

2015 Sustainability Report



About This Report

• Reporting Period

Jan. 01, 2015-Dec. 31, 2015. This report also includes additional content and information that pre-dates the stated reporting period.

• Reporting Cycle

Our report is annually published around the month of June;
This edition is the tenth report released since 2006.

• Main Contents

This report outlines our intentions, actions and performance in 2015 on economic, environmental, and social issues;

It includes information, data and typical cases from the Company's relevant documents, statements and its grassroots-level enterprises.

• Compilation Conformance

Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 3.0);

The Sustainability Reporting Guidelines (G4) from the Global Reporting Initiative (GRI);

ISO 26000: Guidance on Social Responsibility (2010);

Guidelines on Social Responsibilities of Chinese Industrial Enterprises and Industrial Associations.

• References to China Huaneng Group

In this report, "Huaneng Group", "Huaneng", "CHNG", "the Company" and "we" refer to the "China Huaneng Group".

• Online Access to the Report

The report is prepared and released in Chinese and English. For more information, please go to our website: <http://www.chng.com.cn>.

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Declaration on Sustainable Development

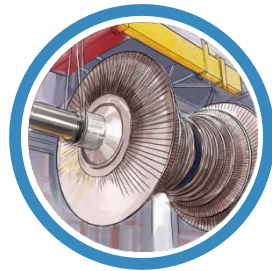
- ◆ Persist in serving national interests and development strategies, so as to set an example in promoting economic and social development in all respects.
- ◆ Persist in scientific development and technological innovation, so as to set an example in building a resource-conserving and environmentally-friendly society.
- ◆ Persist in pursuing operational performance in a rational way, so as to set an example in promoting harmony between enterprises and society.
- ◆ Persist in relying on employees and working with the public to develop the enterprise so as to set an example in putting people first and sharing benefits.
- ◆ Persist in contributing to society and benefiting the people, so as to set an example in practicing social ethics.

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Message from the Company Leaders



Cao Peixi

President of China Huaneng Group and Vice Secretary of the CPC Huaneng Committee

State-owned enterprises are the backbone of the national economic development, shouldering significant responsibilities in the journey of building a well-off society. As an important national backbone enterprise primarily engaged in power generation, and since the "Twelfth Five-Year Plan", China Huaneng Group has persevered in our objective of building an internationally competitive company focusing on better development quality and benefit and faster industrial transformation and upgrading, as well as scientific mastering of the regulation of market economy and general law of corporate growth, accelerated the transformation of development pattern, and promoted a stronger, better and bigger enterprise. Consequently, we have stepped forward firmly towards building a world-class enterprise with international competitiveness. At the end of 2015, the Company's wholly-owned and holding installed capacity exceeded 160GW, with its comprehensive strength entering into the world's advanced level; achieved outstanding results in the restructuring, including multiplied installed capacity of low-carbon clean energy which was a sharp increase in the proportion of installed gross capacity, and significantly optimized power sources structure, industrial structure, and regional layout; greatly improved the levels for saving and producing clean energies, with the specific coal consumption and station service power consumption rate keeping industrial advanced level and emission performance of major pollutants keeping industrial leading level; markedly enhanced its profitability, reaching a record level; continuously strengthened the ability for Party building and team building, etc., which provided a solid foundation for healthy and harmonious development of the Company.



Huang Yongda

Secretary of the CPC Huaneng Committee and Vice President of China Huaneng Group

Glancing at the performance of Huaneng during the Twelfth Five-Year Plan Period, we deeply feel that we must unswervingly adhere to and strengthen the leadership of the Party in state-owned enterprises and keep highly consistent with the CPC Central Committee in thoughts and actions, in order to promote enterprise sustainable development. We must unswervingly implement the Company's overall requirements in recent years, strive to create new advantages and make new breakthroughs, and keep improving profitability, competitiveness and sustainability. We must also promote a stronger, better and bigger Company; unswervingly promote reform and innovation, give impetus for enterprise sustainable development and unswervingly agglomerate mental efforts to stimulate the enthusiasm, initiative and creativity of all employees to build a world-class enterprise.

At present, China's economic development enters into a new normal, with intertwined difficulties in economic growth adjustment, restructuring and conversion of driving force. Power generation enterprises are faced with profound changes in the external environment.

President Xi Jinping stresses that the implementation of the five development concepts is a profound change in our country's overall development, and leading the transformation of development modes by the transformation of development concepts and promoting development quality and benefit by the transformation of development modes are the important policy we must adopt in the long-term development of the national economic and social development, as well as the important rule for Huaneng in promoting sustainable development in the new situation.

Electricity market supply-demand imbalance is increasingly outstanding, and the market competition continues to intensify. Construction of ecologically civilized society and the resource and environment constraints urge the Company to further speed up restructuring and transformation and upgrading. The state-owned enterprises constantly deepen the reform, and comprehensively promotes power regime reform, which have higher requirements for solving the outstanding problems, making up for all kinds of disadvantages, and promoting the Company's scientific and sustainable development at the new starting point.

The Fifth Plenum of the 18th CPC Central Committee pointed out that we must firmly establish and implement the concepts of innovated, coordinated, green, open, and shared development, in order to realize the development objectives during the Thirteenth Five-Year Plan period, solve development problems and strengthen development advantages. President Xi Jinping stresses that the implementation of the five development concepts is a profound change in our country's overall development, and leading the transformation of development modes by the transformation of development concepts and promoting development quality and benefit by the transformation of development modes are the scientific understanding of the Party and nation about development rule and theory, a major strategic decision to follow the trend of the times and grasp the development opportunity, as well as the important policy we must adopt in the long-term development of the national economic and social development, and the important rule for Huaneng in promoting sustainable development in the new situation.

In the face of the new normal, new reform requirements and new market changes, we'll earnestly implement the guiding principles of the Eighteenth National Congress of the Communist Party of China and the Third, Fourth and Fifth Plenary Sessions of 18th CPC Central Committee, study and implement the spirit of the important speeches of President Xi Jinping, strive to improve profitability, competitiveness and sustainable development capabilities focusing on improvement of development quality and benefit, adhere to the objective of building a world-class enterprise with international competitiveness in accordance with the requirements for "five-in-one" overall layout and "four comprehensive" strategic layout and the enterprise's actual condition, and try to establish a new mechanism with focus on the improvement of core competitiveness in management, clients in operations, and market demands in development.

We'll promote innovative development, deepen enterprise reform, perfect system and mechanism, promote technological progress, and lead the development by relying on innovation. We'll promote coordinated development, strengthen problem-oriented principle, strive to make up for the weakness, and promote balanced development in all aspects. We'll promote green development, further implement the *Action Plans on Green Development*, intensify low-carbon clean energy development, and continuously enhance the level of energy conservation and production based on environmental protection. We'll promote open development, make full use of international and domestic markets and resources, and promote the Company to "go global". We'll promote shared development, be responsible for the society and stakeholders, share the development achievements, and create a good internal and external environment.

Responsibility creates bright future. We will always adhere to the mission of "three-color Company", seriously implement the five development concepts, and grasp the development opportunity. We will strengthen the development advantages, continue to be a stronger and better and bigger enterprise, and strengthen management and promote development. While joining hands with stakeholders for the protection of national energy security and promotion of energy revolution, we will be committed to being a responsible corporate citizen and the practitioner and promoter of sustainable development, and making efforts to create economic, social and environmental values. By doing so, we will make new and greater contributions towards the Chinese Dream.

June, 2016



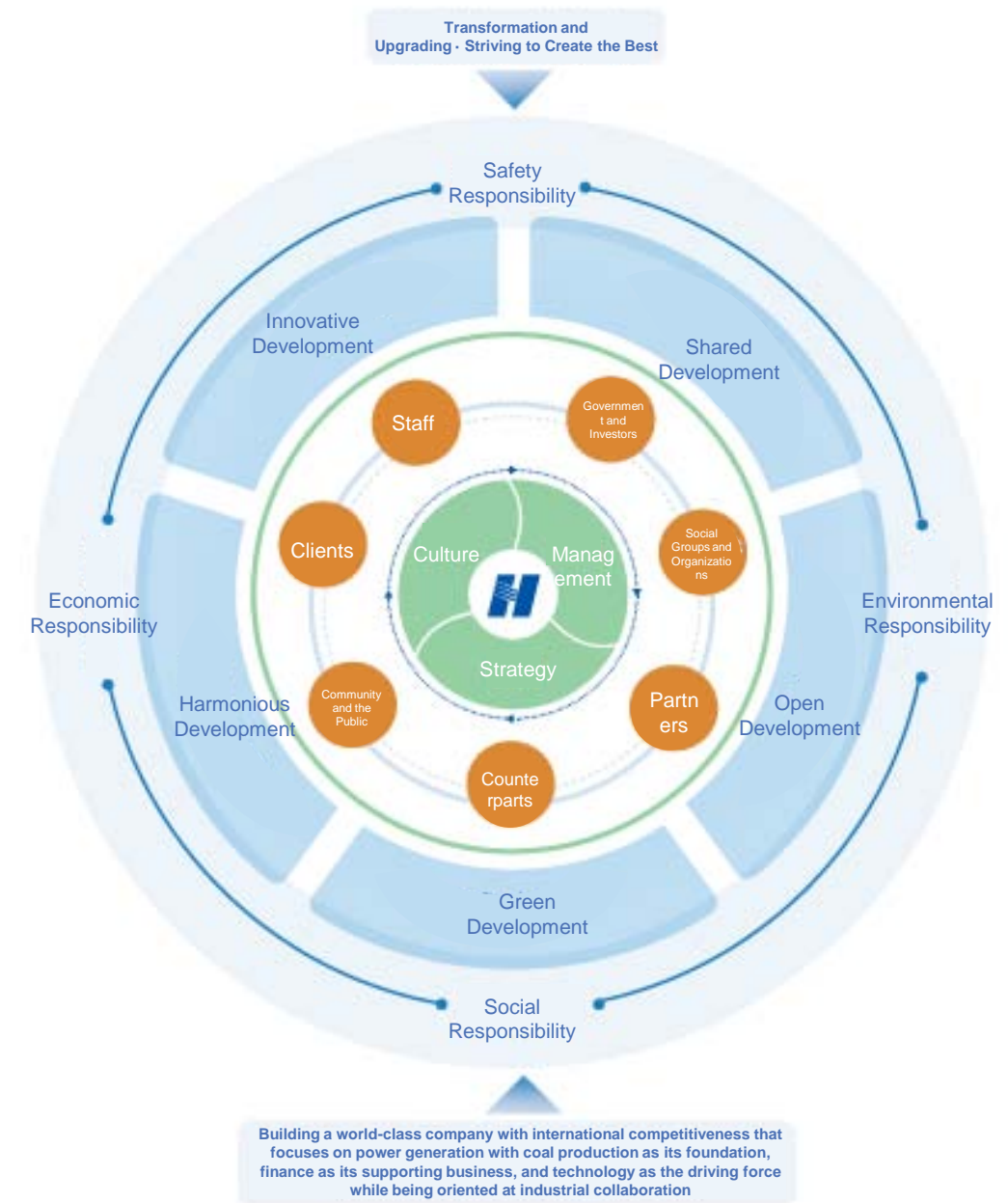
Management Team



Cao Peixi, President of CHNG and Vice Secretary of the CPC Huaneng Committee	(third from left in the front row)	Sun Zhiyong, Vice President of CHNG and Member of the CPC Huaneng Committee	(second from left in the back row)
Huang Yongda, Secretary of the CPC Huaneng Committee and Vice President of CHNG	(third from right in the front row)	Zhao Jianming, Member of the CPC Huaneng Committee and Discipline Inspection Group Leader	(second from right in the back row)
Zhang Tingke, Vice President of CHNG and Member of the CPC Huaneng Committee	(second from left in the front row)	Ye Xiangdong, Vice President of CHNG and Member of the CPC Huaneng Committee	(first from left in the back row)
Guo Junming, Chief Accountant of CHNG and Member of the CPC Huaneng Committee	(second from right in the front row)	Liu Wencheng, Chief Economist of CHNG	(first from right in the back row)
Kou Wei, Vice President of CHNG and Member of the CPC Huaneng Committee	(first from left in the front row)		
Liu Guoyue, Vice President of CHNG and Member of the CPC Huaneng Committee	(first from right in the front row)		



Sustainable Development Mode





Key Performance

Safety Responsibility Performance	2011	2012	2013	2014	2015
Major equipment accident (times)	0	0	0	0	0
Ordinary equipment accident (times)	6	1	3	2	2
Casualty-causing accident (times)	1	1	2*	6*	3*
First class equipment failure (times)	62	52	55	40	23
Unplanned outages (times)	91	89	86	71	63
Equipment utilization ratios (%)	94.17	94.46	94.58	94.52	94.35

Economic Responsibility Performance	2011	2012	2013	2014	2015
Installed capacity (10MW)	12538	13508	14224	15149	16063
Including: Hydropower (10MW)	1133	1417	1835	2045	2089
Thermal power (10MW)	10672	11235	11356	11867	12348
Wind power (10MW)	726	848	973	1151	1508
Solar PV (10MW)	6	8	60	85	117
Power output (100GWh)	6046	6092	6493	6461	6146
Coal production capacity (10 thousand tons/year)	6817	7817	8464	8660	8330
Coal output (10 thousand tons/year)	6406	6858	7156	7418	6515
Total assets (100 million Yuan)	7532	7950	8552	9282	9719
Total revenue (100 million Yuan)	2682	2798	2932	2921	2682
Tax paid (100 million Yuan)	196	261	328	332	357
Total profit (100 million Yuan)	61	140	236	268	306
Performance evaluation by SASAC (Grade)	A	A	A	A	A

Environmental Responsibility Performance	2011	2012	2013	2014	2015
Low-carbon clean energy installed capacity (10MW)	2397	2830	3504	4100	4619
Proportion of low-carbon clean energy (%)	19.12	20.95	24.64	27.10	28.80
Specific coal consumption (g/kWh)	318.68	316.52	312.89	310.00	305.78
Station service power consumption rate (%)	5.08	4.83	4.59	4.40	4.24
Slag and ash utilization rate (%)	76.34	77.08	78.14	79.50	77.62
Water consumption per unit power generated (kg/kWh)	1.28	1.25	1.22	1.15	1.04
Total number of technicians (People)	1170	2017	2202	2325	1977
Number of experts from Recruitment Program of Global Experts (People)	6	7	8	7	7
National patents (items)	45	96	83	166	306
Including: Patent for invention (items)	22	28	29	27	64
Scientific achievement award at or above provincial level (items)	9	9	20	10	21

Social Responsibility Performance	2011	2012	2013	2014	2015
Number of staff (People)	133270	136510	137779	139780	140989
Number of female staff (People)	31384	32636	32696	35047	33537
Signing rate of labor contracts (%)	100	100	100	100	100
Signing rate of collective contracts (%)	100	100	100	100	100
Rate of participation in the Labor Union (%)	100	100	100	100	100
Rate of physical examinations (%)	100	100	100	100	100
Donations (10,000 Yuan)	4603	7439	11425	8188	6519.5
Number of volunteers among employees (person-times)	43500	51000	63800	71700	76500

(Note: "-" means no statistics of that year, "*" means the data from coal business sector is included.)

Sustainable Development of China Huaneng Group During the Twelfth Five-Year Plan Period

Since the "Twelfth Five-Year Plan", we have striven to build a world-class enterprise with international competitiveness, emphasized more the transformation of development mode, the improvement of development quality and benefit, and accelerated transformation and upgrading, and restructuring. We have created new development advantages and made efforts to strengthen the Company. We have achieved connotative development, and sustainable development, and thus completed the objectives of the Twelfth Five-Year Plan.



Haimen Power Plant

Comprehensive Strength Towards Excellence

The total installed capacity reached

160 GW

Installed capacity of low-carbon and clean energy reached

46 GW

Proportion of low-carbon installed capacity

28.8 %

- ◆ **World's largest installed capacity** The installed capacity has reached 160GW, 1.4 times that of 2010, of which the installed capacity of hydropower, wind power, and solar power numbered 20.89GW, 15.08GW, and 1.17GW respectively.
- ◆ **Supreme performance in a number of indicators** During the 11th five-year plan, the cumulative power generation attained 3100TWh and the consolidated revenue and profit hit the record high, representing 1.6 times, 1.8 times and 3.5 times those of the previous five years respectively.
- ◆ **Dramatic growth in total assets** The total assets stood at 971.9 billion yuan during the 12th Five-Year Plan (FYP) period, an increase of 309.5 billion yuan from the 2010 level. The five-year cumulative contribution to national tax revenue registered 147.4 billion yuan, up by 100.9% compared with the 11th five-year plan.

Constant Structural Optimization

Total assets

971.9 billion Yuan

Accumulative power generation during the "Twelfth Five-Year Plan" period

3100 TWh

- ◆ **Substantial increase in installed capacity of low-carbon clean energy** The installed capacity of clean energy has expanded by 11% to 46.19GW over the five years.
- ◆ **All-round optimization of development network** The energy bases and large-scale hydropower projects have achieved full coverage of the domestic 31 provinces, with overseas installed capacity in 8 countries on 4 continents.
- ◆ **Continued restructuring of thermal power plants** Up to 73% of the thermal power units are CHP, supercritical, and ultra-supercritical units.
- ◆ **Steady development of collaborative industries** The total assets in trust and under management and the total profits of the financial business became 5.6 times and 3.3 times that of 2010 respectively. The technology business has generated profits 4.5 times that of 2010.

Continued Good Business Performance

- ◆ **The third term (2010-2012)** During the term, performance was evaluated by the SASAC as Grade A, and annual performance was evaluated as Grade A in 2010, 2011 and 2012.
- ◆ **The fourth term (2013-2015)** Annual performance was evaluated as Grade A in 2013 and 2014; the first prize of Outstanding Contribution Award in 2014 Economic Benefits; the advanced unit of evaluation of business performance of central enterprises in 2015.

Energy Conservation and Environmental Protection Reaching a New Stage

- ◆ **Increased investment in retrofit** The five-year investment in retrofit totaled 34.7 billion yuan, supporting all thermal power units to achieve emissions standards.
- ◆ **Improved performance in energy efficiency** The coal consumption for power supply declined by 16.94 g/kWh and station service power consumption rate by 0.98%. Industry leading performance is also seen in the coal consumption for power supply by coal-fired units and six main types of generating units.
- ◆ **Reduced total emissions** In 2015, the sulfur dioxide, nitrogen oxides and soot emissions fell by 71%, 83% and 69% from the 2010 levels respectively, maintaining the industry leading performance.

Specific coal consumption decreased for five years by

16.94 g/kWh

Station service power consumption rate decreased for five years by

0.98 %

Compared with 2010, the emission of pollutants achieved decrease

The emission of SO₂ dropped by

71 %

The emission of NO_x dropped by

83 %

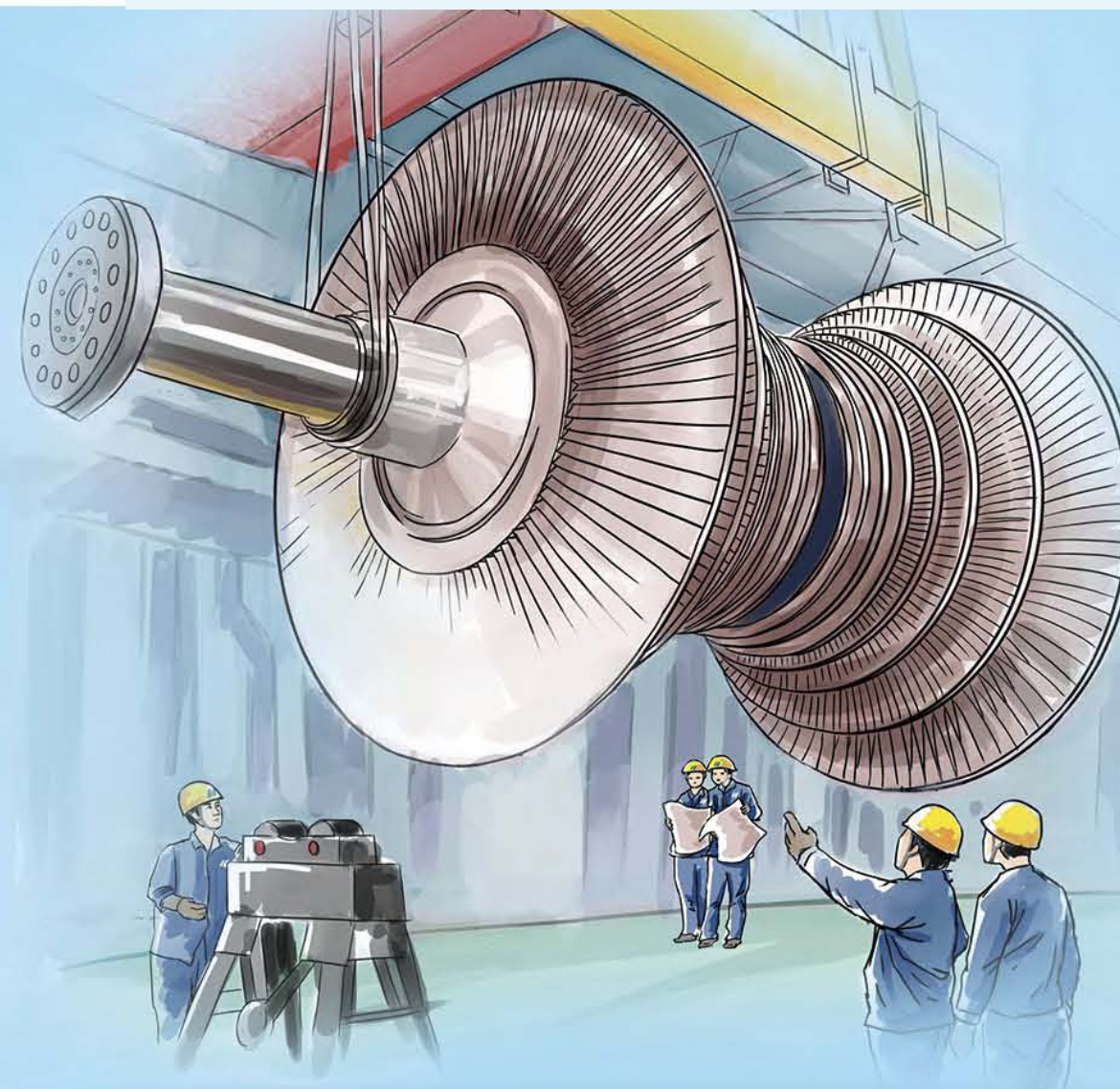
The emission of dusts dropped by

69 %

01 Innovative Development

Innovative Development Stories in 2015

Huaneng is the product of reform and development. During the development process of more than 30 years, Huaneng has striven to be better and continuously innovated to grow stronger. Huaneng has created many "No. 1" in the development process of China's power industry. Continuous innovation has become Huaneng's gene, flowing in the blood of Huaneng. It is a source of vitality and driving force for the Company to maintain competitive and grow stronger.



Innovative Development Stories in 2015

Technology Breakthrough on Double Reheat

There are always technological summits in the power generation industry to be climbed with dauntless courage, the double reheat technology of thermal power plants being one of them. The technology under the same steam pressure and temperature conditions enables the heat efficiency to be 2% higher than that of single reheat units, corresponding CO₂ emission reduced by about 3.6%, giving prominence to energy saving and emission reduction benefits. The double reheat technology has many technical advantages, but it also has complexity and particularity which cannot be matched by other technologies. However, staff of Huaneng challenge the technology with fearless innovation.

Patent
licensing

306 Items

Provincial science
and technology
achievements

21 Items

ERP coverage
rate

Above 90 %

Brave to take on heavy responsibilities and dare to be the first

Since its establishment, Huaneng has always regarded national demands as its own duty, been dedicated to scientific and technical innovation, and constantly striven for efficient and clean utilization of coal-fired power. Huaneng has actively explored new power generation technologies to promote innovation of China's large clean and efficient coal power technologies, and promote progress in China's equipment manufacturing technologies. In 2012, we decided to build 600MW and 1000MW scale ultra-supercritical double reheat power generation units in Anyuan Power Plant and Laiwu Power Plant, through thorough preliminary studies and scientific decision-making. With concerted efforts, we certainly will reach the heights of technology in the power industry.

Be bold and innovative to tackle tough challenges

As it is the first double reheat power generation unit in China without experience for reference, the most common problems in the construction of conventional thermal power plant will become large problems in the construction of the double reheat unit. Each step is beset by difficulties. We have set up a leading group for researches of the double reheat application technology, mobilized scientific research strength, established 10 research groups at different stages in combination with equipment manufacturing, commissioning and other aspects, and carried out researches on key technical issues, providing technical guarantee for the construction of the unit as well as safe and steady operation.

In the face of problems and challenges, staff of Huaneng have solved the key technical issues on dynamic response analysis, steam temperature control and coordinated control strategy of the double reheat unit, and its environmental emission optimization during the construction and commissioning by meticulous practice and bold innovation, with perseverance and courage to scale new heights regardless of difficulties, thus mastered the key technology with proprietary intellectual property rights.

No. 2 Unit of Anyuan Power Plant

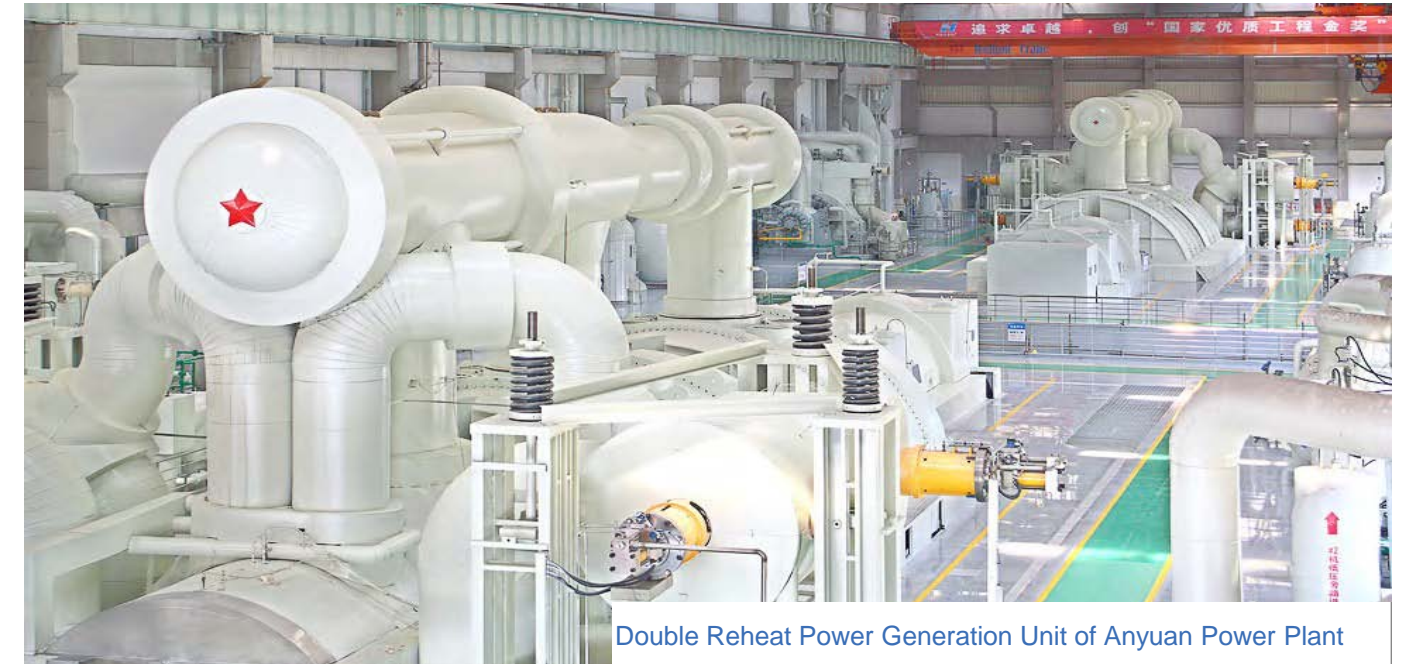
Average coal consumption for power supply
272.66 g/Kwh

Station service power consumption rate
3.57 %

No. 6 Unit of Laiwu Power Plant

Coal consumption for designed power supply
266.75 g/Kwh

Station service power consumption rate
3.97 %



Double Reheat Power Generation Unit of Anyuan Power Plant

Technology Achievements of Huaneng

After nearly three years of efforts, staff of Huaneng finally gave the world a satisfactory answer by getting over so many difficulties. No. 1 Unit of Anyuan Power Plant was put into operation on June 27, 2015. Key points of installation and commissioning of the unit succeeded at the first time. No. 2 Unit was completed and put into operation on August 24. During the test run, the main economic and technical indicators of the units reached the domestically leading level, with the average coal consumption for power supply of 272.66 g/Kwh and the station service power consumption rate of only 3.57%, and the emission index of the units was highly evaluated by the provincial and municipal environmental protection departments.

The completion of commissioning of No. 2 Unit (660MW) of Huaneng Anyuan Power Plant marks the completion of China's first ultra-supercritical power plant with double reheat. The two historical moments - June 27 and August 24 will be written into the annals of history of China's power industry.

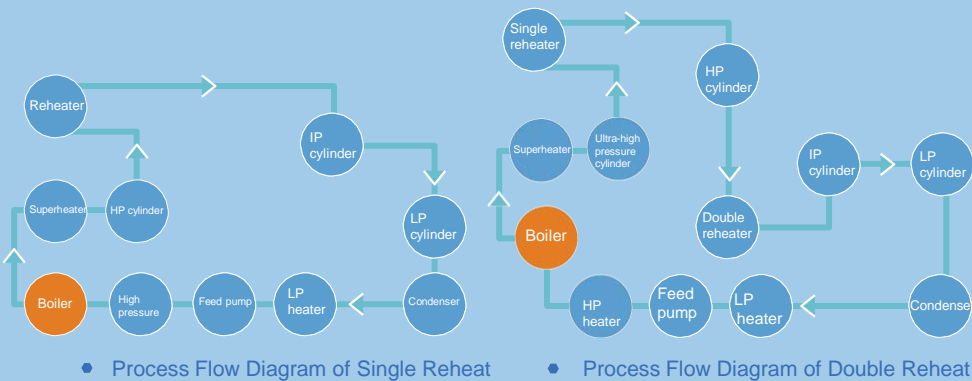
No. 6 Unit of Huaneng Laiwu Power Plant completed 168h full-load test run on December 24, marking the commercial operation of the first 1000MW class ultra-supercritical unit with double reheat within China Huaneng Group and Shandong Province.

The unit adopts the world's most advanced double reheat technology to improve the operating efficiency mainly by increasing times of thermodynamic cycle. According to the design data, the generating efficiency of the unit is 47.95%, about 2.2% higher than the average efficiency of conventional 1000 MW units;

the designed coal consumption for power generation of the unit is 256.16 g/Kwh, 14.1 g/Kwh lower than that of the conventional 1000 MW units. The unit is currently of the highest efficiency, lowest energy consumption and optimal indicators among the thermal power generating units. Operation of dust removal, desulfurization and denitration environmental protection facilities is synchronized with that of main works, and SO₂, NO_x and soot emission concentration is better than the ultra-low emission limit in Shandong Province.

With the successful construction of double reheat units, Huaneng leads again the power generation technologies through scientific and technological innovation, making new contributions to improving the sustainable development level of conventional thermal power generation.

The double reheat technology represents the world's leading power generation technology and is the effective way to improve thermal efficiency of thermal power generating units. Conventional power units adopt single reheat of steam, which means exhaust steam from steam turbine's HP cylinder is sent into the boiler reheater for re-heating, and then sent back to the IP and LP cylinders of steam turbine for work.



The reheat technology can improve power capability of steam by improving steam dryness and enthalpy value during expansion process, and this is also the purpose of adding the second reheat. With the double reheat system, steam can be sent back to the single reheater and double reheater of the boiler for re-heating after working in the ultra-high pressure cylinder and the LP cylinder. Compared with the single reheat system, the boiler with double reheat system has more technical difficulties in energy distribution and temperature control, and the steam turbine is added with one ultra-high pressure cylinder, which means there is one more set of main throttle valve and steam regulating valve used for coordinated control.





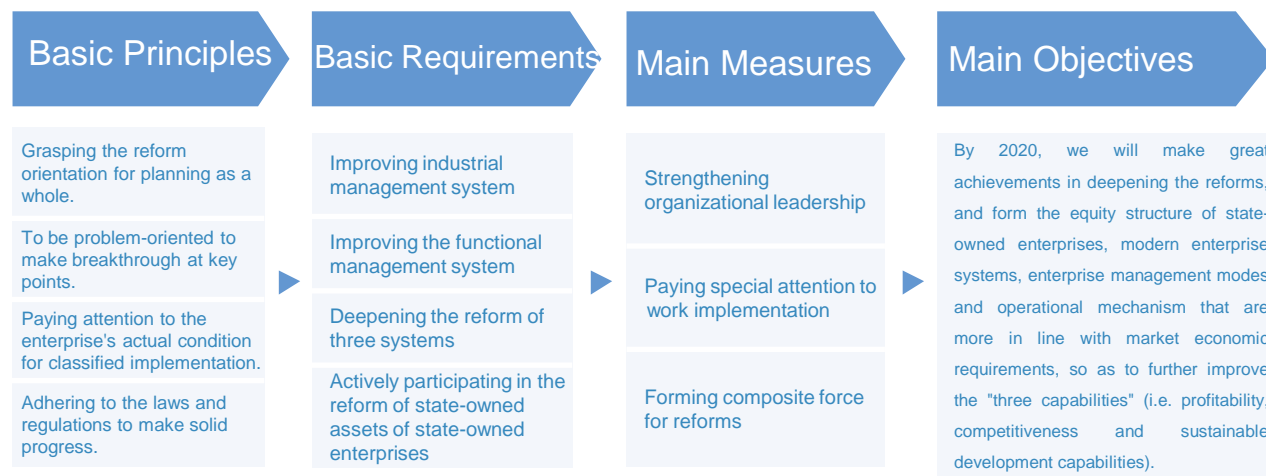
Promoting Reform and Innovation

Taking deepening reforms as a strong driving force for scientific development, we took overall consideration of various reforms, improved the efficiency of resource allocation, stimulated the enterprise's vitality and enhanced profitability, competitiveness and sustainable development capabilities.

Strengthening the top-level design

We seriously implemented the *Guidance of the CPC Central Committee and State Council on Deepening the Reform of State-owned Enterprises*, and planned enterprise reforms based on the strategy and the overall situation. We strengthened the top-level design, set up the leading group and 7 special groups for comprehensively deepening reforms, and developed the *Guidance on Comprehensively Deepening Reforms*, to be clear of reform objectives, principles and 26 concrete measures by 2020, so as to promote steady reforms.

Blueprint of Comprehensively Deepening Reform



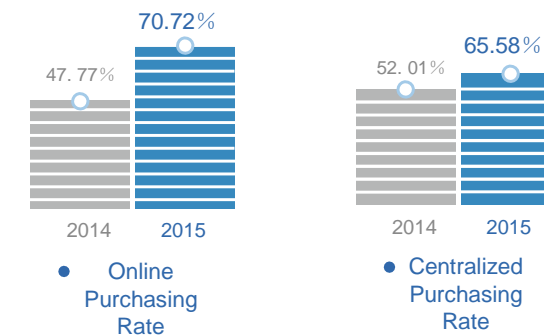
Improving the system and mechanism

- We further perfected the three-tier management system involving the headquarters, industrial companies (regional companies), and grassroots-level enterprises. We promoted the construction of regional companies, specified establishment principle, form, responsibilities, organization establishment, management system and implementation steps, and determined functions in a rational manner. We further adjusted and optimized management relationship.
- We set up and perfected systems and mechanisms in such aspects as comprehensive budget management, performance management, funds central management, total risk management, international development management, informatization management, and soft science research management.
- We adjusted and optimized the establishment and management functions of departments of the headquarters, revised and perfected duties of departments, and further clarified the division of responsibilities and management interfaces. The functions of the Engineering Department of Headquarters and the Engineering Department of Huaneng Power International Inc. have been combined, while Huaneng Finance Co., Ltd. and Huaneng Tendering Co., Ltd. have been separated as secondary subsidiaries.
- We perfected the management relationship in Gansu, Shaanxi, Qinghai, Xinjiang, Hainan, Liaoning (nuclear power), eastern Yunnan, upstream of the Lancang River and other regions, and tried out intensive reforms in new energy project areas to constantly improve the intensive management ability.



Reforming professional management

- We perfected the professional management system. We promoted reforms in such industrial fields as new energy, coal, nuclear power, "Three Gases" (i.e. Shale Gas, Coalbed Methane and Coal Gasification), and finance, and such functional areas as fuel, materials, engineering, maintenance, marketing, science and technology, internalization, and informatization to improve professional, intensive and refinement levels of relevant industrial fields and functional areas.
- We deepened the reform of the material management system. We set up the Materials Department, strengthened the top-level design of purchasing and material management, established new centralized management system for purchasing and the mechanism of "two-level centralized purchasing and three-level management", and formulated 24 systems, including the *Material Management Regulations* and *Purchasing Supervision and Management Regulations*. We developed functions of the material management platform, enlarged the coverage of tendering agency, and intensified the adjustment and disposal of unused materials.
- We promoted the reform of the marketing system. We actively built the new "Megamarketing" management mode, gave play to the dominant role of regional marketing, and carried out trial reforms of marketing in six areas. We set up sales companies at the provincial level, and actively researched and entered the electricity distribution and sales field.
- We actively adapted to marketization and internationalization, and explored to develop mixed ownership economy in 10 secondary units such as HIPDC, HPI and Huaneng Renewables Corporation, and some grassroots-level enterprises by means of IPO and introduction of private capital and foreign capital.



System reform boosting corporate development

Huaneng Shandong Power Generation Co., Ltd. actively carried out system reform, established the fuel, maintenance, information and marketing subsidiaries, and promoted the intensive reform and professional management. It intensified marketing system reform, deepened the enterprise informatization construction and online management, and continued to eliminate losses and increase profits, operate capital, and manage heating, multi-business and wind power management, the reform and innovation being the powerful driving force for the enterprise production, management and development, and strengthened the enterprise informatization construction. It realized a complete coverage of online management, comprehensively promoted maintenance standardization, and firstly launched and ran the fuel bidding system in the Company. It actively promoted unified e-commerce platform construction. It strengthened the material bidding and purchasing management, with the centralized bidding and purchasing rate up to 95%, reaching the evaluation objective issued by SASAC three years ahead of schedule.





Promoting Management Innovation

We fully focused on benchmarking the world-leading enterprises, deepened the construction of the world's first-class enterprise, perfected construction of management system, constantly carried out management activities, and promoted management creativity and practice, so as to enhance the scientific and standardized level of management.

Promoting creation of the first-class enterprise

- ◆ We adhered to leading overall work with the aim to create a world's first-class enterprise, established and perfected normalized and long-term working system for creating the world's first-class enterprise, vigorously promoted scientific development, and finished the objectives during the Twelfth Five-Year Plan period in creating the first-class enterprise.
- ◆ We prepared the 2014 Comprehensive Analysis Report of Progress in Indicators of Creating the First-class Enterprise, strengthened the tracking analysis of overall progress in creating the first-class enterprise, and strengthened comprehensive analysis and put forward improvement suggestions for problems reflected by indicators.
- ◆ We adhered to the problem-oriented principle, prepared the *2015 Plan of Key Measures for Management Improvement* according to the analysis, paid special attention to the correction implementation, strengthened tracking inspection, and continued to promote normalization of creating the first-class enterprise and management improvement.
- ◆ We prepared the Company's Thirteenth Five-Year Planning for creating the first-class enterprise, and completed benchmarking evaluation of the Twelfth Five-Year Plan and optimization and adjustment of the indicator system for creating the first-class enterprise, etc.
- ◆ We strengthened the publicity and implementation of creating the first-class enterprise and management improvement of grassroots-level enterprises, carried out the special training for post management ability of the Company's team leader, and promoted creation of the first-class enterprise to go to the grassroots and to obtain actual effect.

Perfecting rules and regulations

We strengthened and deepened the system construction, established and improved the review and cancellation, modification, and establishment management mechanism of various rules and regulations on a regular basis, and promoted the system construction and implementation.



Taking the inspection corrections as the driving force, we comprehensively strengthened system construction in such fields as the Company's collective decision-making systems management, management of bidding and tendering and capital management, and strictly implemented the systems and plugged loopholes in management. In 2015, the headquarters formulated 55 new systems and revised 59 systems. Rigid constraints on the system implementation were significantly strengthened.



We completed a compilation of systems in 2014, issued the *Compilation of Management Systems of China Huaneng Group*, prepared and issued the *2015 System Construction Plan of China Huaneng Group*, and the *Notice on Review Results of Some Management Systems*.



We deepened the work of managing enterprises according to law, developed the 5-year planning of the Company's law affairs, promoted the specialization and professionalization of General Counsel and the construction of internal control systems, and completed internal control evaluation of 171 units. We strengthened internal audit supervision, established the audit information system, improved the audit closed-loop management mechanism, and carried out the "looking back" for audit correction, with the correction completion rate above 96%.



Promoting innovative practice

We carried out soft science research on the reform policies of the country and the Company's production and operation and other key issues, and accelerated the construction of "Digital Huaneng". We deepened the innovative practice, promoted innovation achievements, and facilitated the creation of the first-class enterprise and management improvement.

- ◆ **Strengthening innovation research** We actively carried out financial centralized and shared work researches, promoted research on strategic subjects in value financial management ("VCF" management) with the cost as the core, and explored the feasibility study on the construction of shared services of large enterprise groups. We planned the construction implementation, and promoted transformation and upgrading of the financial management and management improvement.
- ◆ **Speeding up the construction of "Digital Huaneng"** The online management system was expanded to the secondary units; the ERP coverage rate reached above 90%; the e-commerce platform covered all industrial sectors. We promoted the development of financial, engineering, legal and other information systems. The Temporary Disaster Preparation Center in Beijing and Shandong was launched and operated.
- ◆ **Promoting innovation achievements** We carried out review and selection activities for achievements within the Company, and achieved 30 outstanding achievements. We also organized and participated in the national review of the innovation achievements. There were 19 management achievements winning the management innovation award in the power sector, 4 achievements winning the First Chinese Power Innovation Award, and 6 achievements winning modern innovation achievement award for national enterprise management, which ranked top in the industry.

Management Innovation Achievements in the Power Industry

19 items

National Management Innovation Achievements

6 items

"Operation Center" of HPI Built and Operated, The Integrated Platform Improving Management



HPI attached great importance to the informatization construction. Since 2002, HPI has completed the information system construction of the production real-time supervisory system, the e-commerce platform system, the digital dynamic management system of fuel process, the human resource management system, and the integrated system of assets and finance, and successfully connected various business processes effectively, forming an integrated working platform.

The integrated working platform is the footstone of "Operation Center", and the main body of the platform is "integrated system of assets and finance (SAP)". With the comprehensive budget management as the leading role, the system covers equipment maintenance, production and operation, material purchasing, finance management, project management and fuel digitization and other businesses, enabling all daily management and operation of the company to be completed on the integrated working platform through the integration of business flow, capital flow, information flow and logistics, thus transforming business management to the process-oriented collaborative management from departments' administration by piece combination.

ERP system coverage rate

90 %

The First Power Innovation Awards

4 items



Promoting Scientific and Technological Innovation

We attached great importance to scientific and technological innovation, paid attention to the construction of innovation system, innovation platform construction and project management, transformation and application of innovation achievements, and strove to enhance the industrialization level of science and technology, and took new steps and achieved new results in scientific and technological innovation.

Scientific and technological innovation system

- ◆ We revised the *Regulations on Science and Technology Management*, the *Administrative Measures for Raising and Utilization of Technology R&D Expenditures*, and the *Administrative Measures for Management of Science and Technology Projects*, and further regulated the science and technology projects and expenditure management and utilization.
- ◆ We established the *Incentive Measures for Single Awards of Technology Innovation Award* and set *Single Awards of Technology Innovation Award*, and promoted scientific and technological innovation of the grassroots-level enterprises.
- ◆ We organized to prepare the *Medium and Long-term Science and Technology Development Plan of China Huaneng Group (2015-2030)*.
- ◆ We researched and prepared the *Administrative Measures for Post Innovation*, and further regulated the management of post innovation of the company staff.

Platform construction and project management

Further strengthening the construction of the scientific and technological innovation platform

- "Verification and Test Platform for Key Materials in the National 700° C Ultra Supercritical Power Generation Technology" was completed and commissioned;
- Four national science and technology projects including the national key lab for coal-based clean energy and "Operation Optimization of Large Thermal Power Plants in Service and Key Technologies for Pollutant Control and Demonstration" passed the acceptance;
- Huaneng Innovation and Entrepreneurial Talent Base and Phase I of Xi'an Scientific Research and Experimental and Industrial Base were completed and put into use;
- We installed the main equipment for the GreenGen IGCC Lab for the pre-combustion CO₂ capture; set up the Scientific Research Station of Academician Ma Hongqi and post-doctoral scientific research station.

Actively promoting the establishment of annual major science and technology projects

In consideration of the major technological demands in production, construction, operation, development and other fields, we organized scientific research projects and technological demonstration, established 23 science and technology projects of the headquarters including "650° C Efficient Ultra Supercritical Unit R&D", and 6 special projects in the "Program of Global Expert Recruitments" and a number of science and technology projects set up by subsidiary enterprises.



Integration Laboratory of Huaneng Clean Energy Technology Research Institute

Scientific and technological innovation achievements

In 2015, we made significant achievements in the scientific and technological innovation, applied for 577 patents in the whole year (including 286 patents for invention), and was granted 306 patents (including 64 patents for invention), registering year-on-year substantial increase. We received 21 provincial scientific and technological achievements awards, including China Electric Power Technology Award. We gradually strengthened the scientific and technological innovation of the grassroots-level enterprises. Yimin Open Mine Company applied for 32 patents in 2015, and was granted 23 patents.

- ◆ China's first double reheat power generation unit was put into operation and achieved safe and reliable running;
- ◆ The key technologies and engineering application of 250MW class integrated gasification combined cycle (IGCC) generation won the First Prize of China Electric Power Technology Progress Award, and Tianjin IGCC pilot power plant has run in full load for over 80 consecutive days;
- ◆ Methanation catalysts for coal-to-gas projects, organic thin-film photovoltaics and other technologies with proprietary intellectual property rights have been successfully researched and developed;
- ◆ The first 200KW raft wave energy generation device in China entered the assembly phase;
- ◆ Clean Energy Technology Research Institute's "Rooftop Solar PV-Energy Storage Microgrid Project" was awarded the most beautiful microgrid demonstration operation project.

Patent licensing

306 items

Pushing forward technological progress in the industry

We actively undertook major national and industrial scientific and technological innovation projects. We organized main domestic power generation enterprises, universities and scientific research units to compile and issue the *Technology Innovation and Development Plan of the Thermal Power Industry (2015-2020)* organized to revise the power industry standard *Guideline for Maintenance of Circulating Fluidized Bed Boiler*. Under the guidance of NDRC, we successfully organized Beijing CCUS International Forum, and the national science and technology support program project "Operation Optimization of Large Thermal Power Plants in Service and Key Technologies for Pollutant Control and Demonstration" passed the technical acceptance by the Ministry of Science and Technology; two national science and technology projects including "Research on Operation Optimization Technology for IGCC Power Plants in Service" have obtained the project approval.

02 Harmonious Development

Harmonious development is the inevitable requirement for sustainable development. In 2015, we adhered to be centered on the improvement of the development quality and benefit, consolidated the basis of safe production, and strengthened the management of the enterprise's production and operation. We paid more attention to development quality and benefit, accelerated the adjustment and optimization of the industrial structure, and better played industrial collaboration efficiency. We also raised the level of harmonious development of the Company.



Harmonious Development Stories in 2015

Stabilizing Growth and Improving Economic Benefits

Under the "new normal" of economic development, the enterprise is faced with unprecedented challenges in production and operation, without exception to the power generation enterprises. In 2015, the national power consumption growth was declining, and newly installed capacity still maintained a higher growth rate. Following the requirements of the SASAC for steady growth, we took active measures to increase income and reduce expenditure. We reduced cost and increased efficiency, liquidized resources and optimized allocation, and controlled rigorously the risks for prudent operation. We made strict assessment and strengthened incentives, and went all out to increase efficiency and stabilize growth, so as to promote the healthy and harmonious development.

Operating income

268.2

billion Yuan

Total profit

30.6

billion Yuan

Total assets

971.9

billion Yuan

Sparing no effort to increase production and income

In 2015, power plants in northern regions strove to exploit the heating power market, implemented heat supply reformation and improved the heat supply market share. Enterprises in the west-east power transmission regions strove for power compensation for auxiliary services; hydropower enterprises scientifically regulated excessive power by taking the advantages of high flow period and reservoir regulation. Wind power enterprises made every endeavor to unblock the delivery channel to minimize the loss from wind curtailment...Each unit strengthened market research and took measures according to different types to increase both production and income.

Under the premise of positive marginal contribution, coal enterprises actively explored the external market, closely coordinated with the power enterprises, and played the industrial collaboration effect. They supported the coal business sector in pulling through, insisted on looking for own problems, and conducted the regional benchmarking of the coal enterprises, and they promoted coal enterprises' market competitiveness and ability to resist risks.

We strengthened recovery of electric charge, heat charge and sales revenue, timely paid to the account in full, and strove to increase both production and income.

According to the annual operation budget objective, we actively adapted to market changes, made overall plans and coordinated the relationship among maintenance, technical renovation and power generation in emergencies, and planned power and transacted electricity quantity. We spared no effort to generate more power and generate more benefits, so as to ensure that market share of power generated is in line with installed capacity and improve the market share. We deepened marketing benchmarking, with the regional utilization hours as the focus of benchmarking, to ensure the leading role of overall utilization hours of the Company and the utilization hours of the units.



Beijing Cogeneration Power Plant

The loss scale among thermal power enterprises achieved year-on-year decrease:

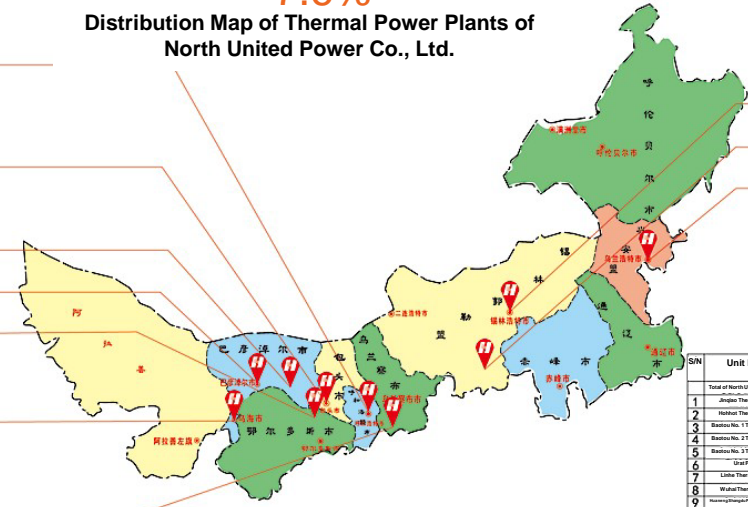
3.0%

- Heat Hohhot Thermal Power Plant
- Heat Jingjiao Thermal Power Plant
- Heat Baotou No. 1 Thermal Power Plant
- Heat Baotou No. 2 Thermal Power Plant
- Heat Baotou No. 3 Thermal Power Plant
- Heat Ural Power Plant
- Heat Linhe Thermal Power Plant
- Heat Dabate Power Plant
- Heat Wuhai Thermal Power Plant
- Heat Halbowan Thermal Power Plant
- Heat Fengzhen Power Plant

The loss scale among small and medium-sized hydropower enterprises achieved year-on-year decrease:

7.6%

Distribution Map of Thermal Power Plants of North United Power Co., Ltd.



The loss scale among wind farms achieved year-on-year decrease:

5.0%

- Heat Xilin Gol Thermal Power Co., Ltd.
- Heat Huamei Shanghai Power Generation Company
- Heat Jing'an Thermal Power Co., Ltd.

Unit Name	2014	2015
	Current Connected Area	Projected Connected Area
Total of North United Power Co., Ltd.	10113	12373
1 Jidong Thermal Power Plant	1210	1410
2 Heilong Thermal Power Plant	1525	1825
3 Baotou No. 1 Thermal Power Plant	800	900
4 Baotou No. 2 Thermal Power Plant	1830	1930
5 Baotou No. 3 Thermal Power Plant	670	1130
6 Ural Power Plant	580	580
7 Linhe Thermal Power Plant	700	750
8 Wuhai Thermal Power Plant	700	700
9 Halbowan Thermal Power Plant	0	250
10 Dabate Power Plant	850	850
11 Xilin Gol Thermal Power Co., Ltd.	500	700
12 Huamei Shanghai Power Generation Company	768	768
13 Jing'an Thermal Power Co., Ltd.	0	300
14 Fengzhen Power Plant	0	200

Devoting to reducing cost and expense

Both increase in income and reduction of expenditure are required. We actively controlled the cost of all operations, with benchmarking towards advanced and regional models in the planning, engineering, production, and operation stages, and realized optimal total cost for the whole process.

We primarily controlled fuel cost. We formulated scientific coal purchasing strategy, and reasonably determined the purchasing proportion of long-term coal and spot coal, imported coal and domestic coal. We refined our imported coal business, and did well in coal purchasing and price control. We strengthened benchmarking in the whole process, paid special attention to the benchmarking of regional standard coal purchased unit price, and strove to minimize the regional fuel purchasing cost. We deepened the construction of a model power plant in fuel management, and improved the lean management level in fuel procurement.

We cut down all unnecessary expenses and costs. We further optimized the capital structure, scientifically arranged funding needs, replaced high-interest loans, and reduced financing costs. We offset such adverse factors as reduction of the feed-in tariff and low growth rate of power generation by controlling costs and expenses, so as to achieve the growth targets of the Company.

Vigorously reversing and reducing Losses

On the basis of implementing the first three-year loss reversing and reducing plan (2013-2015), we summed up the experience, implemented the work requirements of SASAC for reversing and reducing the losses, formulated the work plan for reversing and reducing the losses in 2015-2017, pushed forward the second three-year loss reversing and reducing work plan, and carried out special loss control projects for small and medium-sized hydropower and thermal power enterprises and port and pier enterprises to minimize "the bleeding point". In view of management difficulties of the coal business sector, we intensified industrial collaboration to support loss mitigation in coal business sector and other industries. We compressed noneffective and inefficient capacity of the coal business sector, built up the idea of "practicing austerity" and strove to control the scale of losses and amount of loss within the annual budget.

In 2015 when it was under extremely difficult situation, Huaneng united as one, created more income and benefit, and made outstanding achievements in steady growth. By the end of 2015, the thermal power enterprises, small and medium-sized hydropower enterprises, and wind farms reduced the loss scale by 3.0%, 7.6% and 5.0% respectively over the previous year; coal enterprises reduced the number of households suffering loss by 1 over the previous year. We achieved the annual revenue of 268.2 billion Yuan and profits of 30.6 billion Yuan, reaching a new height.



Vigorously Pursuing Improvement in Income and Benefit

Exploiting the market at home and abroad

- ◆ We met the requirements for the reform of the power market, transformed the marketing idea, and made innovation in the marketing mode. We adopted differential marketing policies, and tailored the measures to cultivate and expand direct power supply for large users and other key users.
- ◆ We comprehensively strengthened power demand tracking and coordination, and carried out special survey in different areas. We actively responded to the slipping of power consumption growth, gave full play to the advantages of efficient and clean large units, and consolidated and expanded the market share.
- ◆ We strengthened the measures to stimulate assessment of power, carried out benchmarking management, mobilized companies in various regions (industries) to expand the market and participate in the competition, and worked actively to strive for larger transacted electricity quantity.
- ◆ We regarded the cultivation and occupancy of the heating market as an important measure to exploit the market, and deepened heating management. We improved the management mechanism, standardized business processes, and strengthened the index analysis. We also strengthened the implementation of the measures, and improved the market share of heating products.

In 2015, we achieved transacted electricity quantity up to 110.2TWh, up 52% over the previous year; direct power supply to big customers achieved the year-on-year growth of 155%; comprehensive utilization hour benchmarking kept ahead; wind power utilization hours had a significant increase. We added another 27.96 million square meters of heating area, and increased the heat supply and income by 16.2% and 15.6% respectively.

Annual transacted electricity quantity

110.2 TWh

Newly-added heating area

27.96 million square meters

Controlling fuel cost

- ◆ In accordance with the principle of purchasing marketization, we paid attention to market research and forecasting, and reasonably set up fuel purchasing strategy to control fuel price.
- ◆ We carried out fuel bidding and purchasing and regional benchmarking for standard coal purchasing unit price, introduced trans-regional high quality coal resources, and reduced the standard coal purchasing unit price.
- ◆ We deepened the construction of a fuel management model power plant, perfected the construction standard, and set up the refined fuel management model.
- ◆ We launched the deepened application project of the fuel information system platform to realize visualized presentation of many indicators.

In 2015, we further reduced the fuel purchasing cost, laying a solid foundation for the steady growth. 54% thermal power plants passed the acceptance for fuel management model power plant.

Strengthening management control

- ◆ We strengthened budget control, and enhanced the rigid implementation of capital budget and operating budget, to ensure effective cost control and overfulfil the capital and operating budget targets.
- ◆ We strengthened the management of performance appraisal, established performance grading and benchmarking assessment mechanism, gave full play to the guiding role of performance appraisal, and aroused the enthusiasm of the enterprises in value creation.
- ◆ We strengthened capital management, optimized the financing structure, and reduced the financing cost, financial expenses and the cost of capital.
- ◆ We comprehensively promoted the construction of "Digital Huaneng", analyzed and organized more than 1,800 indicators on the digital platform, realized the online monitoring and early warning in operation, and further improved the decision-making ability.

In 2015, we successfully accomplished the assessment targets and the task of steady growth issued by SASAC.

Coordinating Industrial Development

Strengthening and improving power business sector

We unwaveringly implemented the national energy development strategies, centered on the promotion of energy production and consumption revolution, and adhered to structural adjustment and transformation and upgrading, so as to further strengthen and improve the core power business sector and increase competitiveness.

We accelerated the adjustment of power structure, reasonably controlled coal-based power development pace, and dynamically evaluated preliminary and engineering projects according to the market demand changes. We continued to strengthened asset disposal and closure of retired thermal power units, and preferentially developed clean and efficient thermal power and CHP projects.

We intensified low-carbon clean energy development. We actively developed hydropower and wind power, accelerated the development of solar power generation, and strove to develop nuclear power, preferentially developed gas power generation. We paid close attention to other new energy projects, and continuously improved the low-carbon clean energy proportion.

- ◆ The power source structure was more reasonable. Up to 73% of the thermal power units are CHP, supercritical, and ultra-supercritical.
- ◆ We continuously improved the proportion of low-carbon clean energy installed capacity. Total clean installed capacity reached 46GW, up 1.7% over the previous year, and the installed hydropower and wind power capacity reached 20GW and 15GW respectively.
- ◆ We terminated and suspended the preliminary work of 21 power projects in 2015.

In 2015, we achieved a total installed capacity of 160.63GW, up 6% over the previous year, with the scale ranking No.1 in the world, and the comprehensive strength reaching the world's advanced level.





Reasonably developing coal business sector

- ◆ According to the overall idea of controlling the existing capacity and making good use of incremental capacity, we actively reacted to the adverse effects of the continuously declined coal business sector, scientifically controlled the development pace of the coal business sector, and improved the ability to develop the coal business sector in a healthy manner.
- ◆ We strengthened the comprehensive analysis and economic argument, and shut down some unreasonable production capacity. We implemented the differential development strategy, and more strictly controlled the early development pace. To this end, we focused more on the development of high quality coal resources with good reservation, and stronger industrial synergy and market competitiveness.
- ◆ We conducted one-to-one coordination, adopted tailored-made policies to each plant and each mine, and implemented the industrial synergy policy, so as to reduce collaboration cost, integrate transportation resources, and give full play to the advantages of industry synergy among coal, power and transportation business sectors.

In 2015, our coal output reached 65.15 million tons, and the amount of coal supplied to our power plants was 39.43 million tons, reaching 60%. We further improved the industrial collaboration between coal and power industry, with coal self-supply rate of 17.39%.

Exploring the development of various energy business sectors

- ◆ We propelled the development of shale gas, coalbed methane, coal-to-gas projects. In 2015, the shale gas block in Qianjiang entered a delicate phase of exploration. We also completed drilling and core analysis and test, and fracturing work of dark grey coal in well 2 in Songzao block, and promoted the preliminary work of Zhundong coal-to-gas project in an orderly way.
- ◆ We explored the development of liquefied natural gas (LNG) trade and service industry, and promoted the preliminary work of Tianjin Lingang and other LNG terminals. We actively carried out LNG upstream resource cooperation discussions with enterprises in the United States, France, Indonesia and other countries, and signed relevant cooperation agreements.
- ◆ We explored the development of electric vehicle charging service and other new energy service industries, and developed new growth points. In 2015, we started the construction of the new energy vehicle charging network infrastructure demonstration project, and promoted the popularization and application of new energy vehicles.



Jilin Wind Power

Annual coal output

65.15 million tons

Coal-power collaboration rate

60 %

Coal self-supply rate

17.39 %

Vigorously developing the finance business sector

- ◆ We strengthened the construction of financial, capital, securities, insurance, trust, and financing leasing platforms and other finance business sectors, deepened the integration of industry and finance, and promoted the coordinated development among the financial industry, the core industry and related industries.
- ◆ We proactively studied the situation, strove to prevent market risks, reacted to market disruption and other challenges, and made innovation in the effective form of financial service entity industry. We provided support in mergers and acquisitions, funds, carbon assets development and e-commerce for the development of the entity industry.

Entrusted assets and assets under management in the finance business sector

980.5 billion Yuan

In 2015, entrusted assets and assets under management in the finance business sector reached 980.5 billion Yuan, providing low-cost financing of more than 40 billion Yuan. Alltrust Property Insurance Co., Ltd. ("Alltrust Insurance") entered the National Equities Exchange and Quotations and was awarded one of the Ten Best Property Insurance Companies with Value Growth in China. Product sales collaboration of the finance industry was further improved.

Integration of industry and finance met demands and reduced cost

Since its establishment, Huaneng Tiancheng Financial Leasing Co., Ltd. has carried out project financing cooperation by the financing leasing mode. In 2015, Shangyi Wind Power under Huaneng International Power Development Corporation (HIPDC) has a large financing gap on the purchase of project equipment such as wind turbines and tower drums. Shangyi Wind Power made innovation to the financing mode by cooperating with Tiancheng Leasing, and achieved the financing of 240 million Yuan, not only meeting the capital requirements for project construction, but also reducing the financial cost. In 2015, Tiancheng Leasing completed the cross-border financing of 10 billion Yuan, and provided leasing financing of 7.6 billion Yuan for the Company, better playing the role of the financing platform.





Consolidating Foundation for Safety Management

Strengthening basic management

- ◆ We earnestly implemented the new *Law on Production Safety*, promoted comprehensive security control according to law, organized and revised the *Regulation on Safe Production* and other regulations, and strengthened the implementation of main responsibilities for safe production.
- ◆ We comprehensively promoted the construction of the production safety management system, strengthened the guidance and verification of the system construction, standardized the management process, and improved the standardized level of system construction and management.
- ◆ We established the *Planning for Promoting the Power Safety Management System (2016-2018)*, strengthened the implementation of responsibilities, idea cultivation, engineering construction, risk precontrol, hidden danger identification, safety training and behavior forming, and established the power production safety control mechanism with Huaneng characteristics.
- ◆ We strengthened the safety management, and employed 85% certified safety engineers as safety inspectors, basically achieving full coverage of certified safety engineers in leadership, middle level and working teams of enterprises at all levels. In 2015, we organized nearly 1,000 safety trainings of various types for 12,000 people.
- ◆ In 2015, we completed the safety management system verification for 71% of thermal power plants and 85% of large and medium-sized hydropower plants. We verified the review of intrinsically safe systems of 8 power plants including Dandong Power Plant and Haimen Power Plant.

Verification rate of the safety management system of thermal power plants

71%

Verification rate of the safety management system of large and medium-sized hydropower plants

85%

The excellence rate of overhauled units

79.5%

Improving operation reliability

- ◆ We strengthened the standardization management of equipment, deepened the "reduction of equipment defects, and control of unplanned outage", and integrated professional technical strength of the system. We gave full play to the advantages of professional technical strength of Xi'an Thermal Power Research Institute and Clean Energy Technology Research Institute, tracked and analyzed major defects and unplanned outage of the units, and coordinated to solve major technical problems.
- ◆ We promoted the construction of the safe production management information platform, actively carried out SAP system construction for overhaul standardization, and pushed forward the pilot work in a steady way.
- ◆ We strengthened the overhaul management of generating units, perfected the standardized overhaul system, and developed five standardized management implementation guidelines for power equipment operation, maintenance, upgrading and technical transformation, and technical accounts, which were comprehensively popularized and applied.
- ◆ In 2015, our equipment reliability indicators maintained the leading position in the industry. The excellence rate of overhauled units was 79.5%, 21 of 37 A/B level overhauled coal-fired units achieved continuous operation. 19 thermal power plants and 8 hydropower plants suffered from no unplanned outage in 2015. Shidongkou I No. 1 unit, Daba No. 2 unit and Dezhou No. 2 unit achieved safe operation in the whole year. Haimen Power Plant No. 4 unit set a record in the longest continuous safe operation among 1000 MW units in China (540 days).
- ◆ We developed PV technology supervision standards and technical guidelines for operation and maintenance, and established six industrial standards for supervision of wind power technology. We were the first to establish the relatively complete technical supervision standard system covering the main power generation forms in the industry.



Strengthening Operation Monitoring

Alarm Bells and reflection

In 2015, we had a stable production safety situation, but failed to eradicate safety accidents effectively. On March 13, No. 2 unit of Beijing Cogeneration Power Co., Ltd. had general equipment accidents, which revealed that our foundation for production safety was still weak and the principle of "safety first, prevention-oriented, with integrated governance" wasn't fully implemented.

Description of the accident

At 14:47 March 13, 2015, No. 2 steam turbine generator unit of Beijing Cogeneration Power Co., Ltd. met an exploding and burning. With spreading fire and large amount of smoke, large economic losses were caused, but no one was injured. After the accident, the power plant took timely measures and cleared site personnel in an orderly manner. Production personnel reacted to this accident calmly, and timely stopped other units,

to minimize accident losses. The Company investigated the accident with profound reflection in accordance with the principle of "four not let pass", analyzed causes, learned lessons from the accident and developed prevention measures, in order to prevent the recurrence of similar accidents.

Accident reflection

On February 26, No. 2 unit met vibration catastrophe, not exceeding the regulated vibration limit, though. Due to the heavy task of production in the heating period, the power plant took temporary control measures such as strengthening tour inspection, but the long-term serious vibration of the unit reduced the healthy level of equipment, which weakened the enterprise's judgment and handling capabilities of abnormal state. On March 1 and 2, cables at the temperature measuring points of shaft vibration and bearing vibration of No. 4 and 5 steam turbine units burnt out, and part of the monitoring signals couldn't be acquired in a real-time manner. Operation personnel measured the vibration manually on the site, which affected some of the thermal process protections of equipment, and reduced the fault response ability of the units. After No. 2 unit had abnormal vibration, vibration and temperature monitoring devices broke down, which revealed that the power plant had not paid enough attention to the production safety, operators on duty were not sensitive enough to the superimposed effect of multiple risks, and risk control was not strict enough. Combustible color plate ceiling adopted during the construction of our workshop couldn't meet the fire safety requirements, and became a fire hazard, but it hadn't been rectified in a timely manner.

Improvement measures

Fully implement the *Law on Production Safety*, improve safety responsibility system featuring "the responsibility of the Party and government, one post with dual responsibilities, and equal emphasis on production and safety", and fulfill the main responsibility of enterprise to ensure production safety.

Reflect on the accident, comprehensively analyze the causes of the accident, further rectify the existing management and technological problems, modify and perfect loopholes in the rules and regulations, in order to strengthen technical exchange about production safety, and improve overall safety level of power unit operation in an all-round way.

Strictly implement the *25 Important Requirements to Prevent Major Power Generation Accidents* issued by National Energy Administration, strengthen the accident prevention and checking management of main generation equipment, and strengthen the monitoring of the metal technology, in order to avoid recurrence of similar accidents. Strengthen the safety management during major events, further improve the accident emergency response and handling mechanism, and perfect the emergency plan, in order to ensure security and stability.



Enhancing the capacity for emergency management

- ◆ We thoroughly revised the *Comprehensive Emergency Response Plan*, revised the special emergency plans for two kinds of emergencies, i.e. accidents and natural disasters, completed the construction of production safety emergency management platform, and further improved the ability to prevent and deal with various emergencies.
- ◆ We strengthened emergency drills, and carried out emergency drills in power outages in the plant, geological disasters, fire, etc. We strengthened the site safety supervision, and carried out special safety supervision for heat supply, flood control, and dangerous chemicals management. We strengthened the hazard checking and governance, rectification within a time limit, and the closed-loop management.

In 2015, Huaneng successfully completed the power supply task during the 70th anniversary of victory of the Anti-Japanese War and other key periods by its careful arrangement, and successfully guarded against the violent typhoon "Soudelor" and other hits, and thus ensuring production safety and stability.

Overview of the Company's Production Safety from 2011 to 2015

Index	2011	2012	2013	2014	2015
Major equipment accident (times)	0	0	0	0	0
Ordinary equipment accident (times)	6	1	3	2	2
First-class equipment failure (times)	62	52	55	40	23
Unplanned outages (times)	91	89	86	71	63
Equipment utilization ratios (%)	94.17	94.46	94.58	94.52	94.35



Mining Area of Huating Coal Company

Improving Production Safety in Coal Mines

A year-on-year decrease of the mortality rate (in million tons + coal production)

43 %

Coal mines reaching the national Level-I safety standard

13

- ◆ We attached great importance to the production safety of the coal business sector, vigorously promoted the standardized construction of production safety management, and strengthened the hazard checking, disaster management and safety supervision and inspection.
- ◆ We further carried out the special campaign for "cracking down illegal and non-compliant production practices, made special inspection of mechanical and electrical transport of coal business sector, and made great efforts in remediation of serious disasters in mines such as flood, fire, gas leakage and strong mine pressure.
- ◆ We carried out team building, safety training, safety quality standardization and emergency response management, to further consolidate the foundation for production safety in the coal business sector.

In 2015, we didn't meet serious and major accidents, and reduced the mortality rate (in million ton+ coal production) by 43% over the previous year, a level better than the national average. 13 coal mines won the title of national level-I safety quality standard coal mines. Xizhou Coal Mine 5-Tier Safety Control System won the National Safety Technology Achievement Award. Matigou Coal Mine achieved consecutive safe production for 4,200 days.

Handling of the super typhoon "Soudelor"

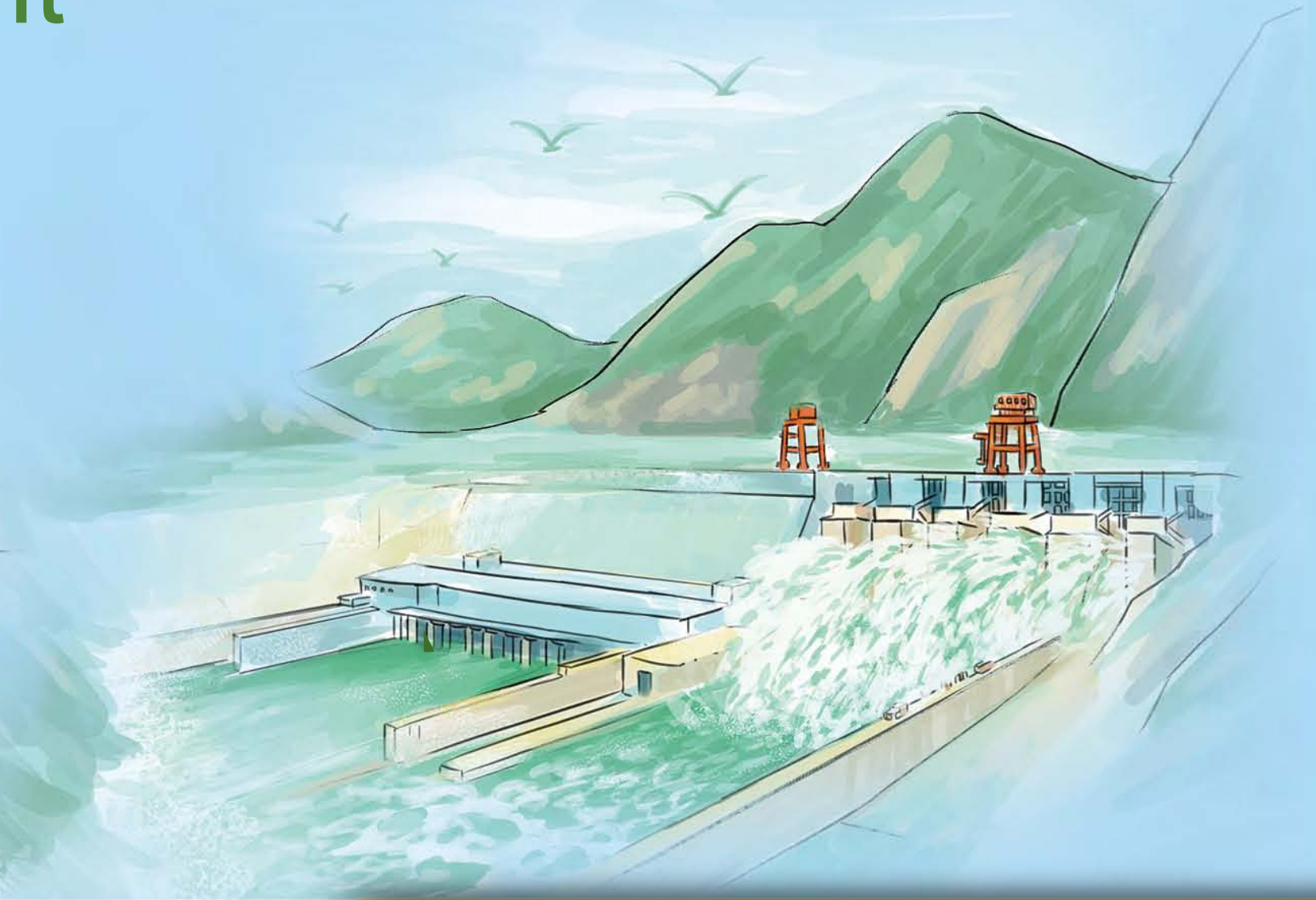
On August 8, 2015, the violent typhoon "Soudelor" attacked Putian, Fujian. The typhoon carried a violent storm with it with maximum wind of magnitude 13 (wind velocity of 38 m/s), causing serious impacts in Fujian, Zhejiang, and Jiangxi and other places. Rainfall on a single day in Fuzhou City of Fujian exceeded 300mm, breaking the record in the daily maximum rainfall of Typhoon Longwang in 2005. The urban area suffered from serious waterlogging and large-scale blackout or short of water supply. Faced with extreme weather, Huaneng enterprises in Zhejiang, Fujian and Jiangxi provinces initiated the typhoon and flood prevention emergency plans at first time, and successfully guarded against the typhoon through careful arrangement, active response and prevention and proper treatment. There was no loss of life or loss of important equipment, and all generating units in the plant ran smoothly.

Six mines of Huating Coal Company reached the national level-I safety standard

Huating Coal Company organized the safe production line, fully implemented the safe production responsibility, and improved the safety responsibility system featuring "the responsibility of the Party and government, one post with dual responsibilities, and equal emphasis on production and safety", to ensure that systems, supervision and management were implemented. Adhering to regular and irregular production safety inspections, we conducted comprehensive safety inspections and hazard control, and continuously consolidated the foundation for production safety. Six production mines including Huating, Shanzhai, Daliu, Matigou, Xinbai, and Jingshigou coal mines were rated as the national level-I safety quality standard coal mines in 2014.

03 Green Development

Adhering to the green development concept, we vigorously developed clean energy, deepened the construction of energy-saving and environmentally friendly enterprises, and continuously decreased emissions of pollutants and greenhouse gases. We made efforts to protect the ecological environment, continued to enhance the level of ecological civilization construction, and realized the coordination of the enterprise's sustainable development and resource conservation and environmental protection, to be a model of green development.



2015 Green Development Stories

Green action to create an ecological Huaneng

In 2010, Huaneng was the first to advocate and launch the "Green Development Action Plan" in domestic power industry. In addition, it announced that it would, by persevering in the transformation of the development mode, vigorously develop clean energy and improve the efficient utilization level of conventional energy, as well as make efforts to reduce pollutant emissions, so as to make contributions to protecting green hills and clear waters of the motherland. The plan clearly put forward the green development goals of Huaneng in 2011-2020, and it had been implemented for five years, yielding substantial results in new energy development, energy conservation and emissions reduction, innovative demonstration project construction and other aspects.

Average power supply
coal consumption rate

305.78

g/kWh

Installed capacity of
low-carbon clean
energy

46.19

GW

Investment in energy
conservation and
environmental
conversions rate

6.26

billion Yuan



Golmud PV Project

Actively developing new energy

Huaneng accelerated the development of clean and renewable energies, vigorously developed hydropower, wind power and solar power, and strove to develop nuclear power. Huaneng produces the best gas, and develops other renewable energy power projects by adjusting measures to local conditions. In the hydropower sector, Xiaowan Hydropower Station, Nuozhadu Hydropower Station, Gongguoqiao Hydropower Station, Longkaikou Hydropower Station, Zangmu Hydropower Station and other hydropower stations were operated steadily. At the end of 2015, installed capacity of hydropower reached 20GW, with an annual increase of over 14%, and installed capacity of wind power reached 15GW, with an annual increase of more than 25.5%.

Clean development of conventional energy sources

For the past five years, Huaneng constantly improved the clean and efficient utilization level of conventional energy sources, accelerated the closure of small and aging generation units with high consumption and high emissions, optimized the development of supercritical and ultra-supercritical coal-fired units with larger capacity, higher efficiency, and lower emissions, and vigorously developed the CHP units. We accelerated the energy saving transformation of the units to reduce the energy consumption so as to generate more power and heat with less coal, and promoted the efficient and low-consumption development of the power industry. In 2015, the installed capacity of Huaneng's GW ultra-supercritical units ranked first in the country, and the installed capacity of CHP and supercritical and ultra-supercritical pure condensing units accounted for more than 70% of the total thermal power.

Investment in reformation of energy conservation and environment protection during the last five years

34.7 billion Yuan

Proportion of units with dust removal, de-Sox, and de-Nox features

100 %
99.47 %
99.37 %

Constructing energy saving and environmental protection enterprises

Huaneng continued to promote the construction of energy saving and environmental protection enterprises. From 2011 to 2015, the total investment in reformation of energy saving and environmental protection reached 34.7 billion Yuan, and proportion of units with dust removal, de-Sox, and de-Nox features was 100%, 99.47% and 99.37% respectively. In 2015, the emissions of SO₂, NO_x and dusts fell by 71%, 83% and 69% respectively compared with 2010. Clean level of coal-fired units was steadily improved.

Constructing innovation demonstration projects

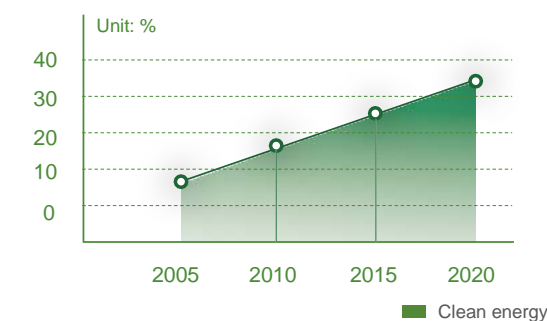
We pressed ahead and made progress with the construction of technological innovation demonstration projects, and positively pushed forward the nuclear power industry relying on national major special technological projects;

implemented a coal-fired power plan to build China's first IGCC Power Plant and the national coal-fired laboratory, and took firm steps in exploring power generation technology for nearly zero emission of coal-fired units; formed the post-combustion CO₂ capture technology with proprietary intellectual property rights. All actions and innovations have created the beautiful Huaneng and beautiful China. Huaneng is in action. Huaneng is becoming the upgrade of the power generation enterprises!

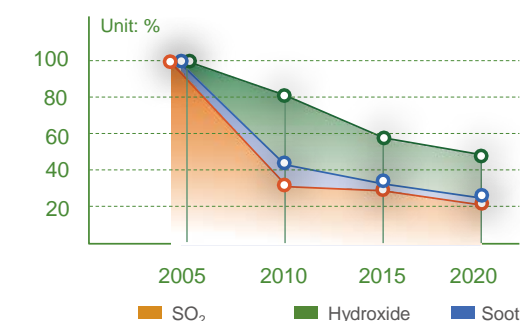
"Green Development Action Plan" and "Huaneng Blue" is the base color of Huaneng as a SOE, the spirit of Huaneng to undertake responsibility and promote innovation, and the practice of Huaneng in fulfilling responsibility for social environment!

Goals of the green development action plan

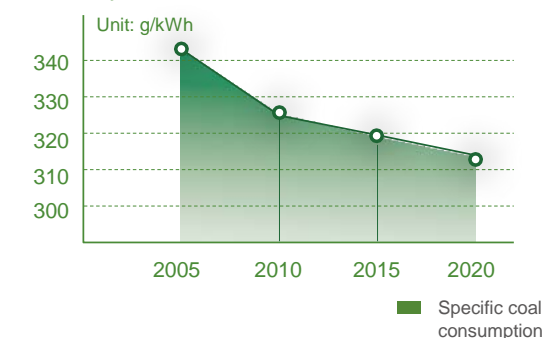
Considerably increased proportion of clean energy



Continuously decreased emission level of unit pollutant



Significantly increased energy conversion efficiency





Developing Clean Energy

In 2015, we vigorously developed hydropower, accelerated the development of wind power, made efforts to develop nuclear power, strengthened the development of integrated wind and solar energy hybrid power station project and PV base project, developed other renewable energy power generation projects by adjusting measures to local conditions, and accelerated the transformation and upgrading.

6.98GW low-carbon and clean energy projects were approved in 2015, and 5.18GW was put into operation. In the newly commenced projects and projects put into operation, the low-carbon and clean energy accounted for 53% and 54% respectively. In 2015, installed capacity of our low-carbon and clean energy reached 46.19GW, accounting for 28.8%, an increase of 1.7% over the previous year.



Turpan Wind Power Project was completed and put into operation

Huaneng Turpan Wind Power Co., Ltd. is located in class 1 generating area in Xiaocaohu area in Turpan Basin, managing and operating five companies: Turpan Wind Power, Shanshan Power Generation, Xihai Wind Power, Xinte Power Generation and Xinhuzhou Power Generation. Installed capacities already in operation and under construction have reached 258MW and 199MW respectively.

The Company adhered to the ecological development concepts of "lighten the industrial structure, develop the green development patterns and optimize economic quality", and a total capacity of about 1.48 billion kWh has been accomplished by the Company since its putting into operation, saving about 451,200 tons of standard coal.

Approval of Power Projects	Operation of Power Projects				Installed Capacity	
Approved power projects 22.7393GW (low-carbon and clean energy accounting for 23%)	PV	11 projects	316MW	3.3%	PV	1,170MW
	Hydropower	12 units	435MW	4.5%	Hydropower	20,890MW
	Thermal power	12 units	5,279MW	55%	Thermal power	123,480MW
	Wind power	50 projects	3,572MW	37.2%	Wind power	15,080MW



Hydropower

- ◆ Hydropower projects were promoted vigorously as the completion and putting into operation of all units of the first large-scale hydropower project in Tibetan region - Zangmu Hydropower Station.
- ◆ Yingliangbao Hydropower Station Project of Sichuan was approved.
- ◆ Competitive advantages of downstream hydropower development of Yajiang were consolidated.
- ◆ The installed capacity of hydropower station reached 20,890MW, with an average annual growth rate of 14%.

Wind power

- ◆ The construction of the first offshore wind power project started, and 2,800MW wind power project and wind power base in Liangshan Prefecture had been included into the fifth batch of national approved plans.
- ◆ Major breakthroughs were made in wind power rankings, with utilization hours rising from a fourth place in the past three years to the second place, and the annual utilization hours reaching 1,768 hours, 40 hours exceeding the national average for the first time.
- ◆ The installed capacity of wind power plant reached 15,080MW, with an average annual growth rate of 25.5%, and the scale of putting into operation reaching a new height.

Nuclear power

- ◆ The Company intensified efforts to develop nuclear power projects.
- ◆ Rongcheng Shidaowan Nuclear Power Base was listed into the "Thirteenth Five-Year Plan".
- ◆ Fujian Xiapu Nuclear Power Project was listed into China's Medium- and Long-Term Development Plan on Nuclear Power.
- ◆ Preliminary feasibility study of Liaoning Pulandian Nuclear Power Project was steadily promoted.

PV power

- ◆ The first distributed PV project - large-scale mountain PV project was put into operation.
- ◆ The installed capacity of PV power plant reached 1,170MW, and the approved project size in 2015 had 96% increase compared with 2014.
- ◆ Scale of PV project putting into operation reached a new height.



Northern Wind Power Project



Improving Cleanliness

Improving management system

- The Company promoted work for "year of overall enhancement of environmental protection", continued to strengthen top-level design of environmental protection, improved management mechanism, enhanced assessment system and the three-tier management system of environmental protection work, and revised *Regulations on Environmental Protection, Assessment and Accountability Measures for Environmental Protection Work (Trial)*, *Management Methods for Real-time Monitoring Platform of Pollutants Emission* and other rules and regulations.

Enhancing the supervision

- The Company has built a whole-process real-time pollutants monitoring platform, which basically covered the full scope, and connected to 170 units for desulfurization and denitrification, and more than 280 units for dust removal emission concentration; it added data index statistics of power plant pollutants, alarm function and centralized supervision of pollutant emission; and provided out-of-limit monitoring, indication and time calculation of NO_x, SO₂, dusts and other pollutants.

Increasing the transformation investment

- The Company implemented the new requirements of national ecological civilization construction and the State Council on "Acceleration and Expansion" of ultra-low emission by issuing *Action Plan of Environmental Upgrading and Transformation of Coal-fired Units (2015-2020)* and deploying ultra-low emission transformation of coal-fired units ahead of time. It issued *Guiding Opinions on Emission Control, Upgrading and Transformation of Flue Gas Pollutants of Coal-Fired Unit* to guide power generation enterprises to optimize the environmental upgrading and transformation schemes. It organized assessment on technical route of ultra-low emission, and started to prepare technical route of wastewater treatment.
- It increased investment to 6.26 billion Yuan for transformation and accelerated the up-to-standard and ultra-low emission transformations, and all thermal power units of the Company met emission standards.

Connected to desulfurization and denitrification units

170 unit-times

Connected to dust removal emission concentration units

280 unit-times

Transformation investment

6.26 billion



The first 1,000MW class ultra-supercritical double reheat unit of the Company and Shandong Province was put into operation in Laiwu Power Plant.

Reducing emission of major pollutants

The Company continued to improve the cleanliness of thermal power plants, and in 2015, it completed dust removal transformation of 65 units and 19,360MW; desulfurization and capacity increase transformation of 51 units and 17,510MW; denitrification transformation of 51 units and 14,280MW, and a total of 20,690MW of units had completed ultra-low emission transformation.

Environmental Transformation Performance in 2015

Item	Dust removal	De-SO _x and capacity-increase	De-NO _x
Unit transformed (set)	65	51	51
Capacity transformed (10MW)	1,936	1,751	1,428

Developing recycling economy

The Company adhered to the concepts of "scientific development and circular economy" to develop the recycling of waste, reduce the discharge of production wastes, and improve the utilization efficiency of resources. It advocated the development mode of "resources - products - wastes - renewable resources", coal ash and slag separation, fine grinding, plaster processing of new building materials and other technologies to promote the comprehensive utilization of ash and slag and desulphurization by-products, reduce solid wastes discharged from thermal power plants, and achieve maximum closed recycling of power plant material and resource.

Yangliuqing Thermal Power Plant, protecting air of Tianjin and Tanggu



Environmental transformation of Unit No. 5 of Yangliuqing Thermal Power Plant was completed in September 2015 by implementing a series of energy saving and transformation activities including efficiency improving transformation of desulfurization unit, ultra-low emission transformation of NO_x and turbine flow transformation; various environmental indicators of Unit No. 5 had been improved to meet ultra-low emission target, and the Unit formally became one of the units with ultra-low pollutant emission. After transformation, the real-time emission concentration of dusts, SO₂ and NO_x respectively met the emission requirements for gas-fired units.



Saving Energy Resources

Strengthening the management of energy consumption

- The Company issued *Action Plan of Energy Saving, Upgrading and Transformation of thermal Power Plants (2015-2020)*, putting forward 21 categories and 146 items of energy saving and transformation measures to promote energy saving, upgrading and transformation of thermal power plants. In 2015, coal consumption rate of the Company for power supply was 305.78 g/kWh, decreasing by 4.23 g/kWh; auxiliary power rate was 4.24%, decreasing by 0.17%.
- It actively optimized energy consumption indices, and focused on index optimization of 1,000MW-class ultra-supercritical units; coal consumption rate for power supply of 1,000MW-class ultra-supercritical and 600MW subcritical air cooling unit lead the industry for the first time, and energy consumption indices of coal machine, gas turbine and six main models were industry-leading.

Thermal Power Units with the Optimal Energy Efficiency Benchmarking of Central Enterprises in the Power Industry

Capacity	Prize-winning Units
1,000MW	Unit 1 of Jinling Power Plant
600MW	Unit 6 of Pingliang Power Plant
	Unit 2 of Ruijin Power Plant
350MW	Unit 3 of Fuzhou Power Plant
	Unit 2 of Shang'an Power Plant
300 MW	Unit 3 of Yushe Power Plant

6 units including Jinling No. 1 and Pingliang No. 6 Units winning the optimal energy efficiency benchmarking of SOE in the power industry account for 30%;

15 units Units awarded as having the optimal energy efficiency around the country account for 44%;

41 units including Jinling No. 1 and Fuzhou No. 3 Units winning Outstanding Awards of the CEC Thermal Power Unit Competition account for 20%;

Power plants of the Company with single unit capacity not less than 300MW All enterprises met the "environment friendly and resource saving" requirements.

Coal consumption of the Company's power supply

305.78 g/kWh

Year-on-year decline of ↓

4.23 g/kWh

Station service power consumption rate

4.24 %

Year-on-year decline of ↓

0.17 %



Accelerating transformation and upgrading

The Company aimed at comprehensive upgrading of main technical and economic indicators, and realizing "two leading positions" of energy consumption indices, conducted in-depth research and demonstration of integrated application of new technology of energy saving and consumption reduction, established (excellent) environment friendly and resource saving thermal power plants in depth, comprehensively carried out benchmarking of energy consumption indicators, enhanced tackling key technical problems and management innovation, explored energy saving potential of existing units and promoted the comprehensive upgrading and transformation of thermal power plants.

- It promoted heating transformation, increased 67.5 million m² of area for heat-supply service annually, and carried out high back pressure heating transformation for seven units including Dezhou, Baoyi and Hailaer Thermal Power and integrated application of energy saving and consumption reduction technologies for 40 overhauled units, reducing coal consumption rate of more than 1.1 g/kWh and 0.5 g/kWh respectively.
- It promoted and carried out contracted energy management, and energy saving, upgrading and transformation of Linhe No. 1 Unit and heating transformation of Tongchuan Power Plant gained 20 million Yuan from central budgetary investments.
- It gave play to the demonstration role of projects applying new energy saving technology, and initiated air cooling unit steam heating air blower, heating steam extraction, full flow connecting back pressure generator and other new technologies which won three national invention patents.
- It held more than 20 technical solution demonstrations, promoted in-depth optimization of generalized regenerative system, comprehensive efficiency-raising of lignite boiler, and implemented demonstration projects of energy-saving integration of Shangdu No. 2 and Weihai No. 6.

Constructing water-saving enterprises

The Company paid attention to discharge reduction and recycling of production sewage, and took active measures to make full use of the rainwater of surrounding area, landscape wastewater and other resources, in order to minimize the waste of water resources. It adopted air cooling technology, seawater desalination,

reuse of reclaimed water, pneumatic ash conveying and other water saving technologies, and adjusted measures to local conditions to build water saving power plants, and treated coal mine drainage water, and adopted stepwise water utilization according to water quality levels, so as to realize effective use of water and reduce the waste of fresh water resources.



Imparting Technical Skills on the Site



Protecting Ecological Environment

Implementing ecological protection

- ◆ Strengthen reclamation of mining area. Backfilling, trees and grass planting and other methods were adopted during open-air coal mining process to conduct ecological restoration and protection for the explored, excavated and occupied land.
- ◆ Protect biodiversity. Power generation, flood control, irrigation, sediment retaining, navigation, soil and water conservation, aquaculture, tourism, regional development and other requirements were comprehensively considered during construction of hydropower projects, and measures to protect the surrounding environment and biodiversity were implemented, and water and environmental protection measures for project construction were carried out, realizing harmony and unity of project development and ecological environment.
- ◆ Carry out fish artificial propagation and releasing. Companies near Yunnan Lancang River and Tibet enhanced the operation and management of fish artificial propagation and releasing station and other facilities and equipment, carried out fish artificial propagation and releasing, and started tributary conservation of Yongchun River, Deqing River and other fish habitats. Xiaowan and Gongguo Bridge Hydropower Stations won the title of "National Project of Ecological Civilization of Soil and Water Conservation".

Zangmu Hydropower Station took various measures to protect biodiversity.

Zangmu Hydropower Station has earnestly implemented the Environmental Protection Law and adhered to "simultaneous design, construction and putting into operation of environment protection with project construction". It has invested 390 million Yuan to build the garbage incineration, sewage treatment plant, fish artificial propagation and releasing, fishways and other ecological protection facilities, and become the largest hydropower environmental protection and water conservation project at current Tibet autonomous region. Zangmu Hydropower Station carried out the first rare fish artificial propagation and releasing activity on October 15, 2015, releasing a total of 53,000 fish, in which 3,000 are oxygymnocypris stewarti fries and 50,000 are schizopygopsis younghusbandi fries. The fishway project was completed in June 2015 and generated good results. The Project played a positive role in protecting aquatic ecological environment of Yarlung Zangbo River Valley, restoring fish germplasm exchange channels at engineering sections, and easing the blocking effect of the hydropower project construction on fish.



Strengthening carbon assets management

The Company further strengthened unified management of carbon assets, carried out 2010-2015 carbon examination for thermal power enterprises, promoted the development of 150 voluntary emission reduction projects, completed annual carbon trading performance of 10 enterprises in the carbon trading pilot area, significantly reducing the performance costs. Its greenhouse gas data management platform took the lead in putting to commissioning in the industry.

It optimized the business structure, promoted business innovation, launched the first quota and emissions exchange business through energy cooperation with Shell China, and successfully operated the first domestic professional carbon trading funds officially registered in CSRC.



Carrying out green office

 <p>The Company sharply streamlined meetings and briefings and gave high priority to video conferences.</p>	 <p>The Company advanced information system construction and paperless office.</p>	 <p>The Company purchased and used office supplies as required, and advocated printing on both sides of paper.</p>
 <p>The Company strictly controlled the temperature of air-conditioners and promoted the use of energy-saving lights.</p>	 <p>The Company used water-saving devices, and used reclaimed water as supporting resources for production, greenery and landscape.</p>	 <p>The Company strictly regulated the use of official vehicles and controlled the purchase of vehicles and the fuel consumption of each vehicle.</p>

Strengthening environmental protection promotion

It enhanced promotion and implementation of energy conservation and environmental protection concepts, cultivated employees' consciousness of ecological environment protection, advocated energy saving and low-carbon living style, actively organized employees to participate in the public activities of environmental protection, and worked together to protect the environment. It actively built a communication platform between the Company and the government, the media, the public and other stakeholders to promote environmental protection ideas of the Company and give better response to related parties.



Environmental Awareness Day

04 Open Development

The Company adhered to the guidance of the open development concept, implemented the "going out" strategy in depth, and participated in international competition and cooperation to become a world-class enterprise with international competitiveness. In 2015, the Company strengthened top-level design of international development, fully implemented international development strategy, strengthened offshore asset management and project development and construction, and deepened international cooperation to enhance the level of open development.



Open Development Stories in 2015

Along with "One Belt and One Road"

In Sahiwal, a city 150km from southwest of Lahore - the capital of Pakistan's Punjab Province, a priority project of China-Pakistan Economic Corridor - the Sahiwal Thermal Plant - is in full swing construction. It takes only more than 1 year for the Station to complete approval formalities and the preparatory work, and enter into the engineering stage. Pakistanis suffering from lack of electricity have been waiting the day of commencement of the Station for years! This is one of the key projects of Huaneng generating outcomes under the background of "OBOR" initiative.

Total overseas
installed capacity

10,440MW

Proportion in total
installed capacity of
the Company

6.5%

Overseas
distribution of
power plants

4 continents

8 countries

National Initiative

One Belt and One Road (OBOR) - Silk Road Economic Belt and 21st-Century Maritime Silk Road, links the past and the future, as well as China and the world. It is a road leading to joint development, share and win-win results, and a belt linking the China Dream and global dream. According to estimates, total population along "OBOR" is about 4.4 billion (accounting for 63% of global population), the economy is about USD 21 trillion (29% of the world), and exports of goods and services account for 23.9% of the world, enjoying great market potential and development space. The grand proposition "OBOR" gives the ancient silk road new connotations, and stimulates Pan-Asia and Asian regional cooperation. Among more than 60 cooperative countries of the "OBOR", most of which have poor infrastructure; many countries and regions are in long-term power shortage, which significantly impeded local economic and social development and improvement of people's livelihood, having great development potential in energy and power projects.

Huaneng Actions

As a bellwether of central power generation companies and one of the earliest power generation enterprises of "going out", In 2015, Huaneng has grown into a power generation enterprise with the largest installed capacity of the world in, having rich experience and human resources reserves in power plant construction, management and operation, and comprehensive strength approaching the world's advanced level. Through over ten years of practice of "going out", Huaneng has an overall oversea installed capacity of 10,440MW, accounting for 6.5% of the total installed capacity, distributed in eight countries on four continents. It properly used international and domestic resources and markets, got familiar with the operation mechanism of the competitive market, learned the advanced operation and management experience, trained and cultivated talents with international vision and global operation and management ability.



Commencement of Priority Project of China-Pakistan Economic Corridor - the Sahiwal Thermal Power Plant



Huaneng profoundly understood that the implementation of the "OBOR" initiative is not only the country's call for in-depth reform and opening up, but also major development opportunities for the Company's "going out" and goal to build an internationally competitive world-class enterprise; it's required by national strategies and the Company to develop overseas market and development space. Huaneng actively links the "OBOR" initiative and the Company's strategy of "going out", and tries to seek for development opportunities along the "OBOR" based on its advantages, and continuously improves the level of open development to provide active electricity support for economic and social development of cooperative countries.

The Sahiwal Thermal Power Plant has now become one of the major cooperation projects between the two countries. The project has a total investment of about USD 1.8 billion for the construction of 2 x 660MW supercritical coal-fired generator units.

After the completion of the Project in 2017, annual energy output is expected to reach 9TWh, which will greatly alleviate the power shortage situation in Pakistan, effectively promote the construction of China-Pakistan Economic Corridor, and further deepen bilateral strategic cooperative partnership.

Comprehensive Layout

Huaneng will focus on development opportunities along the "OBOR" and emerging countries during the "Thirteenth Five-Year Plan" to properly complete project development.

Under the specific guidance of the country in vigorously implementing the "OBOR" initiative, Huaneng will implement more oversea energy projects along the "OBOR" to boost the local economy and promote open development of the Company, creating more glories in the way to internationally competitive world-class enterprise.



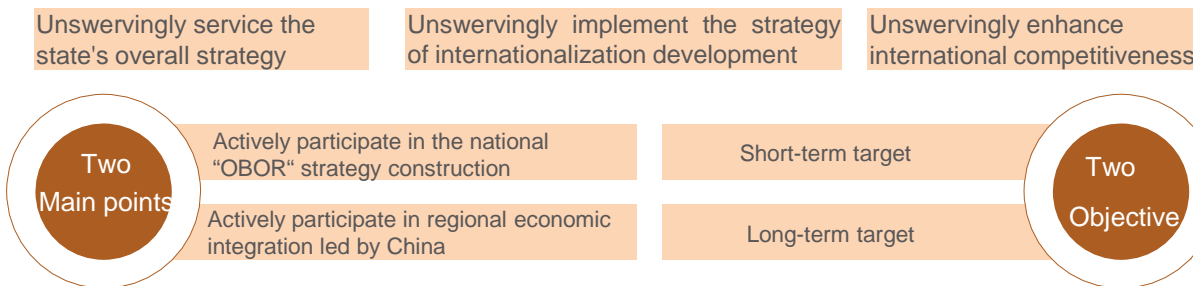


Promoting International Development



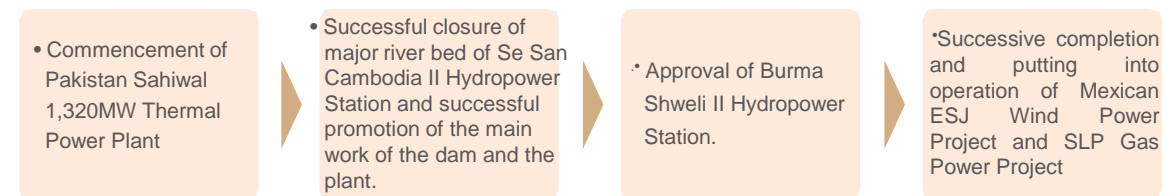
Concepts of internationalization development

Overall positioning



Strengthening the Project Management with Overseas Assets

- The Company strengthened the overseas assets management controls. It focused on asset management and operation supervision to improve operation and management level of offshore assets. Overseas Industrial Co., Ltd. and Australia Millmerran Power Plant seized the market opportunities and successfully completed the refinancing, further optimizing the debt structure and reducing the risk of financing.
- It guarded against risks of international development. It studied security factors related to national politics, economy, religion, etc. to securely guide the oversea investment; issued security warnings for international security emergencies in a timely manner; improved oversea security mechanisms and contingency plans.
- It strengthened the security management of oversea institutions and personnel, carried out security checks on resident agencies and personnel of the Company based on related national security situations, started the emergency work in a timely manner, and adopted countermeasures to effectively protect safety of oversea institutions and personnel and try to build a good public opinion environment.
- It promoted development and construction of oversea projects:



155MW wind turbine units of Mexican ESJ Wind Power Project of the International Power Company were formally put into commercial operation in June 2015. The project is the first wind power project of the International Power Company, marking the major breakthrough of the Company in the field of renewable energy power generation. Mexican SLP Gas Power Plant (with installed capacity of 205MW) was formally put into commercial operation in August 2015.





Deepening the Open Development, Exchanges and Cooperation

The Company is guided by the "OBOR" strategy and adheres to the resource sharing, complementary advantages, mutual benefit, cooperation and win-win principles. It has signed cooperation agreements with KEPCO and other domestic and foreign enterprises successively to form a "union" of foreign development and cooperation and establish a comprehensive strategic partnership.

- ◆ The Company has formed a "go global" union with SINOMACH, Harbin Electric Corporation, Shanghai Electric, Orient Group, PowerChina and other domestic equipment manufacturing enterprises and electric power construction enterprises, utilized the domestic and international markets and resources to promote "going out" of domestic production capacity, equipment manufacturing and construction enterprises.
- ◆ It expanded contact with CNOOC, Sinopec, ENN, Guanghai, Baota, CSIC and other potential strategic partners, actively negotiated the feasibility of equity cooperation, lease and joint development of LNG receiving station.
- ◆ It established good working relationships with ISPAT, Turkish Embassy in Beijing, Embassy of the Republic of Poland in Beijing, Chamber of Commerce and Industry Brazil-China, ProMexico, Embassy of Islamic Republic of Iran in China, Embassy of the Republic of Zimbabwe in China and other institutions to seek for cooperation opportunities in countries along the "OBOR".
- ◆ It actively participated in multilateral cooperation mechanism between governments, made full use of the policy and financial support, tried to incorporate the project cooperation into partnership mechanism between governments, raised the international cooperation level, strengthened the international influence and power, and drove the international development of the Company.
- ◆ It signed strategic cooperation agreements with General Electric Company, ENGIE, KEPCO, Pakistan Punjab Provincial Government and other organizations. It signed cooperation agreements with energy companies in Pakistan, South Korea, Spain, France and other countries.



Chinese President Xi Jinping witnessed the signing of the strategic cooperation memorandum between Huaneng and ENGIE

On November 2, 2015, Cao Peixi, President of China Huaneng Group, signed *Memorandum of Understanding of Strategic Cooperation of China Huaneng Group and ENGIE* with Gérard Mestrallet, chairman and CEO of ENGIE, at Great Hall of the People witnessed by the Chinese President Xi Jinping and the French President Francois Hollande.

According to the Memorandum, the two sides will become strategic partners in the energy and related fields, give full play to their respective advantages in accordance with the principles of sincerity and trustworthiness, reciprocity and mutual benefit, win-win advantages and common development, and explore and cooperate in the natural gas industrial chain, electric power project development and coal bed methane exploitation. The signing of the MoU is of great significance of the Company to speed up the strategy of internationalization development.



Australia Millmerran Power Plant



China Huaneng signed the memorandum of cooperation with KEPCO

On June 2, 2015, China Huaneng Group and Korea Electric Power Corporation respectively signed the *Project Cooperation Memorandum, Memorandum of Understanding on Strategic Cooperation in Soft Science Research and Memorandum of Understanding on Strategic Cooperation in Technical Research* at the company headquarters. According to the contents of three memos, China Huaneng and KEPCO will play their respective advantages, actively promote cooperation and development of domestic and foreign electric power projects, and strengthen the communication and cooperation in the enterprise strategy, management, market, science and technology, environmental protection, talent training and other aspects for cooperation and research.

Foreign ministers of countries along the Lancang-Mekong River visited Jinghong Hydropower Station.



On November 12, 2015, foreign ministers of countries along the Lancang-Mekong River coming to China for the First Meeting of the Foreign Ministers of the Cooperation of Lancang-Mekong River visited the resettlement in reservoir area of Huaneng Jinghong Hydropower Station and Power Plant.

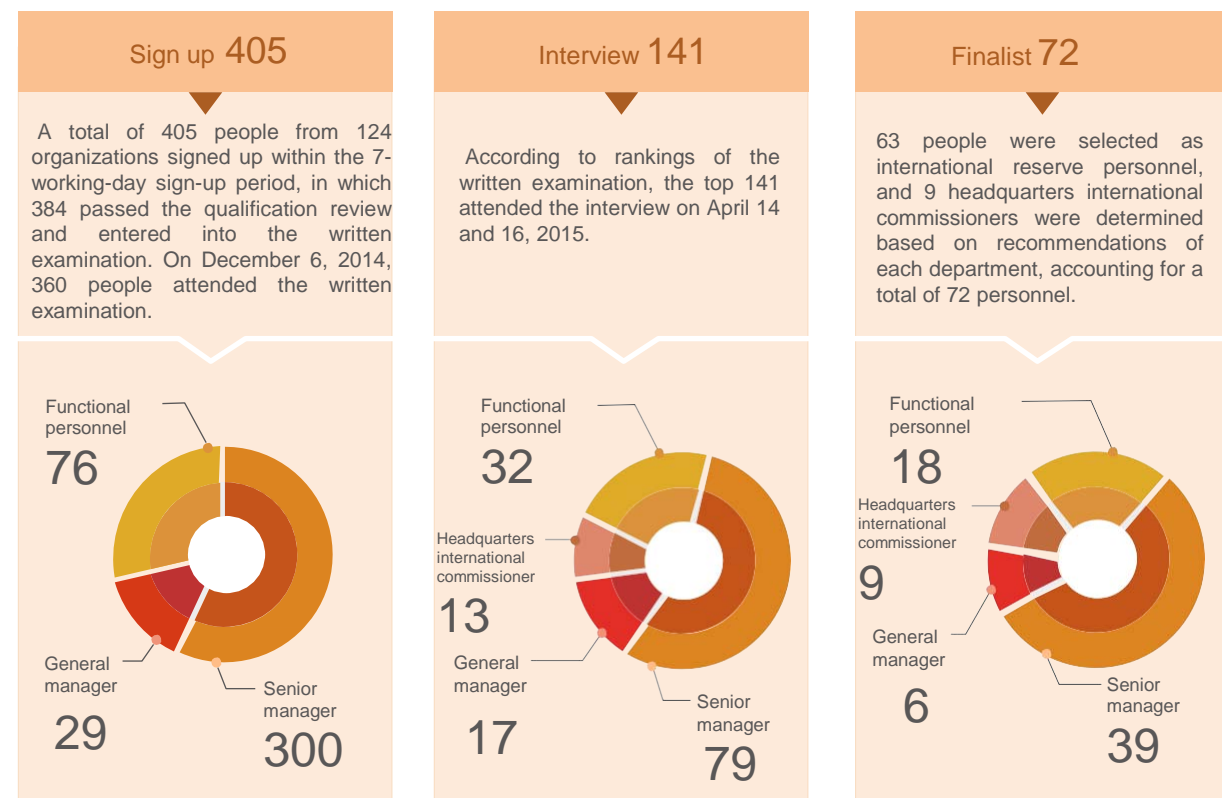
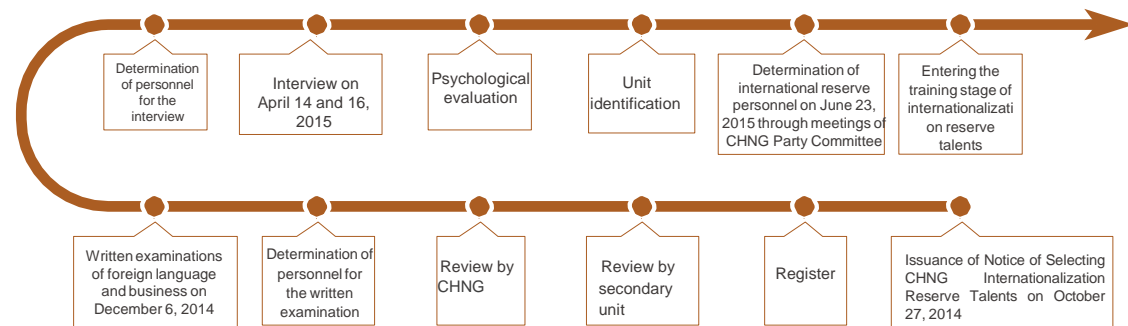
Foreign ministers took a field trip accompanied by Chinese Foreign Minister Wang Yi, Chinese Vice Foreign Minister Liu Zhenmin and Vice President of CHNG Zhang Tingke. During the field trip, foreign ministers of countries along the Lancang-Mekong River expressed their appreciations on Huaneng and its subordinate enterprises for their practices focusing on scientific and technological innovation, adhering to green development, and fulfilling social responsibilities.



Cultivating International Talents

It intensified market hiring of international talents, combined learning and post training, focused on practice of international business, and improved talent training safeguard measures to properly select, cultivate and apply international personnel. In 2015, the Company carried out the first international reserve personnel selection in accordance with the training plan for international talent team, so as to train excellent personnel for the open development.

Selection Process



On-site technical discussion

Examinee Q&A

I am now responsible for the financial management and capital operation work in Hong Kong Company, and I think the questions for the written examination and the interview are comprehensive and open-ended, facilitating full investigation of a person's comprehensive management and professional skills. Considering my career planning, I hope to become a management talent with international vision and leadership skills, and make my contribution to the internationalization of the Company.

- Qiu Haisong, Chief Accountant of a Hong Kong company



Internal Examiner

The selection is an innovative whole system, multi-level, multi-discipline and extensive talents selection. The whole selection work is orderly organized, with scientific standard and strict procedures, and at least obtained results in 3 aspects: first, it selected qualified and potential reserve talents; second, it indicated directions for personnel who are willing to work in the field of internationalization; third, it reflected the fair and open principles of the Company in selecting talents, stimulating the enthusiasm of the staff in working, entrepreneurship and learning.

- Wang Wenjuan, Deputy Director of CHNG International Department

In 1986, as a fresh graduate, I joined a development company, and participated in the Nantong Phase I and II construction of 4x 350 MW units introduced from GE Group. 20 years later, I accepted the organization selection, and actively faced new challenges. I think the examination questions are close to the power industry and very practical, as if I attended a college entrance examination again.

- Qu Shutao, Secretary of the Party Committee of Shidongkou No. 1 Plant

Most examination questions were open-ended questions about theory and practice of the electric power market marketing at home and abroad, which can assess the candidate's professional accomplishment as well as general quality. I wish the training plan at the next stage will combine face-to-face instruction and remote education and adopt more flexible and varied forms.

- Li Xin, Deputy Factory Manager of Liaocheng Thermal Power Plant

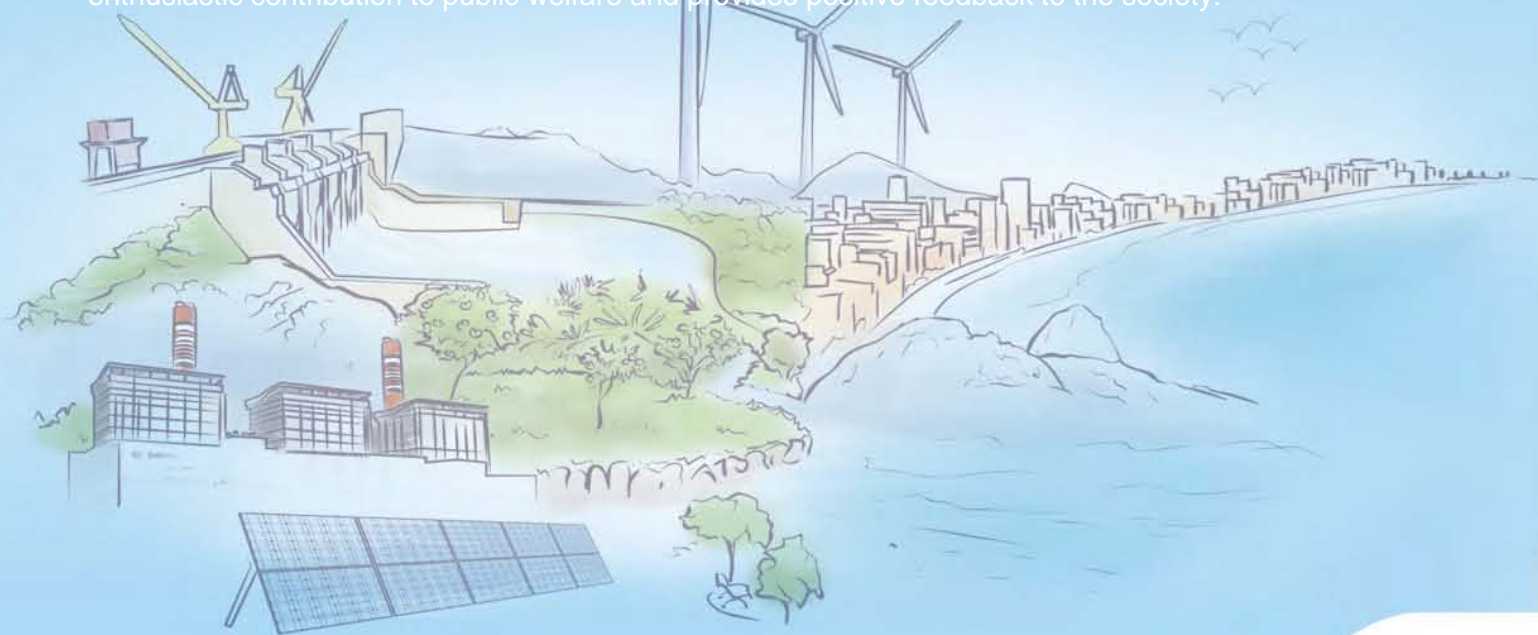
External Examiner

As one of the participants of the international talents selection of the CHNG, I have something to say: first, I was deeply impressed by the leadership of the Company, who not only joined in the interview, but also served as examiners of the General Manager level; second, the organization was strict and standard, and the whole work was smoothly linked by preparing examination work manual and intensive personnel training; third, the item design was scientific and elaborate through innovative use of expatriate adaptability scales and well-designed examiner composition and interview questions, which made the selection more targeted; fourth, though CHNG organized the large-scale international talents selection for the first time, it had relative sufficient and qualified talent reserves judging from the interview.

- Zhang Guofeng, Deputy General Manager of CIIC Talent Assessment Center

05 Shared Development

The Company has always been committed to build a friendly and integrated environment for enterprises and employees, partners and society, adhere to the multilateral cooperation, mutual benefit and win-win results and shared development. It also focuses on internal development of employees and sticks to sustainable development; establishes external cooperation platform to achieve common growth with partners; makes enthusiastic contribution to public welfare and provides positive feedback to the society.



Shared Development Stories in 2015

Huaneng lighting up the Isolated World

"Thank you for lighting up my world..." A girl in Motuo county wrote down these words excitedly after having electricity at home. Students in Motuo Middle School also couldn't help cheering up at the moment of seeing the light turn on. "Lights in school have never been so bright as it is today." Badeng, a native Moinba young fellow, also was tingling with excitement on December 1, 2015. He rode a motorcycle for more than 10km to reach central control room of Yarang Hydropower Station and finally witnessed the joint commissioning and operation of the first unit and extension lines. Before the new power station putting into operation, Yadong Hydropower Station where he worked was the largest power station in Motuo, with installed capacity of only 1MW.

Coverage of labor contract

100
%

Benefits of employees' technical innovation

595
million Yuan

Amount of donations

65.195
million Yuan

Voluntary actions in Motuo

Motuo, referring to "lotus" in Tibetan language, got the name from its lotus-shaped landform. It is a small county located in borders of Nyingchi, Tibet, and the last place in China having highway. Due to frequent geologic activities, humid and rainy climate, and frequent earthquake, landslide and debris flow, 1/4 of Motuo's population are lack of electricity, and the place is known as "Electricity Isolated World". In 2012, Huaneng, based on its pragmatic work, was again authorized by NEA and Government of Tibet Autonomous Region to support electricity construction of Motuo, and provide a series of services from power facilities construction to electricity selling free of charge. In September of the same year, the preparatory office of Huaneng Motuo Power Company was established. The construction of Motuo attracted more than ten Huaneng employees immediately, who were bumpy all the way into Motuo. They walked across the mountain forest and encountered leeches and vipers. With their footprints all over the county, they finally got the real situation of power construction in Motuo. The hydropower stations in Motuo were significantly influenced by dry and wet seasons. The original hydropower equipment was poorly maintained, and there was no power grid. There were safety hazards existed in various links including power generation, transmission, transformation, distribution, household entering and maintenance. Motuo was badly in need of electricity for development.



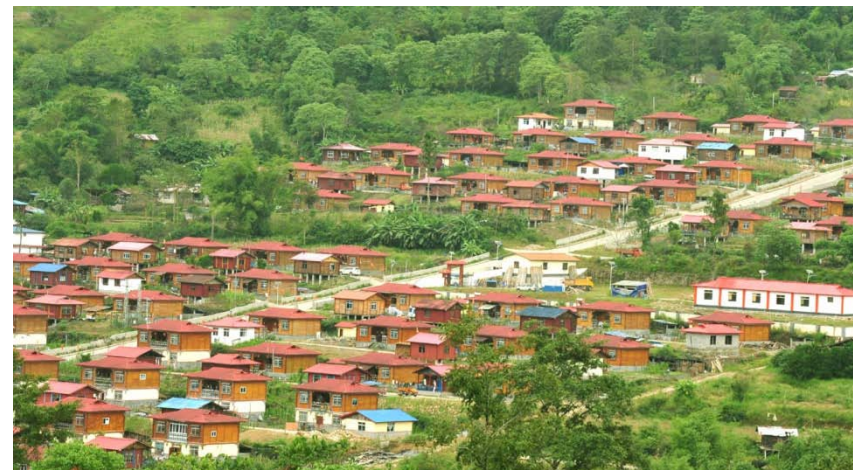
Letter of Thanks from National Energy Administration

Moving forward at all costs

On March 25, 2013, Huaneng Tibet Branch officially took over 9 micro power stations and assets including Yadong Power Plant in Motuo County, and spent eight times as much as the average cost of power plant in the inland of China building the power station. They completed 13 small rural hydropower stations and solved the electricity problem for local inhabitants. However, the rapid growth of the electricity demand in production and living has become the "bottleneck" to restrict the County's rapid economic and social development.

Yarang refers to "development" in the Tibetan language.

Huaneng Yarang Hydropower Station, 15km from the southwest of Motuo County, was commenced on December 25, 2013 in the expectations of all parties. The total installed capacity in the preliminary design was 5MW, more than 2 times of the previously built 22 micro power stations; after its completion, the basic demand of the population without or lack of electricity would be met within the "Thirteenth Five-Year Plan". Runoff water diversion design was adopted for the station, with the 1,683m diversion tunnel going through the "Motuo Fault". The line extension project was commenced on August 28, 2014, including about 203km new lines of 35kV, 10kV, 400V and under, and 5x35kV substations, which formed local electricity network of Motuo. An electric power dispatching center was established at the same time by taking the lead in realizing "regulation and control" of power generation, transmission, transformation and distribution through the integrated intelligent control, and became the first power generation enterprise of the country being qualified for power supply, and obtain the first power supply license in the country.



New looks of Motuo Village and Yadong Village



Carrying the generator through the wetland

Keep the commitment of lighting up Motuo

"Population in Motuo will not suffer from lack of electricity for the winter of 2015!" This is a solemn commitment made by Huaneng staff.

Unit 3 of the Yarang Hydropower Station was put into commercial operation at 23:18 on December 19, 2015 after 72h commissioning, representing comprehensive completion and operation of backbone power supply projects of Motuo supported by Huaneng, marking the history when all ethnic groups in Motuo getting rid of serious electricity shortage and entering into the era of clean, safe, stable and reliable power supply. Full operation of the Yarang Hydropower Station has provided strong energy guarantee for leaping development of economic society of Motuo County, local stability, and reclaiming land and guarding the border areas.

Huaneng has brought great changes to the land from 2012 to 2015. During the three years, it transformed and upgraded the original power station and maintained the rural power grid; trained the original rural electricians and constructed rural electrician team; installed smart electric meters and publicized safe, orderly, paid and legitimate electricity utilization knowledge; constructed main power station and grid and designated residential teams to lead the population to get rich.

I have never thought Huaneng staff would use their intelligence and wisdom by relying on scientific and technological strength and innovation to construct such an advanced power grid and power dispatching center in a remote and backward place like Motuo!

- Zhang Yuhui, Deputy Secretary of the CPC Motuo County Committee and Executive Deputy County Head

Highway and electricity has been connected to Motuo in recent years, which significantly improved the electricity safeguard capacity and facilitated the next stage of development in Motuo.

- Wang Bin, Director of Development and Reform Commission of Motuo County



Education assistance in Tongchuan Zhaojin Power Plant

Make Enthusiastic Contribution to Social Public Welfare

The Company adhered to the concepts of "build a power station to promote local economy while protecting local environment and bringing welfare and harmony to local people", positively responded to national policies, actively undertook the social responsibility of central enterprises, participated in social welfare undertakings, extensively carried out poverty alleviation, financial aid, education aid, volunteer service and other activities to help build a harmonious society. Total donations of all kinds in 2015 amounted to 65.195 million Yuan.

Total donations

65.195 million Yuan

Targeted poverty alleviation and charitable activities

In 2015, in accordance with the basic strategy of accurate implementation plan for poverty alleviation and poverty eradication, the Company prepared 2015-2017 Poverty Alleviation Projects and Funding Plan, played their own advantages to alleviate poverty by power construction and improve people's livelihood, and properly completed designated poverty alleviation and support work.



Solving water, road and electricity shortages in numerous counties and villages and helping population in old revolutionary base areas

Hengshan County was an old revolutionary base area in north Shaanxi with severe water, road and electricity shortages due to its landform and climate.

The Company carefully implemented the SASAC's deployment of designated poverty alleviation of old revolutionary base areas by central enterprises, designated working groups to visit the villages and investigate actual situations of the water, road and electricity shortages, communicated with local governments and selected 39 villages out of 110 as objects of the 2015-2017 designated poverty alleviation activity, which were remote villages with severe poverty and concentrated population. It prepared the Project Planning for Huaneng's Designated Poverty Alleviation of Old Revolutionary Base Areas (2015-2017) and Project Management Methods for Designated Poverty Alleviation Activities with Hengshan County, arranged an investment of 11.7 million Yuan in three years, built and maintained roads of 675km supported by auxiliary facilities and local labors, built more than 330 wells, irrigation stations, water stations and rainwater collecting cellars, and financed 14 villages for power facility maintenance, involving a population of 42,000, in which about 10,000 were impoverished people.

By 2015, 13 village projects had been selected and the corresponding implementation plans had been prepared, construction work had been orderly promoted, and 3.9 million Yuan had been invested.



Arrangements of Assistance to Xinjiang and Qinghai and Targeted Poverty Alleviation Projects from 2015 to 2017

Education, medical treatment and other public infrastructure constructions were emphasized in Akqi County and Jianzha County. In Hengshan County, *Notice on Implementing Designated Poverty Alleviation of Old Revolutionary Base Areas* by Central Enterprises issued by SASAC was implemented and water, road and electricity shortages were emphasized.

Akqi County, Xinjiang: construction of central primary schools and kindergartens of Kulansarike Township were emphasized; poor college students aid, facility agriculture and cadres training were also carried out. The annual financial arranged was 7 million Yuan and the total funds was RMB 21 million in three years.

Jianzha County, Qinghai Province: key assistance in constructing No.2 Ethnic Middle School, comprehensive experiment building, indoor sports halls and campus culture and launch of 5 projects including donation of medical equipment, construction of the service center of the disabled and special training, with annual capital arrangement being 5 million Yuan and totaling 15 million Yuan in three years.

Hengshan County, Shaanxi Province : planning to help 30 poor villages solve water and road problems, etc. within 3 years; to launch "Talent Project" and "New Great Wall Caring Campaign of Poverty-stricken Students"; annual investment of 1.1 million Yuan to help 50 poverty-stricken college students and 100 high school students in Hengshan County finish education; and the annual capital arrangement reaches 5 million Yuan and totals 15 million Yuan in three years .





Education support, a crucial task for generations

Over the years, the Company continues to participate in helping students realize dreams through aided construction of education infrastructure and launch of paired studying assistance in poverty-stricken areas.



"New countryside and youth travel" education support activity of Huaneng Lancang River Hydropower Co., Ltd.

Voluntary service to pass love

Adhering to voluntary service spirit of "devotion, friendship, cooperation and progress", the Company encouraged all staff to actively carry out volunteer activities to pass the power of love to society. In 2015, the Company launched over 2,000 volunteer activities which involved more than 80,000 persons.

Concern for the vulnerable

For a long time, the Company has paid attention to people's livelihood, focused on cultivation of the responsibility fulfillment culture of assisting the disabled and saving the weak, encouraged employees to show concern about the weak.



Voluntary assistance

In the golden autumn, a new semester started. Organizations like Huaneng Power International, Changxing Power Plant, Jinling Power Plant, Yueyang Power Plant, Dongfang Power Plant and Tongchuan Power Plant organized young volunteers to support students in poor poverty-stricken areas. Over the years, all units of the Company aided reconstructions of local Hope Primary Schools and successively donated teaching buildings, computer centers, electricity classrooms and sports teaching equipment for schools and improved students' living conditions like kitchen and toilet facilities and accommodation conditions. Huaneng young volunteers come to school each year and serve as instructors to explain extracurricular knowledge to children and interact with them. In this way, they support those needy children and help them build confidence and realize dreams.

Alltrust "Mom Health Insurance Funds"

On May 10, 2015, Alltrust Insurance and China Women's Development Foundation initiated and founded "Mom Health Insurance Funds" and launched "Mom Health Protection Campaign" in society and established a guarantee mechanism of major disease and accidental injury for poverty-stricken mothers. By the end of 2015, it joined hands with Tencent Foundation and launched such large-scale activities as "Mother Health Protection Campaign—Offer Love for Mother", "Mother Health Protection Campaign—travel to Shanxi" which involved more than 12,000 volunteers and raised funds of over 12 million Yuan in total. So far, more than 2,000 poverty-stricken and left-behind mothers have received assistance. In 2015, the Company won the honorary title of the third Chinese female public welfare model, one of the "10 major enterprises caring for women".



Caring for Employees

Safeguarding employees' rights and interests

The Company strictly followed laws and regulations such as the *Labor Law* and *Labor Contract Law* to sign labor contracts with employees, in addition to paying social insurance and protecting personal privacy of employees according to rules and constantly improving the management basis of labor employment. By the end of 2015, we had 140,989 employees.

Signing rate of labor contracts

100 %

Coverage rate of social insurance

100 %

Salaries and Welfare

Paid on time and gave reasonable salary increases; improved enterprise annuity management system; further strengthened and standardized employee welfare security system; persisted in equal pay for equal work; skewed the salary towards front-line workers and production team; achieved 100% in the coverage rate of social insurance.

Democratic Management

Held the Company's second conference of Worker's Congress; promoted open democratic management of factory affairs and refined democratic management at basic level; strengthened the institutionalization of trade unions and workers' congresses. The rate of workers' congresses institutionalized and trade unions established of the secondary unit reached 100%. The rates of trade unions established and workers' congresses institutionalized of the grass-roots enterprise reached 91.5% and 88%, respectively. By the end of 2015, Every employee joined the trade union.

Annual Leave

Each staff enjoyed paid leaves of 5-15 days ranging with the years of service; consistently allowed maternity leave.

Occupational Health

Organized regular physical examination for employees and those engaged in special types of work; optimized staff's physical examination plans and constantly improved staff's convenience and practical effects in physical examination; the rate of staff covered under the physical examination and the rate of staff under healthy records both reached 100%.

Equal-employment

Adhered to the policies of equality between genders and equality of the people from different minorities; protected the legitimate rights and interests of female workers and dispatched labors in accordance with relevant laws and regulations; strictly complied with national laws and regulations and signed labor contract with employees 100%; studied and formulated management method for employment of college graduates for the Company and refined graduate recruitment conditions and procedures.

Make "Mom's Room" become the "warm home" of female employees

On August 20, 2015, Yimin Coal and Electricity Co., Ltd unveiled its first "Mom's Room". Adhering to the principle of "energy saving, convenience for female staff and multi-purpose room", the "Mom's Room" is equipped with LCD TV, rest bed, health care books for female staff, microwave oven, drinking water machine and children's stuffed toys and provides private, comfortable, convenient and safe rest area for female staff in menstrual period, pregnancy preparation period, pregnancy and lactation period and thus effectively safeguard the rights and interests of women workers and care for their lives. Over 300 female workers can enjoy the "warm home".





Strengthening system training

We implemented the strategy of developing the enterprise by talent management. We struggled to improve the comprehensive quality of our staff through special training, workshops for technology, exchanges and discussions, study of key subjects, coalition of school and enterprise, and skill competitions, all of which helped provide talents for our company to promote better and fast development.

- ◆ We established the Company's technical talents training system covering major industries, areas and disciplines according to plans and steps on a gradual basis. In 2015, we had constructed 16 talent training bases in total.
- ◆ We organized 9 company-level technical talents workshops, 23 skilled talents trainings and 24 management trainings for 3,171 employees.
- ◆ We carried out skill competitions among employees. In 2015, we held skill competitions on 2 production posts (centralized control watcher and coal business sector) and skill competitions on 3 management posts (files, finance and information). And the industrial (regional) companies held 79 skill competitions for 3,031 employees. Our grassroots-level enterprises organized 1,085 competitions for 50,372 employees.
- ◆ We recommended innovations, solicit 39 innovative results and 17 items to the leadership. We established 107 model worker innovation studios, conducted 1,578 technological innovation activities and created economic profits of 595.6 million Yuan.
- ◆ Yao Gengzheng, from Jiacha Preparatory Office of Huaneng Tibet Company, and Fan Zhiqun, from Wulashan Power Plant of Huaneng Northern Company, were awarded the first "China Power Model". Liu Zhenhua, IGCC, Wang Fujing, from Baiyanghe Power Plant of Huaneng Shandong Company, Xiang Bing, from East Hailar Power Plant of Huaneng Hulunbuir Company and Ren Yongqiang, from Clean Energy Technology Research Institute, won the award nomination.
- ◆ In addition, Zhou Tao, from Dalate Power Plant of Huaneng Northern Company, Xu Hai, from Linyi Power Plant of Huaneng Shandong Company and He Maoqun, from Zhongtai Power Plant of Huaneng Shandong Company were awarded "National Model Workers".

Number of technological innovation activities

1,578

Economic benefit of

595 million Yuan

Number of grassroots-level enterprise competitions

1,085

50,372 participants



From a country boy to "Expert Zhou"



From 1996 to 2015, Zhou Tao has been working hard in Dalate Power Plant for 20 years and become one of the first batch of centralized control operators and thus been dubbed as "Expert Zhou" by employees. He led the team to eliminate potential dangers for many times and the unit was awarded "national reliable 600MW golden unit". In April, 2013, the national energy and chemical industry system "Zhou Tao Model Worker Innovation Studio" was established and it had cultivated 7 technicians including technical experts in power industry, youth post expert of central enterprises and technical experts of the autonomous region. In April, 2015, Zhou Tao, who was once a country boy, stood on the podium for national model workers.



Establishment of professional channel

- ◆ Formulated the group company's special planning of "Thirteenth Five-Year Plan" H & R management to optimize the talent cultivation environment.
- ◆ We have 13 chief experts and 16 chief technicians. We introduced 7 experts in the Thousand Talents Program and had 146 national-level technical talents including academics and experts who have outstanding contributions and received a special grant award by the government.
- ◆ Organized professional title evaluation and examination and assessment of technicians and senior technicians and there were 158 people winning the title of technical expert in central enterprises, power sector and company, 363 obtaining the title of senior professional post and 933 winning occupational qualifications of technicians and senior technicians.
- ◆ Conducted special inspection to personnel selection and employment of 48 secondary units according to rectification requirements of the central government's special inspection tour and sent 4 inspection teams to conduct spot checks on 16 subsidiaries including the Huaneng Renewables Corporation.

Improvement of happiness index

- ◆ In 2015, we strengthened the assistance to needy employees, insisted on launching heart-warming activities, actively served as a matchmaker for unmarried employees, carried out rich and colorful cultural activities, paid attention to balance between employees' work and life and constantly improved their happiness.
- ◆ In 2015, financial and material support worthy of 18.996 million Yuan was distributed to help 5,341 needy employees. Paid visits to 6,797 needy employees during the New Year's Day and the Spring Festival.
- ◆ We constructed worker activity venues and libraries, and organized various cultural and sports activities, and established 782 venues for tennis, badminton, table tennis, photography and painting and calligraphy associations.

Join Hands with Partners to Achieve a Win-win Outcome

Improving responsible procurement system

In a major push to improve procurement management regulations, we strengthened the bidding management, implemented the accountability system in offers and hiring and strictly regulated offer letters. We also completed the functional development of material management platform and strengthened the dynamic management of supplier and real-time monitoring to build a responsible industry chain. In 2015, the amount of material purchase through e-commerce platform increased by 22.02% over the previous year and the proportion of centralized procurement of materials rose by 14%.

Building Strategic Cooperation Platforms

We have further improved our industrial/regional layout and expand regional energy cooperation. While proactively building platforms for communication and cooperation with local governments and enterprises, we signed cooperation agreements with Hebei Province, Shanxi Province, Shenhua Group and Power Construction Corporation China to promote mutually beneficial cooperation and common development.



APPENDIXES

About Us

Company profile

China Huaneng Group is a key state-owned enterprise approved by the State Council. The Company is engaged in the following businesses: development, investment, construction, operation and management of power sources; production and sale of power (heat); development, investment, construction, production and sale of business and products related to finance, coal, transportation, renewable energy and environmental protection; industrial investment, operation and management.

During its years of development history, CHNG has provided rich experience in the reform, development and technological innovation for the power industry and has played an exemplary role in improving enterprise management and increasing economic benefit for power enterprises. Also, the Company made a great contribution in meeting power demand for economic and social growth, as well as in maintaining and adding value to state-owned assets.

CHNG is committed to building itself into a world-class enterprise with international competitiveness. By the end of 2015, the Company had total installed capacity of 160.63GW, with assets distributed all over China and overseas, making it installed capacity rank No.1 in the world. The Company is also engaged in sectors of coal, finance, technology R&D and transportation, etc. that support the core business of power and these sectors show gradual development and the industrial collaboration is further improved. The Company was the first Chinese power producer to be enlisted in the rank of *Fortune Global 500* in 2009, ranking 224th in 2015.

Industrial distribution

coal business sector

Our annual production capacity was 83.30 million tons in 2015, and our coal output was 65.15 million tons.

Transportation Industry

Ports that we wholly own or control had a handling capacity of 54.62 million tons per year, and our shipping fleets had a shipping capacity of 4.227 million DWT.

Power Industry

In 2015, we had wholly owned and holding power plants with 160.63GW of installed capacity, of which, there were thermal power of 123.48GW, hydropower of 20.89GW and wind power of 15.08GW.

Financial Industry

We boasted relatively complete financial platforms in finance, capital, security, insurance, trust and finance lease. In 2015, entrusted assets and assets under management in the finance industry reached 980.5 billion Yuan.

Technology Industry

Our principal scientific research and development system consists of seven national key laboratories (R&D centers), two scientific research bases and several company-level laboratories.



Organization structure

Departments of the Headquarters		
General Administration Department	Finance Department	Human Resources Department
News Center	Department of Capital Operations and Equity Management	Office of Retiree Affairs
Department of Planning and Development	Department of Safety Supervision and Production	Discipline Inspection and Supervision Department
Department of Budget and General Planning	Department of Science and Technology and Environmental Protection	Auditing Department
Department of Corporate Governance and Legal Affairs	Engineering Department (Engineering Department of joint-stock company)	Department of Party Construction
Sales & Marketing Department (Sales & Marketing Department of joint-stock company)	Materials Department	Labor Union Working Committee
Fuel Department (Fuel Department of joint-stock company)	International Cooperation Department	

Business Departments and Professional Office		
Power Development Business Department	Shale Gas Development and Utilization Office	Coal Business Department
Coal Chemical Management Office	Nuclear Power Business Department	

Units Directly under China Huaneng Group		
CPC China Huaneng Group Party School (Education and Training Center)	Technical Economics Research Institute IT Center	Talent Base Construction Office (Talent Base Construction Management Center)

Industrial Companies		
Huaneng International Power Development Corporation (HIPDC)	Huaneng coal business sector Co., Ltd.	Huaneng Properties Co., Ltd.
GreenGen Co., Ltd.	China Huaneng Group Fuel Co., Ltd.	China Huaneng Group Hong Kong Co., Ltd.
Huaneng Power International Inc. (HPI)	Huaneng Capital Services Co., Ltd.	Huaneng Overseas Enterprises Management and Service Co., Ltd.
Huaneng Renewables Corporation	China Huaneng Finance Co., Ltd.	Xi'an Thermal Power Research Institute Co., Ltd.
Huaneng Nuclear Power Development Co., Ltd.	China Huaneng Group Clean Energy Technology Research Institute	China Huaneng Group Technology Innovation Center
Huaneng Energy and Transportation (Holding) Co., Ltd.	Huaneng Integrated Industries Company	

Regional Branch Companies		
China Huaneng Group North China Branch	China Huaneng Group Jiangsu Branch	China Huaneng Group Chongqing Branch
China Huaneng Group Northeast China Branch	China Huaneng Group Zhejiang Branch	China Huaneng Group Yunnan Branch
China Huaneng Group East China Branch	China Huaneng Group Anhui Branch	China Huaneng Group Qinghai Branch
China Huaneng Group Central China Branch	China Huaneng Group Fujian Branch	China Huaneng Group Tibet Branch
China Huaneng Group South China Branch	China Huaneng Group Jiangxi Branch	China Huaneng Group Guangxi Branch (Preparatory Office)
China Huaneng Group Northwest China Branch	China Huaneng Group Henan Branch	China Huaneng Group Guizhou Branch (Preparatory Office)
China Huaneng Group Hebei Branch	China Huaneng Group Hunan Branch	
China Huaneng Group Shanxi Branch	China Huaneng Group Hainan Branch	

Regional Subsidiaries		
North United Power Co., Ltd.	Huaneng Jilin Power Generation Co., Ltd.	Huaneng Qinghai Power Generation Co., Ltd.
Huaneng Lancang River Hydropower Co., Ltd.	Huaneng Heilongjiang Power Generation Co., Ltd.	Huaneng Tibet Yarlung Zangbo River Hydroelectric Development Investment Co., Ltd.
Huaneng Hulunbuir Energy Development Co., Ltd.	Huaneng Shaanxi Power Generation Co., Ltd.	Huaneng Xinjiang Energy Development Co., Ltd.
Huaneng Shandong Power Generation Co., Ltd.	Huaneng Ningxia Energy Co., Ltd.	
Huaneng Sichuan Hydropower Co., Ltd.	Huaneng Gansu Energy Development Co., Ltd.	

Units Directly Managed by China Huaneng Group		
Huaneng Shandong Shidaowan Nuclear Power Co., Ltd.	Huaneng Hainan Industrial Co., Ltd.	
Huaneng Shidaowan Nuclear Power Development Co., Ltd.	Huaneng Tendering Co., Ltd.	



Corporate strategy

- 
Transforming and upgrading Strategy
 Focus on optimizing and adjusting the power structure, industrial structure and regional distribution. Concentrate on the development of new energy, highly-efficient and clean use of conventional energy and energy service. Eliminate backward production capacity and build a synergistic and efficient industrial system.
- 
Technology innovation strategy
 Persist in supporting the core business while being geared to the needs of production, the leading edge and industrialization; improve technological innovation system and mechanism; enhance the capacity of independent innovation and research on international cutting-edge technology to lead technological progress of the power industry.
- 
Green development strategy
 Intensify our efforts in the development of low-carbon and clean energy and reduce emissions of greenhouse gases and pollutants; rely on technological progress and scientific management and develop the circular economy to constantly improve the level of energy conservation and environment protection.
- 
International operation strategy
 Speed up the pace of "go global" and deepen international exchange and cooperation based on global perspective; allocate the resources of capital, talent and markets effectively; gradually expand the business abroad and strengthen the operational supervision and risk prevention to improve the level of international operations.
- 
Operation excellent strategy
 Give full play to the supporting role of scientific management through constantly improving the whole process management of production and operation, marketing, financial costs and project construction, effectively integrating economic factors and system resources, and continuously improving the profitability and management of the company.
- 
Talent-Intensive strategy
 Stick to the "Scientific Outlook on Development" as the overall guidance in the recruiting and management of talents through constantly improving the incentive mechanism for fostering, attracting, employing and managing talents, while positively developing high-end, complex, innovative and international talent team to support the company's development.
- 
Harmonious development strategy
 Operate the business according to laws and regulations. Strengthen the construction of corporate culture through wholeheartedly relying on employees in conducting the business and actively performing corporate social responsibilities while enhancing the economic, social and environmental value creation capabilities and shaping Huaneng's good image to build a harmonious enterprise.

Responsibility management

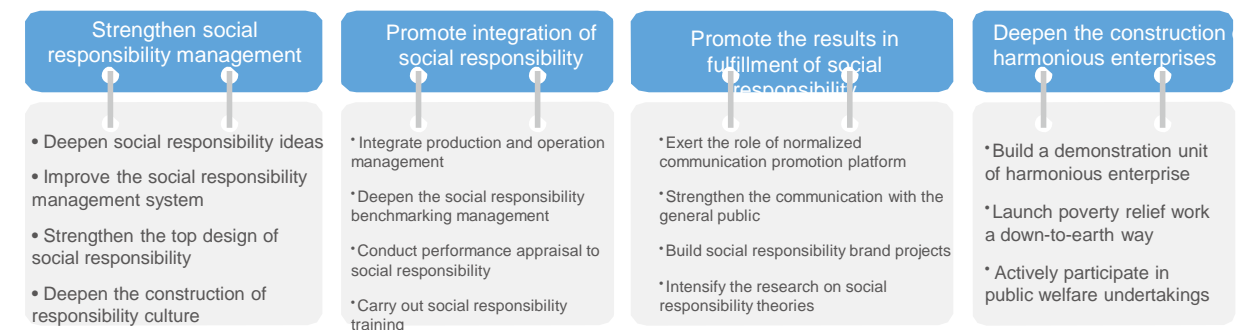
CSR culture

CHNG is committed to building a Red company serving the needs of socialism with Chinese characteristics; a Green company advocating technological innovation and environmental protection; and a Blue company advancing through innovation and internationalization. Building a "three-color" company is CHNG's corporate mission and is the view of our social responsibility.



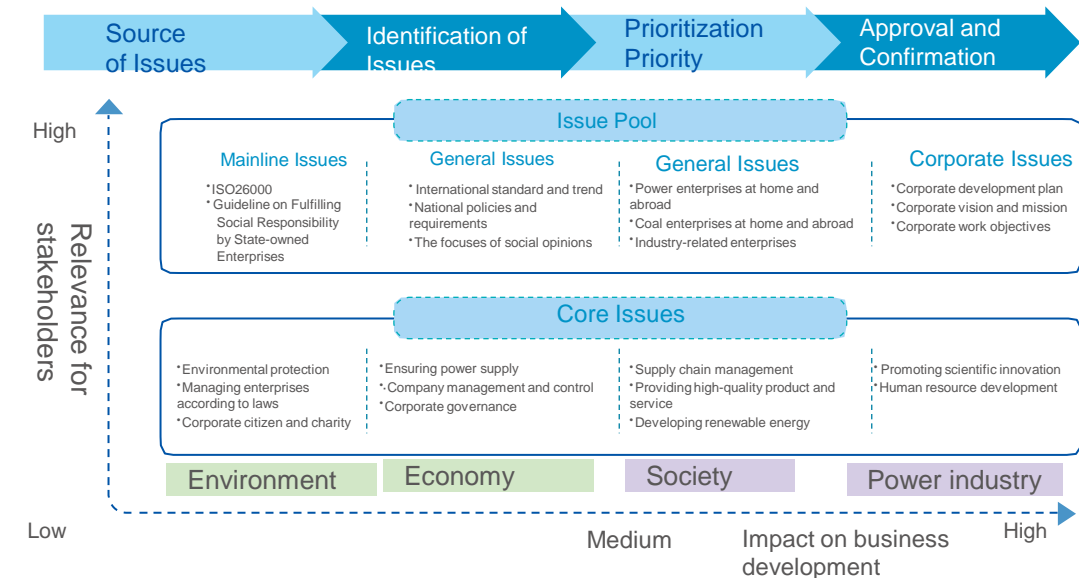
"Red"	"Green"	"Blue"
is the essence of the Company and the foundation for our mission. The construction of a Red company is our fundamental attitude and spirit, the concentrated embodiment of our efforts to the national economic development, social progress and people's higher living standards, as well as the reflection of our responsibilities.	symbolizes the coordinated development and harmonious progress between human and natural environment. The construction of a Green company manifests our humanistic values and scientific attitude to advocate science, respect talents, focus on technology, protect environment and promote the sustainable development of society.	is the basic color of the logo. It implies that we will develop our business through keeping pace with times, striving for innovation, expanding internationally and absorbing the essence of all advanced technologies and cultures in the world, and embodies CHNG's ability and ambition to coexist with various enterprises.

CSR planning (2016-2018)



Responsibility issues

Responding to the Global Reporting Initiative (GRI) (G4), Chinese Academy of Social Sciences CASS 3.0 and other standards and initiatives and combining the actual situation of enterprise, we have identified CSR core issues to clear major social responsibility issues, scientifically determined the content boundary of the report, disclosed social responsibility practice and performance and answered the concerns of stakeholders.





CSR communication

We have constantly improved our trinity CSR information communication system to make daily, regular and yearly communication with stakeholders. We have also implemented press spokesman system, established media open day, and released sustainability reports regularly. Besides, we have set up a special CSR column on our website, joined various social organizations, taken an active part in industry exchanges and made effective interactions with stakeholders.

Stakeholder engagement

Stakeholders	Major Concerns	Communication
Government and Investors	<ul style="list-style-type: none"> Safe supply of power Maintenance and appreciation of state-owned assets value Abiding by relevant laws and regulations, paying taxes according to law Return to investors 	<ul style="list-style-type: none"> Implement earnestly national policies and regulations Participate in studies and discussions conducted by relevant state ministries and committees Coordinate with local government for common development
Employees	<ul style="list-style-type: none"> Employment Career development Rights and interests protection Health and safety Corporate culture 	<ul style="list-style-type: none"> Give full play to the role of the labor union Ensure transparency of company affairs Improve Workers' Congress system Establish multiple communication channels
Customers	<ul style="list-style-type: none"> Supply adequate, reliable, environmentally-friendly, reasonably-priced electric power Supply safe and quality coal products 	<ul style="list-style-type: none"> Maintain close relationship with clients Strictly implement business contracts Maintain the safety and stability of power grid and heat supply network
Partners	<ul style="list-style-type: none"> Strategic cooperation and fulfillment of commitment Implement National License System Shoulder responsibilities in purchasing and influence Achieve win-win in the industrial chain 	<ul style="list-style-type: none"> Negotiations for strategic corporation High-level meetings Routine business communication
Community and the Public	<ul style="list-style-type: none"> Community environment Community harmony and stability Community public welfare 	<ul style="list-style-type: none"> Participation in community construction Support public welfare causes Organize poverty-alleviation activities
Industry Counterparts	<ul style="list-style-type: none"> Experience sharing Technical exchange Competition and cooperation 	<ul style="list-style-type: none"> Attend industrial meetings Technical competition and exchange Routine communication
Social Groups and Organizations	<ul style="list-style-type: none"> Support and participate in social groups and organizations Abide by the articles of associations 	<ul style="list-style-type: none"> Take an active part in relevant meetings Take the initiative in making suggestions



Mangjiedu Bridge built by Huaneng Lancang River Hydropower Company for local people

CSR governance

We have established a Social Responsibility Management Committee to develop our strategy for social responsibility and our medium and long-term development program, deliberate over and decide major social responsibility issues, designate the related management department and agency, and take the responsibility for the coordination of daily work for the construction of social responsibility and harmonious enterprise. We have also developed a three-level social responsibility system comprised of the headquarters, secondary units and grassroots-level enterprises. In this system, the headquarter has appointed a part-time manager of social responsibility; each secondary unit has set up social responsibility leading groups; and grassroots-level enterprises have also identified departments and staff who are responsible for developing social responsibility activities and reporting the related performance to CHNG.



Managers of social responsibility from subordinate units participated in "Sharing Responsibility—CSR Public Classroom (the 7th session)"

CSR performance

- The company's sustainability report in 2014 was awarded **five stars** (highest level) by Chinese Academy of Social Sciences and acknowledged as an outstanding CSR report.
- In November 2015, our company was ranked the **fourth** among Top 300 enterprises and rated as a five-star enterprise in the *Corporate Social Responsibility Blue Paper* issued by the Chinese Academy of Social Sciences, with CSR index of **87.6** points.

Huaneng held 2015 nuclear power "Public Open Day" activity

Under the unified guidance of National Energy Administration, National Nuclear Safety Administration, State Commission of Science and Technology for National Defense Industry, 2015 Nuclear Power "Public Open Day" Activity with the theme of "transparent nuclear power plant and safe Shidaowan" kicked off at Huaneng Shandong Shidaowan Nuclear Power Co., Ltd. in August 2015.

During the activity, over 10 news media including xinhuanet.com and people.cn and a total of 70 people including environmentalist, Internet celebrities and representatives of Weihai and Rongcheng governments and student representatives from middle and primary schools in Rongcheng

came to Shidaowan Nuclear Power Plant to visit the company's exhibition center and construction site, learning such nuclear power knowledge as the development of nuclear power, safety of nuclear power plant, nuclear safety regulation and safety of HTGR nuclear power plant and construction progress. That helped them improve the understanding to the Shidaowan Nuclear Power Plant.





Our Commitment to Responsibility During the Thirteenth Five-Year Plan Period

Innovative Development



- We will comprehensively deepen enterprise reform, speed up promotion of innovation in system and mechanism, management, technology and business mode.
- We will accelerate transformation of energy production and service and actively seek for new profit growth points;
- We will increase investment in science and technology innovation, make breakthroughs in major science and technology projects, expedite development of science and technology industry and enhance abilities in service, production and operation;
- We will construct "digital Huaneng" to improve the information management level.

Harmonious Development



- We will intensify structural reform, optimize inventory, guide increments, active reduce amount and do a good job of "addition, subtraction, multiplication and division". Also, we will strengthen technical renovation and boost the quality improvement, efficiency increase and upgrading;
- We will accelerate the elimination of backward production capacity, increase the efficiency in disposing low-efficiency and inefficient assets and actively and prudently deal with "zombie enterprises";
- We will expedite optimization of industrial restructuring and maximizing benefits of industrial collaboration.

Green Development



- We will deeply promote *Green Development Action Plan*, extend the development of low-carbon clean energy and constantly improve the proportion of low-carbon clean energy;
- We will promote the construction of excellent environment-friendly and conservation-minded enterprises, accelerate upgrading and reconstruction of energy conservation and emission reduction, make energy consumption, pollutant and carbon emissions constantly reduce and reach the carbon discharges peak value as soon as possible;
- We will enhance the clean level, expand ultra low emission and intensify "speed increase and scope expansion" to create a clean energy system.

Open Development



- We will participate in construction of the "One Belt and One Road", implement international development strategy and improve international competence.
- We will strengthen management and reorganization of overseas assets, put the existing and additional financial resources to good use and enhance profitability of overseas assets.
- We will form combo going global and increase competitiveness and anti-risk capability.
- We will strengthen international exchanges and cooperation and support local economic and social development to enhance staff localization and diversification level.

Shared Development



- We will deepen the construction of harmonious enterprises, improve the well-being of employees and make the enterprise and employees grow together.
- We will strengthen the communication with stakeholders and realize win-win results between the enterprise and partners.
- We will create value, serve the country and repay society, realizing harmonious advance between the enterprise and society.

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Implementation of the United Nations Global Compact

The United Nations Global Compact requires companies to comply with, support and carry out a set of ten universally accepted principles in the aspects of human rights, labor standards, environment and anti-corruption within. These principles are from *Universal Declaration of Human Rights*, *Declaration on Fundamental Principles and Rights at Work* by International Labor Organization, and *Rio Declaration on Environment and Development*.

Huaneng joined the United Nations Global Compact in November, 2007, becoming the first power generation company in China to join the United Nations Global Compact. It actively performs the ten basic principles of the UN Global Compact through promoting safe development, optimal development, green development, healthy development, innovative development and harmonious development.

Ten Principles		Page Number	Implementation
Human Right	Respect and support the protection of internationally proclaimed human rights	P65-67	Abide by laws and regulations at home and abroad, support international conventions on human rights approval by the central government, safeguard and respect human rights, and guarantee employees' legal rights and interest.
	Not complicit in human rights abuses	P65	
Labor	Uphold the freedom of association and recognize the right of collective bargaining	P65	Abide by the national laws and regulations on labor issue, forbid the use of child labor, and oppose any forms of forced labor; adhere to equal and just labor policies and democratic management, make public the affairs of enterprises, and respect the rights of labor.
	Eliminate all forms of forced and compulsory labor	P65	
	Effective abolition of child labor	P65	
	Eliminate discrimination in employment and industry	P65	
Environment	Take a precautionary approach to environmental challenges	P44-47	Actively practice the green action plan, and constantly optimize the industrial organization, accelerate the elimination of backward production capacity, develop various clean energies, strengthen the control and management of greenhouse gases, improve clean production and cope with global climate change, actively develop clean coal technology, create excellent and eco-friendly thermal power plants, vigorously implement reformation of energy saving and environmental protection, refine all links of enterprise operation and reduce the impact on environment.
	Actively increase responsibilities on environmental protection	P36-39	
	Encourage the development and promotion of environmental-friendly technologies	P40-43	
Anti-corruption	Counter any forms of corruption, including fraud, blackmail and offering or accepting bribery	P13-14	Complete the rectifications after the central government's special inspection tour and further promote the special education practice activity of "Three Stricts and Three Honests". Strengthen anti-corruption system construction, advance the construction of honest culture, strictly implement the responsibility of managing and governing the party, conduct the special work of combating bribery in business and standardize enterprises' behaviors in business and transactions.

《中国华能集团公司 2015 年可持续发展报告》评级报告

Upon the delegation of China Huaneng Group, Chinese Expert Committee on CSR Report Rating selected experts to form China Huaneng Group Sustainability Report 2015 Rating Team. The rating team rated *the China Huaneng Sustainability Report 2015* (hereinafter referred to as *the Report*).

I. Rating Basis

Guidelines for China Corporate Social Responsibility Reporting (CASS-CSR 3.0), and the *Standard for China Corporate Social Responsibility Rating (2014)*.

II. Rating Procedures

- The Process Evaluation Group interviewed main members of the Report preparation team and reviewed on the site relevant documents involved in the compiling process;
- The Rating Group evaluated the compiling process of *the Report* and the information disclosed in the Report and drew up the rating report;
- The rating report was submitted for joint signature to the vice-chairman of Chinese Expert Committee on CSR Report Rating and head of the rating team.

III. Rating Results

Process: (★★★★☆)

The Political Work Department of China Huaneng Group led the reporting team, and the senior leaders were engaged in facilitating the compilation and review of the report; the team identified the stakeholders, and collected suggestions from some stakeholders through interview, expert workshop and other ways; the team identified the essential subjects based on China Huaneng's strategy and industrial benchmark analysis; and the team planned to release the report on Huaneng's official website and presented the report in printed, electronic, and H5 versions. A transparent exhibition of the process has been observed.

Materiality: (★★★★★)

The Report discloses in details the key issues in the power industry, including "responding to national policies", "power supply assurance", "production safety", "green power development", "resource and energy conservation", "circular economy development", "eco-environment protection" and carbon asset management. An outstanding substantiality has thus been observed. It shows a high degree of substance.

Completeness: (★★★★☆)

The Report covers 85% of the core indicators in the power generation industry from the perspective of "innovative development", "harmonious development", "green development", "open development" and "shared development". An excellent degree of completeness has thus been observed.

Balance: (★★★★★)

The Report contains negative information and data including "the number of serious equipment accidents", "general equipment accident", "the number of human casualties", "Type I obstacle" and "the number of unplanned outage". It discloses, in the form of special column, the description of general equipment accidents, reflection and corrective measures. An outstanding balance has thus been observed.

Comparability: (★★★★★)

The Report contains historical data of 38 key performance indicators in 3 consecutive years, including "equipment utilization ratios", "installed capacity", "power output", "total revenue", "total profit", "specific coal consumption" and "donations" and makes horizontal comparison with domestic and overseas counterparts in "installed capacity", "specific coal consumption", "station service power consumption" and "mortality rate (in million ton+coal production)". An excellent comparability has thus been observed.

Readability: (★★★★★)

The report gives a description by focusing on "innovative development", "harmonious development", "green development", "open development" and "shared development", with clear framework and strong logicity. Meanwhile, it expounded responsibility practice with abundant cases. Main industry elements of enterprises were blended in the cover, making it have a good integrity. Also, the whole design was simple and elegant and harmony in colors, improving the readability of the report greatly.

Innovativeness: (★★★★★)

The Report focuses on five major development philosophies and follows fundamental policies of China, highlighting a central enterprise's assuming responsibility. Special features like "Sustainable Development of China Huaneng Group During the Twelfth Five-Year Plan Period" and "Strengthening Party Self-discipline by Adhering to the Party's Leadership" are set at the beginning to elaborate the enterprise's key point in performing responsibilities. Meanwhile, the enterprise's responsibilities and actions and key performances are expounded at the start of each chapter, in addition to embedding five "2015 development stories" to demonstrate the enterprise's excellent practice in an all-dimensional and multi-angle manner. Therefore, it is of excellent performance in innovation.

Overall rating: (★★★★★)

Upon evaluation by the Rating Group, *China Huaneng Group's Sustainability Report 2015* is awarded five stars and acknowledged as an outstanding CSR report.

IV. Suggestions

- Strengthen the management of full life circles of reporting and boost stakeholder engagement.

The Rating Group

Head: Wang Zhixuan, Party Member and Vice President of China Electricity Council

Member: Wei Xiuli, Associate Professor of the School of Economics and Management, North China University

Process Evaluation Team: Fang Xiaojing and Wang Zhimin

魏紫川 王志敏

Vice-chairman of Chinese Expert Committee on CSR Reporting Rating The Rating Group Head



Rating Report on Sustainability Report of China Huaneng Group 2015

Issuing time: June 19, 2016



Feedback

Dear Readers,

This report is a Sustainability Report (2015) issued to the public by China Huaneng Group. We are looking forward to your advice and suggestions so that we can improve our reporting in the future. We would be grateful if you would answer the following questions and send this questionnaire back to us in one of the following ways.

Fax: +86-10-63228866
 Mail to: No. 6, Fuxingmennei Street, Xicheng District, Beijing (100031)

Your Personal Information

Name _____

Organization _____

Position _____

Tel _____

Fax _____

E-mail _____

Readers Feedback Questionnaire on this Sustainability Report

Single choice (Please mark your choice with "√")	Yes	Average	No
1. Do you think this report reflects Huaneng's significant impacts on safety, environment, economy and society?			
2. Do you think this report makes an accurate and complete analysis of the relations between Huaneng and its stakeholders?			
3. Do you think the information disclosed in this report is clear, accurate and complete?			
4. Do you think this report is convenient for reading with respect to contents and design?			

Open question

1. In your opinion, which part of this report is most satisfactory?

2. What information that you need to know is not included in this report?

3. What's your advice on our future sustainability reports?

Thank you for your support and cooperation.

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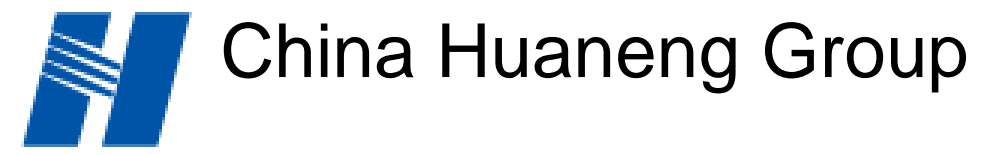
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Stamp

No. 6, Fuxingmennei Dajie, Xicheng District, Beijing

China Huaneng Group

Postcode



We support the
Global Compact