swap contracts that are sensitive to changes in fuel prices, including contract volumes, the weighted average contract prices, and the total contract amount by expected maturity dates.

(RMB expressed in millions, except interest rates and exchange rates)

	As of December 31, 2018							
	Expected Maturity Date						Total	Fair Value
	2019	2020	2021	2022	2023	Thereafter		
Fuel Swap contracts								
Contract Volumes (MT)	436,220	280,610	175,040	-	-	-	891,870	—
Weighted Average Price (US$/MT)	384.88	345.70	350.38	-	-	-	—	—
Contract Amount (RMB million)	1,147	663	419	-	-	-	2,229	(335)
Contract Volumes (BBL)	175,000	-	-	-	-	-	175,000	—
Weighted Average Price (US$/BBL)	64.62	-	-	-	-	-	—	—
Contract Amount (RMB million)	77	-	-	-	-	-	77	(14)

	As of December 31, 2017							
	Expected Maturity Date						Total	Fair Value
	2018	2019	2020	2021	2022	Thereafter		
Fuel Swap contracts								
Contract Volumes (MT)	423,136	340,395	141,740	20,160	-	-	925,431	—
Weighted Average Price (US$/MT)	324.95	309.04	301.04	317.48	-	-	—	—
Contract Amount (RMB million)	898	687	278	42	-	-	1,905	319
Contract Volumes (BBL)	98,000	-	-	-	-	-	98,000	—
Weighted Average Price (US$/BBL)	62.67	-	-	-	-	-	—	—
Contract Amount (RMB million)	40	-	-	-	-	-	40	3

For other detailed information of the market risk, please refer to the Note 3(a)(i) to the "Financial Statements."

ITEM 12 DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

A. Debt Securities

Not applicable.

B. Warrants and Rights

Not applicable.

C. Other Securities

Not applicable.

D. American Depositary Shares

Depositary Fees and Charges

Under the terms of the Deposit Agreement for Huaneng Power International, Inc.'s American Depositary Shares (ADSs), an ADS holder may have to pay the following services fees to the Depositary:

Services	Fees
Issuance of ADSs	$5.00 (or less) per 100 ADSs (or portion of 100 ADSs) issued
Cancellation of ADSs	$5.00 (or less) per 100 ADSs (or portion of 100 ADSs) canceled
Distribution of cash dividends or other cash distributions	$2.00 (or less) per 100 ADSs (or portion of 100 ADSs) held
Distribution of ADSs pursuant to stock dividends, free stock distributions or exercises of rights	$5.00 (or less) per 100 ADSs (or portion of 100 ADSs) held
Distribution of securities other than ADSs or rights to purchase additional ADSs	$5.00 (or less) per 100 ADSs (or portion of 100 ADSs) held

An ADS holder will also be responsible to pay certain fees and expenses incurred by the Depositary and certain taxes and governmental charges such as:

taxes and other governmental charges;

such registration fees as may from time to time be in effect for the registration of transfers of H Shares generally on the H Share register of the Company or Foreign Registrar and applicable to transfers of H Shares to the name of the Depositary or its nominee or the Custodian or its nominee on the making of deposits or withdrawals;

such cable, telex and facsimile transmission expenses as are expressly provided in the Deposit Agreement;

such expenses as are incurred by the Depositary in the conversion of foreign currency; and

any other charge payable by the Depositary, any of the Depositary's agents, including the Custodian, or the agents of the Depositary's agents in connection with the servicing of H Shares or other Deposited Securities.

Depositary Payments for the Year 2018

In 2018, we received the payment of US$121,231.19 (inclusive of withholding tax) from the Bank of New York Mellon, the Depositary for our ADR program, for the reimbursement of our expenses related to investors' relation activities and training activities.

PART II

ITEM 13 DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

None.

ITEM 14 MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

None.

ITEM 15 CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the U.S. Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of December 31, 2018 (the "Evaluation Date"), the end of the fiscal year covered by this annual report. Based on this evaluation, our principal executive officer and principal financial officer have concluded that, as of the Evaluation Date, our disclosure controls and procedures were effective.

Management's Report on Internal Control over Financial Reporting

According to Sarbanes-Oxley Act Section 404, our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in the Exchange Act Rules 13a-15(f) and 15d-15(f). The Company conducted an evaluation of the effectiveness of the design and implementation of our internal control over financial reporting based upon the framework in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) as of the end of the period covered by this annual report. The evaluation is conducted under the supervision and with the participation of our management including principal executive officer and principal financial officer of the Company. The Company acquired Shandong Huaneng Laizhou Wind Power, Shandong Huaneng Laiwu Thermal Power Co., Ltd., Shandong Huaneng Liaocheng Thermal Power Co., Ltd. and Huaneng Shandong Ruyi (Hong Kong) Energy Co., Ltd. (the “Acquired Companies”) during 2018, and the Company excluded from the evaluation of the effectiveness of the Company’s internal control over financial reporting as of December 31, 2018, the Acquired Companies’ internal control over financial reporting associated with total assets of RMB17,498 million and total revenues of RMB 743 million included in the consolidated financial statements of the Company as of and for the year ended December 31, 2018. Based on that evaluation, our management has concluded that our internal control over financial reporting was effective as of December 31, 2018. The effectiveness of the Company's internal control over financial reporting as of December 31, 2018 has been audited by KPMG Huazhen LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Because of its inherent limitations, internal control over financial reporting may only provide reasonable assurance for preventing or detecting misstatements. In addition, projections of any evaluation of effectiveness of our internal control over financial reporting to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Huaneng Power International, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Huaneng Power International, Inc. and subsidiaries’ (the “Company”) internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United

States) (“PCAOB”), the consolidated statements of financial position of the Company as of December 31, 2018 and 2017, the related consolidated statements of comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), and our report dated April 16, 2019 expressed an unqualified opinion on those consolidated financial statements.

The Company acquired Shandong Huaneng Laizhou Wind Power, Shandong Huaneng Laiwu Thermal Power Co., Ltd., Shandong Huaneng Liaocheng Thermal Power Co., Ltd. and Huaneng Shandong Ruyi (Hong Kong) Energy Co., Ltd. (the “Acquired Companies”) during 2018, and management excluded from its assessment of the effectiveness of the Company’s internal control over financial reporting as of December 31, 2018, the Acquired Companies’ internal control over financial reporting associated with total assets of RMB17,498 million and total revenues of RMB743 million included in the consolidated financial statements of the Company as of and for the year ended December 31, 2018. Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of the Acquired Companies.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG Huazhen LLP

Beijing, China
April 16, 2019

Changes in Internal Control over Financial Reporting

During the year ended December 31, 2018, no changes occurred in our internal controls over financial reporting that materially affected, or is reasonably likely to materially affect, our internal controls over financial reporting.

ITEM 16 RESERVED

ITEM 16A AUDIT COMMITTEE FINANCIAL EXPERT

The Board of Directors has determined that Mr. Yue Heng and Mr. Zhang Xianzhi qualify as Audit Committee Financial Experts in accordance with the terms of Item 16A of Form 20-F. See "Item 6 Directors, Senior Management and Employees – A. Directors, members of the supervisory committee and senior management."

ITEM 16B CODE OF ETHICS

Although, as of the date of this annual report, we do not have, in form, a code of ethics that applies to the Company's principal executive officer, principal financial officer and principal accounting officer (collectively, the "Senior Corporate Officers"), we believe that, as a substantive matter, the Senior Corporate Officers are subject to a set of written requirements under the PRC law that are substantially similar to the ethical standards described under Item 16B (b) of Form 20-F. Joint stock companies that are incorporated in China and listed on both PRC and foreign stock exchanges are heavily regulated by the central government. To a large extent, these requirements, which are designed to promote honest and ethical conduct and compliance with applicable laws and regulations by the directors and senior executives of such companies, are not merely ethical requirements, but more importantly, statutory obligations that are legally binding on these individuals under the PRC Company Law, relevant rules and regulations promulgated by China Securities Regulatory Commission and the Mandatory Provisions of Articles of Association of Overseas Listed Companies.

ITEM 16C PRINCIPAL ACCOUNTANT FEES AND SERVICES

KPMG Huazhen LLP has served as our independent registered public accounting firm for the fiscal years ended December 31, 2018 and 2017, for which audited consolidated financial statements appear in this annual report on Form 20-F.

The following table shows information about fees payable by us to KPMG Huazhen LLP in 2018 and 2017, respectively.

(RMB million)	For the Year Ended December 31,	
	2018	2017
Audit fees	45.5	42.8
Audit-related fees	1.6	2.4
Tax fees	0.3	0.4
All other fees	1.9	2.4
Total	49.3	48.0

Tax Fees

Services provided primarily consist of tax compliance services.

Audit-related Fees

Audit-related services include those other assurances and related services provided by auditors, but not restricted to those that can only reasonably be provided by the external auditors signing the auditors' report, that are reasonably related to the performance of the audit or review of the Company's financial statements. The audit-related fees in 2018 were related to acquisition audits.

All Other Fees

Provision of other assurance and general training service.

Audit Committee Pre-approval Policies and Procedures

The Audit Committee of the Company's Board of Directors is responsible, among other things, for the oversight of the external auditors subject to the requirements of the PRC Law and the Company's Articles of

Association. The Audit Committee has adopted a policy regarding pre-approval of audit and permissible non-audit services to be provided by our independent auditors (the "Policy"). Under the Policy, proposed services either (i) may be pre-approved by the Audit Committee without consideration of specific case-by-case services ("general pre-approval"); or (ii) require the specific pre-approval of the Audit Committee ("specific pre-approval"). General pre-approval applies to services of recurring and predictable nature. These types of services, once approved by the Audit Committee in the beginning, will not require further approval in the future, except when actual fees and expenses exceed pre-approved budget levels. In such a case, the Audit Committee may authorize one of its members to approve budget increases subject to the requirement that such member provides a report on his decision to approve or deny an application for budget increases to the Audit Committee at an Audit Committee meeting held immediately after such member grants or denies the approval.

Specific pre-approval applies to all other services. These services must be approved by the Audit Committee on a case-by-case basis after an application including proposed budget and scope of services to be provided by our independent auditors is submitted to the Audit Committee.

For 2018, all of the services provided by KPMG were pre-approved by the Audit Committee.

ITEM 16D EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

Not applicable.

ITEM 16E PURCHASES OF EQUITY SECURITY BY THE ISSUER AND AFFILIATED PURCHASERS

Not applicable.

ITEM 16F CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

On December 11, 2018, our board of directors resolved to propose change in our independent registered public accounting firm, KPMG Huazhen LLP, after the completion of the audit of the December 31, 2018 consolidated financial statements and the audit of the effectiveness of internal control over financial reporting as of December 31, 2018, and the issuance of their reports thereon. The decision was later approved by our shareholders at 2019 first extraordinary general meeting on January 30, 2019. The proposed change of auditor was a commercial decision. During the two most recent fiscal years and through April 16, 2019, there have been no disagreements with KPMG Huazhen LLP on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements if not resolved to the satisfaction of KPMG Huazhen LLP, would have caused it to make reference thereto in their report on the consolidated financial statements for such years.

During the two most recent fiscal years and through April 16, 2019, there have been no “reportable events” (hereinafter defined) requiring disclosure pursuant to Item 16F(a)(1)(v) of Form 20-F. As used herein, the term “reportable event” means any of the items listed in paragraphs (a)(1)(v)(A)-(D) of Item 16F of Form 20-F.

The audit reports of KPMG Huazhen LLP on the consolidated financial statements of Huaneng Power International, Inc. as of and for the years ended December 31, 2017 and 2018 did not contain any adverse opinion or disclaimer of opinion, nor were they qualified or modified as to uncertainty, audit scope, or accounting principles.

We provided a copy of this disclosure to KPMG Huazhen LLP and requested that KPMG Huazhen LLP furnish a letter addressed to the SEC stating whether it agrees with the above statements, and if not, stating the respects in which it does not agree. A copy of the letter from KPMG Huazhen LLP addressed to the SEC, dated April 16, 2019, is filed as Exhibit 15.1.

On December 11, 2018, our board of directors resolved, as recommended by our audit committee, to propose to appoint Ernst & Young Hua Ming LLP as our independent registered public accounting firm, which was later approved by our shareholders at 2019 first extraordinary general meeting on January 30, 2019. During the two most recent fiscal years and through April 16, 2019, neither we nor anyone on our behalf consulted Ernst & Young Hua Ming LLP regarding either (i) the application of accounting principles to a specified transaction, either completed or proposed; or the type of audit opinion that might be rendered on the registrant’s financial statements, or (ii) any matter that was either the subject of a “disagreement” (as defined in Item 16F(a)(1)(iv) of Form 20-F and related instructions to Item 16-F of Form 20-F) with Ernst & Young Hua Ming LLP or a “reportable event” (as described in Item 16F(a)(1)(v) of Form 20-F). Also, during the two most recent fiscal years and through April 16, 2019, we have not obtained any written report or oral advice that Ernst & Young Hua Ming LLP concluded was an important factor considered by us

in reaching a decision as to the accounting, auditing or financial reporting issue.

ITEM 16G CORPORATE GOVERNANCE

Comparison of New York Stock Exchange corporate governance rules and China corporate governance rules for listed companies: under the amended Corporate Governance Rules of New York Stock Exchange ("NYSE"), foreign issuers (including the Company) listed on the NYSE are required to disclose a summary of the significant differences between their domestic corporate governance rules and NYSE corporate governance rules that would apply to a U.S. domestic issuer. A summary of such differences is listed below:

NYSE corporate governance rules	Corporate governance rules applicable to the domestically listed companies in China and the Company's governance practices
Director Independence	
A listed company must have a majority of independent directors on its board of directors.	It is required in China that any domestically listed company must establish an independent director system and set forth specific requirements for the qualification of independent directors. For example, an independent director shall not hold any other position in the listed Company other than being a member of the special committee established by the board of directors and shall not be influenced by the main shareholders or the controlling persons of the listed company, or by any other entities or persons with whom the listed company has a significant relationship. The Company has complied with the relevant Chinese corporate governance rules and has implemented internal rules governing the independence and responsibilities of independent directors. The Company determines the independence of independent directors every year.
No director qualifies as "independent" unless the board of directors affirmatively determines that the director has no material relationship with the listed company (either directly or as a partner, shareholder or officer of an organization that has a relationship with the company). In addition, a director must meet certain standards to be deemed independent. For example, a director is not independent if the director is, or has been within the last three years, an employee of the listed company, or an immediate family member is, or has been within the last three years, an executive officer of the listed company, or if the director has received, or has	

NYSE corporate governance rules	Corporate governance rules applicable to the domestically listed companies in China and the Company's governance practices
an immediate family member who has received, during any twelve-month period within the last three years, more than US$120,000 in direct compensation from the listed company, other than director and committee fees and pension or other forms of deferred compensation for prior service (provided such compensation is not contingent in any way on continued service).	
To empower non-management directors to serve as a more effective check on management, the non-management directors of each listed company must meet at regularly scheduled executive sessions without management.	No similar requirements.
Nominating/Corporate Governance Committee	
Listed companies must have a nominating/corporate governance committee composed entirely of independent directors.	The board of directors of a domestically listed company may establish a nominating committee composed entirely of directors, of which the independent directors shall be the majority and the convener. The Company has established a nominating committee.
The nominating/corporate governance committee must have a written charter that addresses the committee's purposes and responsibilities which, at minimum, must be to: search for eligible people for the board of directors, select and nominate directors for the next session of the shareholders' annual meeting, study and propose corporate governance guidelines, supervise the evaluation of the board of directors and management, and evaluate the performance of the committee every year.	Relevant responsibilities of the nominating/corporate governance committee are similar to those stipulated by the NYSE rules, but the main responsibilities do not include the research and recommendation of corporate governance guidelines, the supervision of the evaluation of the board of directors and management, or the annual evaluation of the committee.
Compensation Committee	
Listed companies must have a compensation committee composed entirely of independent directors.	The board of directors of a listed company can have a compensation and evaluation committee composed entirely of directors, of whom the independent directors are the majority and act as the convener.
The compensation committee must have a written charter that addresses, at least, the following purposes and responsibilities:	The responsibilities are similar to those stipulated by the NYSE rules, but the committee is not required to produce a report on the executive compensation or make an annual performance evaluation of the committee. The board of directors of the Company has established a compensation and evaluation committee composed mainly of independent directors who act as the convener, and the committee has a written charter.

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NYSE corporate governance rules	Corporate governance rules applicable to the domestically listed companies in China and the Company's governance practices
(1) review and approve the corporate goals associated with CEO's compensation, evaluate the performance of the CEO in fulfilling these goals, and, either as a committee or together with the other independent directors (as directed by the board) based on such evaluation, determine and approve the CEO's compensation level; (2) make recommendations to the board with respect to non-CEO executive officer compensation, and incentive-compensation and equity-based plans that are subject to board approval; (3) produce a committee report on executive compensation as required by the SEC to be included in the annual proxy statement or annual report filed with the SEC. The charter must also include the requirement for an annual performance evaluation of the compensation committee. The compensation committee may, in its sole discretion, retain or consult a compensation consultant, independent legal counsel or other advisor. The compensation committee shall be directly responsible for the appointment, compensation and oversight of the work of such advisor. A listed company must provide for appropriate funding for payment of reasonable compensation to such advisor. The compensation committee may select such advisor to the compensation committee only after taking into consideration all factors relevant to that person's independence from management.	
Audit Committee	
Listed companies must have an audit committee that satisfies the requirements of Rule 10A-3 of Exchange Act. It must have a minimum of three members, and all audit committee members must satisfy the requirements for independence set forth in Section 303A.02 of NYSE Corporate Governance Rules as well as the requirements of Rule 10A-3(b)(1) of the Exchange Act.	The board of directors of a domestically listed company shall establish an audit committee composed entirely of directors, of which the independent directors are the majority and act as the convener, and the convener shall be an accounting professional.
The audit committee must have a written charter that specifies the purpose of the audit committee is, at minimum, to assist the board oversight of the integrity of financial statements, the Company's compliance with legal and regulatory requirements, qualifications and independence of independent auditors and the performance of the listed company's internal audit function and independent auditors.	The board of directors of a domestically listed company needs to establish the audit committee and make a written rules of procedure. The domestically listed company shall disclose the audit committee's performance of the duty along with the annual report, including the disclosure of all audit committee meetings.

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NYSE corporate governance rules	Corporate governance rules applicable to the domestically listed companies in China and the Company's governance practices
The written charter must also require the audit committee to prepare an audit committee report as required by the SEC to be included in the listed company's annual proxy statement as well as an annual performance evaluation of the audit committee. The written charter must also specify the duties and responsibilities of the audit committee, which, at a minimum, must include those set out in Rules 10A-3(b)(2), (3), (4) and (5) of the Exchange Act, as well as other duties and responsibilities, such as to obtain and review a report by the independent auditor at least annually, meet to review and discuss the listed company's annual audited financial statements and quarterly financial statements with management and independent auditor.	
Each listed company must have an internal audit department.	China has a similar regulatory provision, and the Company has an internal audit department.
Shareholder approval of equity compensation plan	
Shareholders must be given the opportunity to vote on all equity-compensation plans and material revisions thereto, except for, among others, plans that are made available to shareholders generally, such as typical dividend reinvestment plan, certain awards and plans in the context of mergers and acquisitions.	The relevant regulations of China provide that the shareholders' meeting shall approve the compensation of the directors and supervisors. The compensation plan of executive officers shall be approved by the board and announced at the shareholders' meeting and disclosed to the public.
Corporate governance guidelines	
Listed companies must adopt and disclose corporate governance guidelines, involving director qualification standards, director responsibilities, director compensation, director continuing education, annual performance evaluation of the board of directors, etc.	CSRC has issued the Corporate Governance Rules, providing specific rules regarding the process of director election, the duty of directors, the composition and duty of the board of directors and the rules of performance review, with which the Company has complied.
Code of ethics for directors, officers and employees	
Listed companies must adopt and disclose a code of business conduct and ethics for directors, officers and employees, and promptly disclose any waivers of the code for directors or executive officers. Each code of business conduct and ethics must require that any waiver of the code for executive officers or directors may be made only by the board or a board committee.	China does not have such requirement for a code of ethics. But, the directors and officers must perform their legal responsibilities in accordance with the Company Law of PRC, relative requirements of CSRC and Mandatory Provisions to the Charter of Companies Listed Overseas.

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NYSE corporate governance rules	Corporate governance rules applicable to the domestically listed companies in China and the Company's governance practices
Each listed company's CEO must certify to the NYSE each year that he or she is not aware of any violation by the listed company of NYSE corporate governance listing standards and he or she must promptly notify the NYSE in writing of any non-compliance with any applicable provisions of Section 303A.	No similar requirements.

ITEM 16H MINE SAFETY DISCLOSURE

Not applicable.

ITEM 17 FINANCIAL STATEMENTS

Not applicable.

ITEM 18 FINANCIAL STATEMENTS

See page F-1 through F-144 following Item 19.

ITEM 19 EXHIBITS

1.1*	Articles of Association amended and adopted by the Shareholders' meeting in January 2019.
3.1	Shareholders' Agreement dated May 31, 1994, incorporated by reference to Exhibit 9.1 of our Registration Statement on Form F-1, filed with the SEC on August 24, 1994. Amendment to Shareholders' Agreement dated May 12, 2006, incorporated by reference to Exhibit 3.1 of our annual report on Form 20-F for the year ended December 31, 2006, filed with the SEC on April 16, 2007.
8*	A list of subsidiaries.
12.1*	Certifications of Principal Executive Officer pursuant to Rule 13a-14(a) promulgated under the U.S. Securities Exchange Act of 1934.
12.2*	Certifications of Principal Financial Officer pursuant to Rule 13a-14(a) promulgated under the U.S. Securities Exchange Act of 1934.
13.1**	Certification pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
15.1*	Letter from KPMG Huazhen LLP regarding Item 16F of this annual report.
101.INS*	XBRL Instance Document.
101.SCH*	XBRL Taxonomy Extension Schema Document.
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB*	XBRL Taxonomy Extension Labels Linkbase Document.
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document.

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* Filed herewith

** Furnished herewith

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Huaneng Power International, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated statements of financial position of Huaneng Power International, Inc. and subsidiaries (the “Company”) as of December 31, 2018 and 2017, the related consolidated statements of comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three-year ended December 31, 2018, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated April 16, 2019, expressed an unqualified opinion on the effectiveness of the Company’s internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statement. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG Huazhen LLP

We have served as the Company’s auditor since 2012.

Beijing, China
April 16, 2019

Huaneng Power International, Inc.
Consolidated Statements of Comprehensive Income
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB, except per share data)

	Note	For the year ended 31 December 2018	2017	2016
		RMB	RMB (Note i)	RMB (Note i)
Operating revenue	5	169,550,624	152,459,444	113,814,236
Tax and levies on operations		(1,788,998)	(1,376,312)	(1,177,818)
Operating expenses				
Fuel	6	(105,736,173)	(92,737,304)	(56,617,542)
Maintenance		(4,393,335)	(4,347,723)	(4,343,349)
Depreciation		(20,466,423)	(20,180,830)	(14,815,620)
Labor		(11,845,280)	(10,590,084)	(8,043,406)
Service fees on transmission and transformer facilities of HIPDC		(96,721)	(95,894)	(138,038)
Purchase of electricity		(4,678,431)	(3,787,032)	(3,066,415)
Others	6	(10,430,998)	(10,160,875)	(7,234,308)
Total operating expenses		(157,647,361)	(141,899,742)	(94,258,678)
Profit from operations		10,114,265	9,183,390	18,377,740
Interest income		234,604	198,906	147,063
Financial expenses, net				
Interest expense	6	(10,486,412)	(9,749,004)	(6,817,526)
Exchange (loss)/gain and bank charges, net		(160,899)	144,359	(250,076)
Total financial expenses, net		(10,647,311)	(9,604,645)	(7,067,602)
Share of profits less losses of associate and joint ventures	8	1,823,415	425,215	1,298,889
Gain/(loss) on fair value changes of financial assets/liabilities	6	726,843	856,786	(12,986)
Other investment (loss)/income	6	(278,669)	1,742,081	1,070,034
Profit before income tax expense	6	1,973,147	2,801,733	13,813,138
Income tax expense	34	(643,173)	(1,217,526)	(3,465,151)
Net profit		1,329,974	1,584,207	10,347,987

The accompanying notes are an integral part of these financial statements.
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Huaneng Power International, Inc.
Consolidated Statements of Comprehensive Income (Continued)
For the years ended 31 December 2018, 2017and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB, except per share data)

		For the year ended 31 December		
		2018	2017	2016
	Note	RMB	RMB (Note i)	RMB (Note i)
Other comprehensive (loss)/income, net of tax				
Items that will not be reclassified to profit or loss:				
Fair value changes of other equity instrument investments		1,036	—	—
Share of other comprehensive loss of investees accounted for under the equity method		(18,858)	—	—
Items that may be reclassified subsequently to profit or loss:				
Fair value changes of available-for-sale financial assets (Note ii)		—	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 (loss)/income of investees accounted for under the equity method		(241,587)	121,208	(180,572)
Effective portion of cash flow hedges		(503,182)	62,853	1,015,103
Translation differences of the financial statements of foreign operations		343,702	84,418	540,442
Other comprehensive (loss)/income, net of tax		(418,889)	(585,214)	485,284
Total comprehensive income		911,085	998,993	10,833,271
Net profit attributable to:				
- Equity holders of the Company		734,435	1,579,836	8,520,427
- Non-controlling interests		595,539	4,371	1,827,560
		1,329,974	1,584,207	10,347,987
Total comprehensive income/(loss) attributable to:				
- Equity holders of the Company		340,101	1,023,118	9,005,227
- Non-controlling interests		570,984	(24,125)	1,828,044
		911,085	998,993	10,833,271
Earnings per share attributable to the shareholders of the Company (expressed in RMB per share)				
- Basic and diluted	35	0.03	0.10	0.56

Note:

(i) The Company and its subsidiaries have initially applied IFRS 15 and IFRS 9 at 1 January 2018. Under the transition methods chosen, comparative information is not restated. See Note 2(b).

(ii)

This amount arose under the accounting policies applicable prior to 1 January 2018. As part of the opening balance adjustments as at 1 January 2018 the balance of this reserve has been reclassified to fair value reserve (non-recycling) and will not be reclassified to profit or loss in any future periods. See Note 2(b)(i).

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Financial Position
As at 31 December 2018 and 2017
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	As at 31 December 2018	2017 (Note)
ASSETS			
Non-current assets			
Property, plant and equipment	7	282,061,272	284,328,093
Investments in associates and joint ventures	8	19,553,964	19,517,623
Investment property		232,554	217,406
Available-for-sale financial assets	10	—	1,604,993
Other equity instrument investments	10	2,083,419	—
Land use rights	11	11,450,034	11,264,785
Power generation licenses	12	4,014,972	3,916,246
Mining rights	13	1,511,186	1,646,271
Deferred income tax assets	32	2,282,585	2,300,091
Derivative financial assets	14	5,970	75,328
Goodwill	15	15,572,227	15,484,120
Other non-current assets	16	19,336,059	7,696,845
Total non-current assets		358,104,242	348,051,801
Current assets			
Inventories	17	9,543,691	7,385,411
Other receivables and assets	18	6,455,911	6,081,517
Accounts receivable	19	29,278,938	25,447,595
Contract assets	5(c)	11,058	—
Derivative financial assets	14	28,735	258,364
Bank balances and cash	36	15,832,788	9,364,823
Assets held for sale	20	647,948	-
Total current assets		61,799,069	48,537,710
Total assets		419,903,311	396,589,511

The accompanying notes are an integral part of these financial statements.
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Huaneng Power International, Inc.
Consolidated Statements of Financial Position (Continued)
As at 31 December 2018 and 2017
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	As at 31 December 2018	2017 (Note)
EQUITY AND LIABILITIES			
Capital and reserves attributable to equity holders of the Company			
Share capital	21	15,698,093	15,200,383
Other equity instruments	22	10,077,396	5,068,550
Capital surplus		26,194,931	24,114,400
Surplus reserves	23	8,140,030	8,140,030
Currency translation differences		(340,337)	(675,054)
Retained earnings		34,665,305	35,793,257
		94,435,418	87,641,566
Non-controlling interests		21,686,252	19,973,038
Total equity		116,121,670	107,614,604
Non-current liabilities			
Long-term loans	25	129,548,161	107,030,958
Long-term bonds	26	25,984,663	15,993,833
Deferred income tax liabilities	32	3,866,159	4,566,680
Derivative financial liabilities	14	231,308	148,486
Other non-current liabilities	27	5,945,136	5,284,462
Total non-current liabilities		165,575,427	133,024,419

The accompanying notes are an integral part of these financial statements.
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Huaneng Power International, Inc.
Consolidated Statements of Financial Position (Continued)
As at 31 December 2018 and 2017
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	As at 31 December 2018	2017 (Note)
EQUITY AND LIABILITIES (Continued)			
Current liabilities			
Accounts payable and other liabilities	28	35,138,680	38,900,132
Contract liabilities	5(c)	1,976,647	—
Taxes payable	29	1,474,437	1,302,210
Dividends payable		1,267,833	1,735,426
Derivative financial liabilities	14	313,984	62,178
Short-term bonds	30	11,541,454	11,068,357
Short-term loans	31	61,038,772	80,251,348
Current portion of long-term loans	25	20,620,849	18,098,458
Current portion of long-term bonds	26	3,993,479	3,997,033
Current portion of other non-current liabilities	27	475,646	535,346
Liabilities held for sale	20	364,433	-
Total current liabilities		138,206,214	155,950,488
Total liabilities		303,781,641	288,974,907
Total equity and liabilities		419,903,311	396,589,511

Note: The Company and its subsidiaries have initially applied IFRS 15 and IFRS 9 at 1 January 2018. Under the transition methods chosen, comparative information is not restated. See Note 2(b).

These financial statements were approved for issue by the Board of Directors on 19 March 2019 and were signed on its behalf.

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Changes in Equity
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Attributable to equity holders of the Company							
		Capital surplus						
	Share capital	Share premium	Hedging reserve	Available-for-sale financial assets revaluation reserve	Other capital reserve	Subtotal	Surplus reserve	Currency translation difference
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	(1,327,83
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	-	-
	-	-	574,455	-	-	574,455	-	-

Changes in fair value of effective portion of cash flow hedges - gross									
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 31	-	-	1,015,103	(1,070,261)	-	(55,158)	-	539,958	

December 2016								
Dividends relating to 2015	-	-	-	-	-	-	-	-
Net capital injection from non-controlling interests of subsidiaries	-	-	-	-	-	-	-	-
Balance as at 31 December 2016 (Note)	15,200,383	22,226,889	(24,084)	1,445,912	1,111,614	24,760,331	8,140,030	(787,881

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Changes in Equity (Continued)
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Attributable to equity holders of the Company								
			Capital surplus						
	Share capital	Other equity instruments	Share premium	Hedging reserve	Available-for-sale financial assets revaluation reserve	Other capital reserve	Subtotal	Surplus reserve	C tr d
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	-	-	-	-	162,858	-	162,858	-	-
Shares of other comprehensive income of investees –	-	-	-	-	(41,650)	-	(41,650)	-	-

accounted for under the equity method - tax									
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 income/(loss) for the year ended 31 December 2017	-	68,600	-	62,853	(732,398)	-	(669,545)	-	
Business combination	-	-	-	-	-	-	-	-	-
Issue of perpetual corporate bonds	-	4,999,950	-	-	-	-	-	-	-
Dividends relating to 2016	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-
Balance as at 31 December 2017 (Note)	15,200,383	5,068,550	22,250,503	38,769	713,514	1,111,614	24,114,400	8,140,030	(

Note: The Company and its subsidiaries have initially applied IFRS 15 and IFRS 9 at 1 January 2018. Under the transition methods chosen, comparative information is not restated. See Note 2(b).

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Changes in Equity (Continued)
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Attributable to equity holders of the Company								
			Capital surplus						
	Share capital	Other equity instruments	Share premium	Hedging reserve	Fair value Reserve (non-recycling)	Other reserve in other comprehensive income	Other capital reserve	Subtotal	Surpl reser
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	8,14
Impact on initial application of IFRS 9(Note 2(b)(i))	-	-	-	-	944,603	(574,657)	-	369,946	-
Balance as at 1 January 2018	15,200,383	5,068,550	22,250,503	38,769	944,603	138,857	1,111,614	24,484,346	8,14
Profit for the year ended 31 December 2018	-	342,349	-	-	-	-	-	-	-
Other comprehensive income/(loss):									
Fair value changes of other equity investment instruments - gross	-	-	-	-	1,412	-	-	1,412	-
Fair value changes of other equity investment instruments - tax	-	-	-	-	(353)	-	-	(353)	-
Shares of other comprehensive income of investees – accounted for under the equity method - gross	-	-	-	-	(25,144)	(323,220)	-	(348,364)	-
Shares of other comprehensive income of investees –	-	-	-	-	6,286	81,633	-	87,919	-

accounted for under the equity method - tax											
Changes in fair value of effective portion of cash flow hedges - gross	-	-	-	(127,265)	-	-	-	(127,265)	-		
Changes in fair value of effective portion of cash flow hedges - tax	-	-	-	21,264	-	-	-	21,264	-		
Cash flow hedges recorded in shareholders' equity reclassified to inventories - gross	-	-	-	(524,228)	-	-	-	(524,228)	-		
Cash flow hedges recorded in shareholders' equity reclassified to inventories - tax	-	-	-	89,119	-	-	-	89,119	-		
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net - gross	-	-	-	18,778	-	-	-	18,778	-		
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net - tax	-	-	-	(3,192)	-	-	-	(3,192)	-		
Cash flow hedges recorded in shareholders' equity reclassified to	-	-	-	68,604	-	-	-	68,604	-		

interest expense – gross									
Cash flow hedges recorded in shareholders' equity reclassified to interest expense – tax	-	-	-	(12,745)	-	-	-	(12,745)	-
Currency translation differences	-	-	-	-	-	-	-	-	-
Total comprehensive income/(loss) for the year ended 31 December 2018	-	342,349	-	(469,665)	(17,799)	(241,587)	-	(729,051)	-
Business combination (Note 41)	-	-	-	-	-	-	-	-	-
Issue of new A shares, net of issue expenses (Note 21)	497,710	-	2,747,620	-	-	-	-	2,747,620	-
Issue of other equity instruments (Note 22)	-	5,000,000	-	-	-	-	-	-	-
Dividends relating to 2017 (Note 24)	-	-	-	-	-	-	-	-	-
Cumulative distribution of other equity instruments (Note 24)	-	(333,503)	-	-	-	-	-	-	-
Net capital injection from non-controlling interests of subsidiaries	-	-	-	-	-	-	-	-	-
Acquisition of non-controlling interests of subsidiaries	-	-	(227,441)	-	-	-	-	(227,441)	-
Share of other capital reserve of investees accounted for under the equity	-	-	-	-	-	-	(80,543)	(80,543)	-

method									
Balance as at 31 December 2018	15,698,093	10,077,396	24,770,682	(430,896)	926,804	(102,730)	1,031,071	26,194,931	8,14

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Cash Flows
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	For the year ended 31 December 2018 RMB	2017 RMB (Note)	2016 RMB (Note)
CASH FLOWS FROM OPERATING ACTIVITIES				
Profit before income tax expense		1,973,147	2,801,733	13,813,138
Adjustments to reconcile profit before income tax expense to net cash provided by operating activities:				
Depreciation		20,466,423	20,180,830	14,815,620
Provision for impairment loss on property, plant and equipment		989,778	1,046,195	1,063,735
Provision for impairment loss on goodwill		409,371	-	-
Provision for impairment loss on mining rights		135,085	-	-
Provision for impairment loss on land use rights		-	108,590	51,981
Provision for other non-current assets		8,432	5,008	-
Amortization of land use rights		344,068	341,125	225,707
Amortization of other non-current assets		105,623	113,878	121,388
Amortization of employee housing subsidies		653	653	866
Recognition of provision for loss allowance		40,967	27,682	89,498
Recognition/(reversal) of provision for inventory obsolescence		253,816	(263)	(256)
(Gain)/loss on fair value changes of financial assets/liabilities		(726,843)	(856,786)	12,986
Other investment loss/(income)		278,669	(1,742,081)	(1,070,034)
Net (gain)/loss on disposals of non-current assets		(47,005)	616,456	590,049
Unrealized exchange loss/(gain), net		103,888	(157,056)	195,055
Share of profits less losses of associates and joint ventures		(1,823,415)	(425,215)	(1,298,889)
Interest income		(234,604)	(198,906)	(147,063)
Interest expense		10,486,412	9,749,004	6,817,526
Others		(198,046)	171,611	(213,089)
Changes in working capital, net of effects of acquisitions:				
Inventories		(1,996,075)	714,045	(1,270,582)
Other receivables and assets		(150,782)	(199,023)	(20,810)
Accounts receivable		(3,273,058)	(6,201,149)	(838,272)
Contract assets		(11,058)	—	—
Restricted cash		(347,777)	9,670	(11,566)
Accounts payable and other liabilities		349,703	2,414,376	1,912,034
Contract liabilities		471,721	—	—
Taxes payable		2,565,786	2,543,863	1,279,505
Interest received		173,986	136,134	84,806
Income tax expense paid		(1,620,887)	(2,003,011)	(4,692,509)
Net cash provided by operating activities		28,727,978	29,197,363	31,510,824

The accompanying notes are an integral part of these financial statements.
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Huaneng Power International, Inc.
Consolidated Statements of Cash Flows (Continued)
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	For the year ended 31 December 2018 RMB	2017 RMB (Note)	2016 RMB (Note)
CASH FLOWS FROM INVESTING ACTIVITIES				
Payment for the purchase of property, plant and equipment		(20,613,314)	(25,798,009)	(20,144,903)
Proceeds from disposal of property, plant and equipment, land use rights and other non-current assets		127,182	286,609	144,346
Prepayments of land use rights		(94,684)	(213,928)	(89,430)
Payment for the purchase of other non-current assets		30,107	(33,498)	(50,653)
Cash dividends received		618,592	1,419,380	1,057,642
Payment for investment in associates and joint ventures		(463,259)	(301,916)	(276,118)
Cash paid for acquiring available-for-sale financial assets		—	(5,600)	-
Cash paid for acquiring other equity instrument investments		(450)	—	—
Cash consideration paid for acquisition of subsidiaries, net of cash acquired	41	(674,845)	(10,817,107)	157,421
Cash received from disposal of a subsidiary, net of cash of the subsidiaries		-	530,437	-
Cash received from disposal of available-for-sale financial assets		—	2,186,758	1,474,301
Others		694,789	998,049	77,748
Net cash used in investing activities		(20,375,882)	(31,748,825)	(17,649,646)

The accompanying notes are an integral part of these financial statements.

Huaneng Power International, Inc.
Consolidated Statements of Cash Flows (Continued)
For the years ended 31 December 2018, 2017 and 2016
(Prepared in accordance with International Financial Reporting Standards)
(Amounts expressed in thousands of RMB)

	Note	For the year ended 31 December 2018 RMB	2017 RMB (Note)	2016 RMB (Note)
CASH FLOWS FROM FINANCING ACTIVITIES				
Issuance of short-term bonds		40,000,000	30,988,679	32,982,340
Repayments of short-term bonds		(39,500,000)	(47,000,000)	(25,000,000)
Proceeds from short-term loans		77,005,025	107,564,128	85,689,874
Repayments of short-term loans		(98,345,708)	(96,378,054)	(77,904,489)
Proceeds from long-term loans		48,859,376	32,706,327	15,978,023
Repayments of long-term loans		(34,269,623)	(17,390,982)	(20,702,421)
Issuance of long-term bonds		13,999,807	7,800,000	4,200,000
Repayments of long-term bonds		(4,000,000)	(3,300,000)	(11,500,000)
Interest paid		(10,987,871)	(10,080,102)	(7,344,781)
Net proceeds from the issuance of new shares		3,245,330	-	-
Net proceeds from the issuance of other equity instruments		5,000,000	4,999,950	-
Net capital injection from non-controlling interests of subsidiaries		725,683	838,084	285,620
Dividends paid to shareholders of the Company		(1,520,038)	(4,352,973)	(7,206,220)
Dividends paid to non-controlling interests of subsidiaries		(1,265,451)	(2,184,145)	(2,695,378)
Government grants		-	590,629	233,276
Payment for finance leasing		(637,026)	(695,019)	(571,485)
Others		(552,574)	(93,342)	(46,209)
Net cash (used in)/generated from financing activities		(2,243,070)	4,013,180	(13,601,850)
Effect of exchange rate fluctuations on cash held		26,266	10,171	72,923
NET INCREASE IN CASH AND CASH EQUIVALENTS		6,135,292	1,471,889	332,251
Cash and cash equivalents as at beginning of the year		9,282,390	7,810,501	7,478,250