



Beautiful China  
Beautiful Huaneng



# Sustainability Report 2013



Printed on environmentally friendly paper

## About this Report

### Time Covered

- Jan 01, 2013 - Dec 31, 2013. Where appropriate, the report includes additional content and information that pre-dates the stated reporting period.

### Reporting Cycle

- Our sustainability report is published annually, this being the eighth report since 2006.

### Main Contents

- This report outlines our performance in 2013 on safety, environmental, economic and social issues. It includes information and typical cases from documents, statements and information platforms of the Company 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
- Guidelines on Social Responsibilities of Chinese Industrial Enterprises and Industrial Associations

### References to China Huaneng Group

- In this report, "Huaneng Group", "Huaneng", "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>.
- Tel: +86-10-63228800/8811
- Email: [hncsroffice@chng.com.cn](mailto:hncsroffice@chng.com.cn)
- Address: NO.6 Fuxingmennei Street, Xicheng District, Beijing
- Postcode: 100031

## 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.

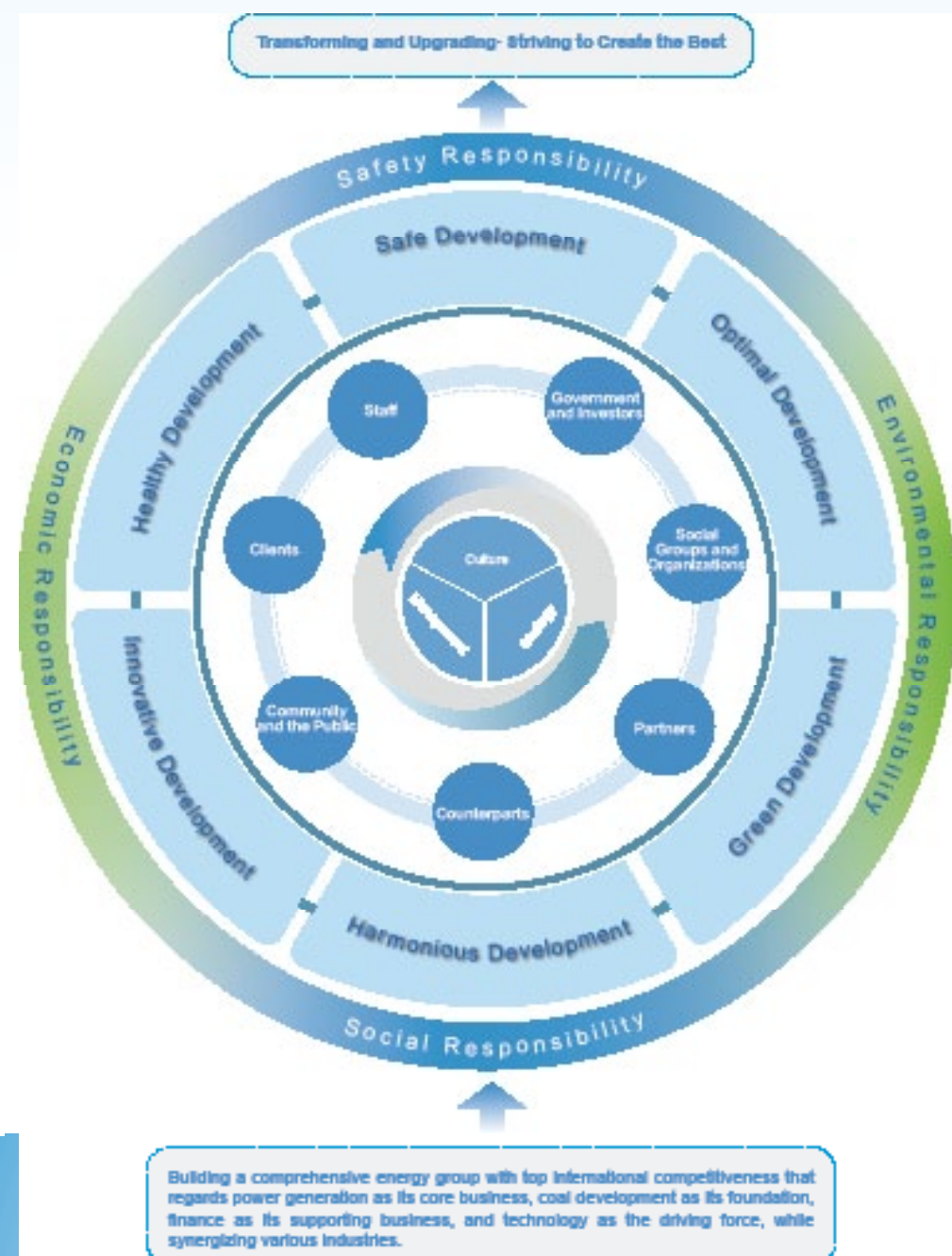
Persist in relying on employees and working with the public to develop the enterprise so as to set an example in putting people first and sharing benefits.

Persist in contributing to society and benefiting the people, so as to set an example in practicing social ethics.



China Huaneng Group's Sustainability Reports in 2006-2013

## Huaneng's Sustainable Development Mode



## Contents

Message from Company Leaders	02
Beautiful Huaneng In Action	08

<b>01 Strategy and Management</b>	10
-----------------------------------	----

<b>02 Safe Development</b>	18
----------------------------	----

<b>03 Optimal Development</b>	26
-------------------------------	----

<b>04 Green Development</b>	34
-----------------------------	----

<b>05 Healthy Development</b>	42
-------------------------------	----

<b>06 Innovative Development</b>	50
----------------------------------	----

<b>07 Harmonious Development</b>	58
----------------------------------	----

Prospect in 2014	66
Indicator Index	68
Rating Report	70

## Message from Company Leaders



**Cao Peixi** President of China Huaneng Group and Vice Secretary of the CPC Huaneng Committee



**Huang Yongda** Secretary of the CPC Huaneng Committee and Vice President of China Huaneng Group

At a new historical moment when China is fully engaged in building a well-off society in an all-round way and rejuvenating the Chinese nation, it is an inevitable choice to accelerate the revolution in energy production and consumption for the sustainable development of the energy industry, and also the most fundamental and important social responsibility of China Huaneng Group as an integrated energy group with electricity as its core business.

Energy constitutes an important material base for the survival and development of human society. A sustainable energy industry concerns the economic lifeline and people's wellbeing of a nation. At a new historical moment when China is fully engaged in building a well-off society in an all-round way and rejuvenating the Chinese nation, it is an inevitable choice to accelerate the revolution in energy production and consumption for the sustainable development of the energy industry, and also the most fundamental and important social responsibility of China Huaneng Group as an integrated energy group with electricity as its core business.

In 2013, facing the complex and severe business environment, Huaneng made a joint effort to tackle the difficulties and persisted in improving development quality, accelerating structural adjustment, optimizing resource allocation, positively developing clean energy and driving the transition of development mode through in-depth study and implementation of the spirit of the Eighteenth CPC National Congress and with a solid implementation of the CPC's mass line education and practice requirement as the powerful driving force. With special attention to production and management and making efforts in market expansion, we reduced loss and increased profits through multiple measures and realized the maintenance and appreciation of assets value. We continued to advance energy conservation and emission reduction, cut energy consumption to meet emission standard and deepen the construction of an energy-efficient and environment-friendly company. We persisted in an innovation-driven path by increasing research input and pilot exercising advanced technology to strengthen the capacity of independent innovation. We improved our management level through benchmarking the world-leading mode, innovating management system and mechanism and improving management methods. We gained a solid ideological and political guarantee to advance scientific development from strengthening the ideological and work style construction. Consequently, we made great progress in many aspects of our work in 2013, the economical benefits reaching a new high and, profitability, competitiveness and sustainability increasing greatly. Due to the above progress, we've made a solid forwardness towards building a world-class company with international competitiveness.

Nowadays, energy, resource and environment remain the core issues bottlenecking sustainability. The conflict between resource and environmental bearing capacities and the demand of energy for socioeconomic growth looms large. Severe haze and other environmental problems become the focus of social concern. It has become a consensus of the whole society to conserve resources and protect the environment for bluer sky, greener water and better life. In the face of the new situation and challenges, the 18th National Congress of CPC proposed the grand vision of advancing ecological progress for a beautiful China. The 3rd Plenary Session of the 18th CPC Central Committee made an important decision to further comprehensively deepen reforms. This is a long-term strategy concerning people's wellbeing and the future of the Chinese nation.

As a key state-owned enterprise, we will unwaveringly implement the guidelines and policies outlined by the CPC and the central government and firmly follow the low-carbon, clean and sustainable road of development. We will make efforts to protect the ecological environment and constantly increase the proportion of low-carbon and clean energy in our installed power generation capacity through paying more attention to the pattern transformation of energy production, vigorously pressing ahead with energy restructuring, and developing clean and renewable energy. We will strive to ensure a safe and stable power supply through attaching more importance to utilizing resources in an intensive manner, optimizing and developing clean coal fired power generation, and tapping the potential of energy conservation. On top of that, we will put more emphasis on environmental friendliness and ensure standard and clean emission through strict enforcement of environmental laws and regulations and technological and managerial approaches. Moreover, we will focus more on technological innovation through enhancing fundamental research, following the frontline scientific trend, making technological breakthroughs and demonstrating the application of advanced technologies. Last but not least, we will pay more attention to institutional improvement, optimize the allocation of resources and unleash business dynamics to build a world-class company.

2014 marks the first year for China to comprehensively deepen reforms and also an important year for us to boost sustainability. We will adhere to the objective of building a world-class company with international competitiveness, focus on improving development quality and efficiency, and accelerate the transformation and upgrading. To this end, we will further enhance safety management and improve the long-term mechanism for

production safety through sticking to the corporate development strategy, firmly upholding the principle of making progress while maintaining stability, and thoroughly implementing the CPC's mass line education and practice requirement. We will go all out to increase efficiency through intensifying business management, improve the management system and mechanism through deepening internal reform, maintain the leadership of key indicators through strengthening energy conservation and emission reduction, improve the fine management level through enhancing corporate management, and raise independent innovation capacity through facilitating technological innovation. We will also reinforce the Party's construction and team construction to provide a powerful ideological and political guarantee for building a world-class company with international competitiveness.

Standing at a new starting point and adhering to the mission of "three Color Corporation", we will be devoted to becoming a responsible corporate citizen and the practitioner and promoter of sustainable development through bearing in mind our economic, political and social responsibilities, practicing the declaration on sustainable development, and forging ahead hand in hand with all stakeholders. We will make long-lasting contribution to the building of a well-off society and the great rejuvenation of the Chinese nation through creating comprehensively economical, environmental and social value.

May 2014

## Members of the Management Team



**Cao Peixi**, President of CHNG and Vice Secretary of the CPC Huaneng Committee (third from left in the front row)

**Huang Yongda**, Secretary of the CPC Huaneng Committee and Vice President of CHNG (third from right in the front row)

**Zhang Tingke**, Vice President of CHNG and Member of the CPC Huaneng Committee (second from left in the front row)

**Guo Junming**, Chief Accountant of CHNG and Member of the CPC Huaneng Committee (second from right in the front row)

**Ma Jing**, Member of the CPC Huaneng Committee and Discipline Inspection Group Leader (first from left in the front row)

**Hu Jianmin**, Vice President of CHNG and Member of the CPC Huaneng Committee (first from right in the front row)

**Kou Wei**, Vice President of CHNG and Member of the CPC Huaneng Committee (third from left in the back row)

**Liu Guoyue**, Vice President of CHNG and Member of the CPC Huaneng Committee (third from right in the back row)

**Sun Zhiyong**, Vice President of CHNG and Member of the CPC Huaneng Committee (second from left in the back row)

**Hu Shihai**, Chief Engineer of CHNG (second from right in the back row)

**Liu Wencheng**, Chief Economist of CHNG (first from left in the back row)

**Ye Xiangdong**, Chief Engineer of CHNG (first from right in the back row)

## Stakeholders

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

## Key Performance

Safe Development	2009	2010	2011	2012	2013
Major equipment accident(times)	0	0	0	0	0
Ordinary equipment accident(times)	3	0	6	1	3
Casualty-causing accident(times)	2	1	1	1	2 (including coal industry)
First class equipment failure(times)	53	54	62	52	55
Unplanned outages(times)	84	83	91	89	86
Equipment utilization ratios (%)	92.27	94.87	94.17	94.46	94.58

Optimal Development	2009	2010	2011	2012	2013
Installed capacity (10MW)	10438	11343	12538	13508	14224
Including: Hydropower (10MW)	860	1082	1133	1417	1835
Coal-fired power (10MW)	9309	9776	10672	11235	11356
Wind power (10MW)	269	484	726	848	973
Solar PV (10MW)	0.2	1	6	8	60
Coal production capacity (10 thousand tons / year)	4772	6412	6817	7817	8464
Coal output (10 thousand tons / year)	4408	4886	6406	6858	7156

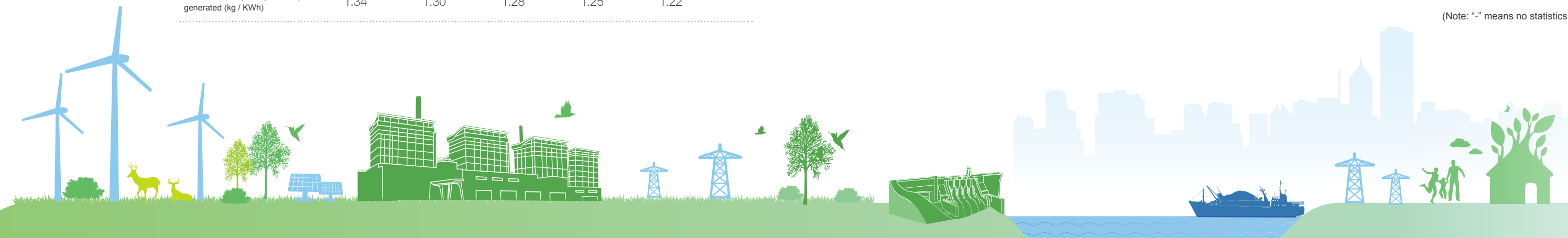
Green Development	2009	2010	2011	2012	2013
Low-carbon clean energy installed capacity (10MW)	1566	2003	2397	2830	3504
Proportion of low-carbon clean energy (%)	15.01	17.70	19.12	20.95	24.64
Specific Coal consumption (g / kWh)	327.70	322.72	318.68	316.52	312.89
Station service power consumption rate (%)	5.61	5.22	5.08	4.83	4.59
Slag and ash utilization rate (%)	70.24	74.15	76.34	77.08	78.14
Water consumption per unit power generated (kg / kWh)	1.34	1.30	1.28	1.25	1.22

Healthy Development	2009	2010	2011	2012	2013
Power output (100GWh)	4201	5376	6046	6092	6493
Total assets (100 million Yuan)	5783	6624	7532	7950	8552
Total revenue (100 million Yuan)	1777	2280	2682	2798	2932
Tax paid (100 million Yuan)	166	173	196	261	328
Total profit (100 million Yuan)	69	78	61	140	236
Performance evaluation by SASAC (Grade)	A	A	A	A	A

Innovative Development	2009	2010	2011	2012	2013
Total number of technicians (People)	-	-	1170	2052	2874
Number of experts from Recruitment Program of Global Experts (People)	-	3	6	7	8
National patents (items)	14	47	45	96	83
Including: Patent for invention (items)	3	15	22	28	29
Scientific achievement award at or above provincial level	8	19	9	9	20

Harmonious Development	2009	2010	2011	2012	2013
Number of staff (People)	129992	131816	133270	136510	137779
Number of female staff (People)	26633	27088	31384	32636	32696
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)	11107	10770	4603	7439	11425
Number of volunteers among employees (person-times)	17000	25600	43500	51000	63800

(Note: "-" means no statistics of that year)





## Adjusting Our Power Sources Structure

Based on the fact that in China, coal is taken as the key primary energy, Huaneng has made efforts in improving the utilization efficiency of the traditional coal-fired power and developing high-capacity machine unit with high parameter to generate more power with less coal. We have accelerated the development of clean and renewable energy such as pneumoelectric, hydropower, wind power, PV, and nuclear power and continued to increase our proportion of installed clean energy to generate more green power for economic and social development.

### Installed Clean Energy Capacity Increased Rapidly

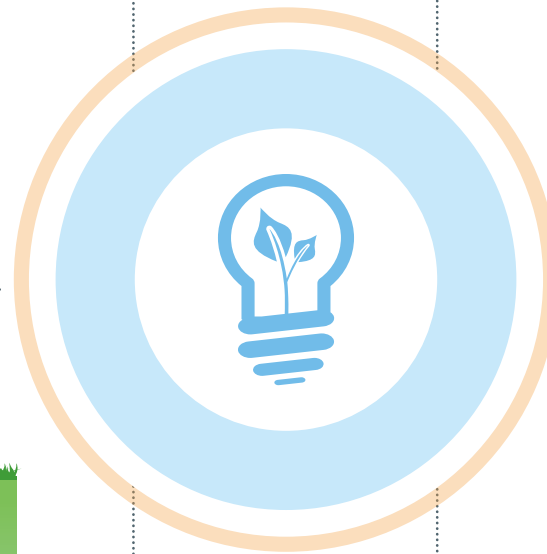
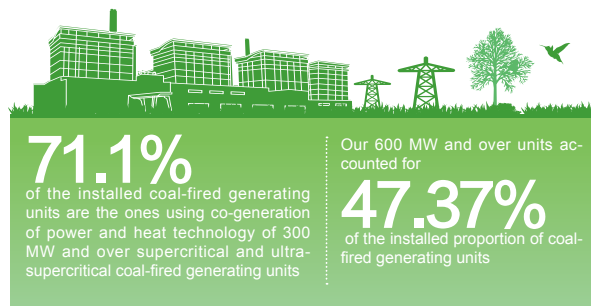
- In 2013, 6,740MW of clean energy units went into production, setting a new record. Our total installation of clean energy is 35,040MW, maintaining a leading level in the industry;
- 4,165MW of hydropower units went into production, total hydropower installed capacity exceeded 18,350MW; 1,262MW of wind power went into operation and total wind power capacity exceeded 9,740MW;
- In 2013, low-carbon clean energy projects accounted for 47.7% and 48.2% respectively of newly approved and newly developed projects, laying a solid foundation for the continuous optimization of our power source structure.

**6,740**  
MW of clean energy went into production in 2013

Total installed capacity of clean energy was **35,040** MW

### Our Proportion of Clean and High-efficiency Coal-fired Units Increased Greatly

- More than 2/3 of our units are CHP (combined heat and power) units or supercritical and ultra-supercritical coal-fired generating units with single capacity of 300MW or above;
- 47.37% of our units are 600MW and over, of which 13 are 1000MW or above, accounting for 1/3 of China's total;
- The average single-unit coal-fired power installed capacity is more than 330MW, which leads the industry.



We proudly contribute to the vision of building a beautiful China and focus on the development of an ecological civilization. In 2013 we unswervingly plan to accelerate the transformation of our development model, promote green, low-carbon and clean development, and advance our efficient utilization of resources while protecting the natural environment and building a beautiful Huaneng. This is our corporate responsibility and we believe that it will contribute to the building of a beautiful China.

## Unprecedented Transformation in Energy Conservation and Environmental Protection

We always implement state policies related to energy-saving and environmental protection, and will continue to increase our resource support and investment. We are currently upgrading the equipment and technology in our units, and tapping into the vast potential associated with the use of innovative energy-saving equipment. We will continue to work tirelessly to ensure that all clean emissions standards are reached, and will save resources and protect the environment in a manner that accelerates the building of a resource-saving and environmentally-friendly enterprise.

### Our Key Performance Indicators Lead the Industry

- In 2013, our super coal consumption was 312.89g/kWh, 3.63g/kWh less than 2012. According to our annual power production, 2.36 million tons of standard coal could be saved, equivalent to a reduction of three coal mines with an annual capacity of about one million tons;
- Our station service power consumption rate was 4.59%, 0.24 percentage lower than last year, saving 1,600 GWh of power, equivalent to the annual power output of a 300MW generating unit.

Investment in energy-savings and environmental protection transformations in 2013 has reached **10.55** billion Yuan

Representing a year-on-year increase of **3.56** billion Yuan

### Clean Production Continued to Improve

- In 2013, we have completed the denitration transformation of 28,837MW, denitration and capacity increase of 9,210MW; and dedusting and efficiency improvement of 5,178MW.
- The capacity of our generating units with desulfurization equipment accounted for more than 65% of total coal power units and the installation rate of desulfurization facilities was approaching 100%; and in 2013, the performance of emission of SO<sub>2</sub>, nitrogen oxides, smoke and dust led the industry.
- Over 90% of the 300MW generating units (or above) have met standards for an excellent energy-conservation and environmentally-friendly enterprise.

The installed rate of desulfurization facilities and equipment in coal power units approached **100%**

The proportion of denitration units is more than **65%**

In an effort to contribute to the building of a beautiful China with ecological civilization, we took actions to save resources and protect the environment, to help construct beautiful power plants and demonstrate the beautiful China. In 2013, 28 of our power plants were evaluated and recognized as Beautiful Power Plants in China.

## Beautiful China with Beautiful Power Plants

- |                |                                      |                |                               |
|----------------|--------------------------------------|----------------|-------------------------------|
| Zhejiang       | Yuhuan Power Plant                   | Jiangsu        | Taichang Power Plant          |
| Hainan         | Dongfang Power Plant                 | Shaanxi        | Tongchuan Zhaojin Power Plant |
| Guangdong      | Haimen Power Plant                   | Shandong       | Weihai Power Plant            |
| Shanghai       | Shanghai Shidongkou No.2 Power Plant | Inner Mongolia | Yimin Power Plant             |
| Tianjin        | IGCC Power Station                   | Henan          | Qinbei Power Plant            |
| Shandong       | Rizhao Power Plant                   | Ningxia        | Daba Power Plant              |
| Inner Mongolia | Shangdu Power Plant                  | Jilin          | Jiutai Power Plant            |



- |          |                             |          |   |
|----------|-----------------------------|----------|---|
| Jiangsu  | Jinling Power Plant         | Sichuan  | Fujiang Hydropower Station                |
| Liaoning | Dalian Power Plant          | Yunnan   | Miaowei Gongguo Bridge Hydropower Station |
| Gansu    | Pingliang Power Plant       | Gansu    | Jiuquan Wind Power Station                |
| Beijing  | Beijing Thermal Power Plant | Xinjiang | Santanghu Wind Power Company              |
| Yunnan   | Nuozadu Hydropower Plant    | Xinjiang | Turpan Wind Power Company                 |
| Yunnan   | Xiaowan Hydropower Station  | Yunnan   | Ma'anshan Wind Power Farm                 |
| Yunnan   | Jinghong Hydropower Station | Qinghai  | Golmud PV Power Station                   |

# 01

## Strategy and Management



Huawei consistently adheres to the right direction of scientific development, keeps innovative to stay advanced and digitalize multi cooperation, mutual benefit as well as mutual win status. We are committed to our "three-color" corporate mission of being "a red company that covers the need of customers, a blue company that advocates technology advancement and environmental protection, and a black company that keeps pace with the times, stays knowledge-oriented and opens up to the outside world. As a central enterprise, the China Huawei Group fulfills its economic, political, and social responsibilities and is committed to building itself into a world-class company with international competitiveness.



### Events

#### January

2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT

#### January 17

2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT

#### July 6

2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT

#### July 19

2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT

#### July 28

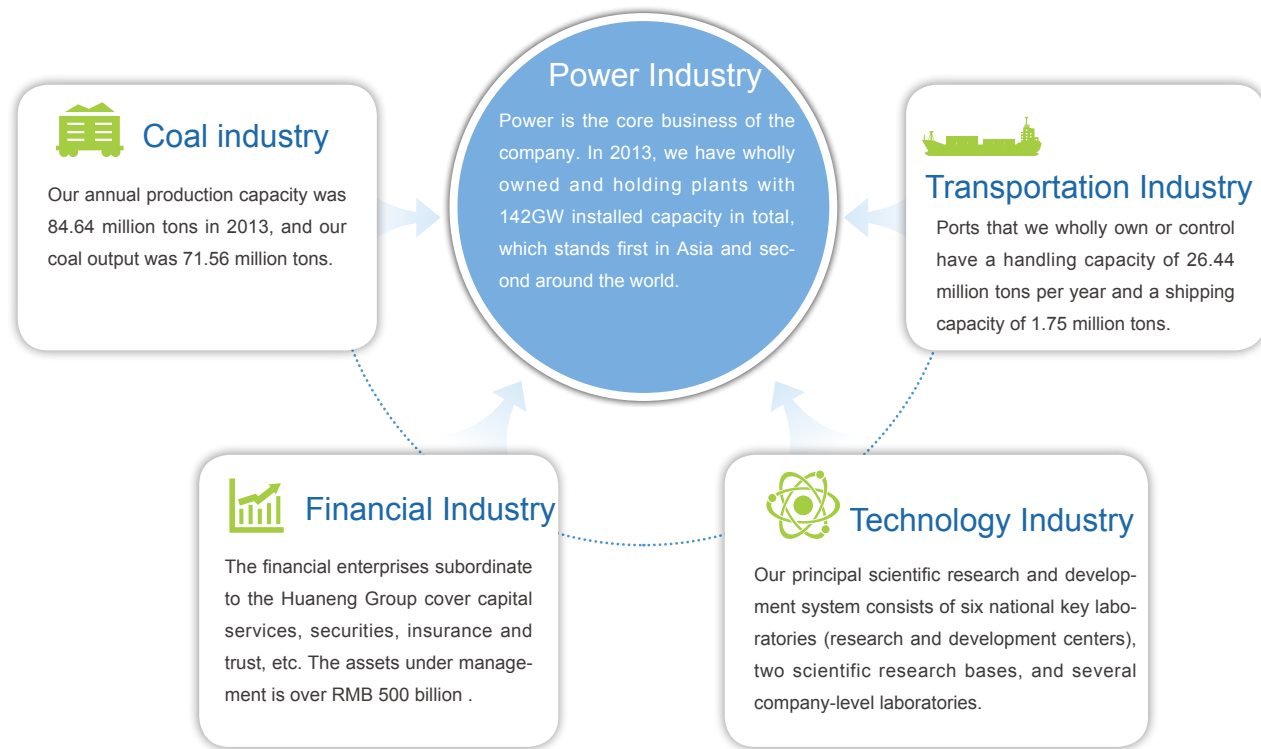
2022-2023 HUAWEI  
FINANCIAL REPORT  
2022-2023 HUAWEI  
FINANCIAL REPORT



## 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 businesses and products related to finance, coal, transportation, renewable energy, and environmental protection; industrial investment, operation and management.

During its 30-year development courses, China Huaneng Group 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. China Huaneng Group is committed to building itself into a world-class enterprise with international competitiveness. By the end of 2013, the Company had total installed capacity of 142GW, with assets distributed all over China and overseas. The Company is also engaged in sectors of coal, finance, technology R&D, and transportation etc. that support the core business of power. The Company was the first Chinese power producer to be enlisted in the rank of Fortune Global 500 in 2009, ranking 231st in 2013.



## 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	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	Department of Ideological and Political Work
Department of Operations	International Cooperation Department	Labor Union Working Committee

### Units Directly under China Huaneng Group

CPC China Huaneng Group Party School	China Huaneng Group Technical Economics Research Institute	China Huaneng Group IT Center
--------------------------------------	--	-------------------------------

### Industrial Companies

Huaneng International Power Development Corporation (HIPDC)	GreenGen Co., Ltd.	Huaneng Properties Co., Ltd.
Huaneng Power International Inc. (HPI)	Huaneng Energy and Transportation (Holding) Co., Ltd.	China Huaneng Group Clean Energy Technology Research Institute
Huaneng Renewables Corporation	Huaneng Capital Services Co., Ltd.	China Huaneng Group Fuel Co., Ltd.
Huaneng Nuclear Power Development Co., Ltd.	China Huaneng Group Technology Innovation Center	China Huaneng Group Coal Industry Co., Ltd.

### Regional Branch Companies

China Huaneng Group North China Branch	China Huaneng Group Shanxi Branch	China Huaneng Group Henan Branch
China Huaneng Group Northeast China Branch	China Huaneng Group Jiangsu Branch	China Huaneng Group Hunan Branch
China Huaneng Group East China Branch	China Huaneng Group Zhejiang Branch	China Huaneng Group Chongqing Branch
China Huaneng Group Central China Branch	China Huaneng Group Anhui Branch	China Huaneng Group Qinghai Branch
China Huaneng Group South China Branch	China Huaneng Group Fujian Branch	China Huaneng Group Guangxi Branch (Preparatory office)
China Huaneng Group Hebei Branch	China Huaneng Group Jiangxi Branch	China Huaneng Group Guizhou Branch (Preparatory office)

### Regional Subsidiaries

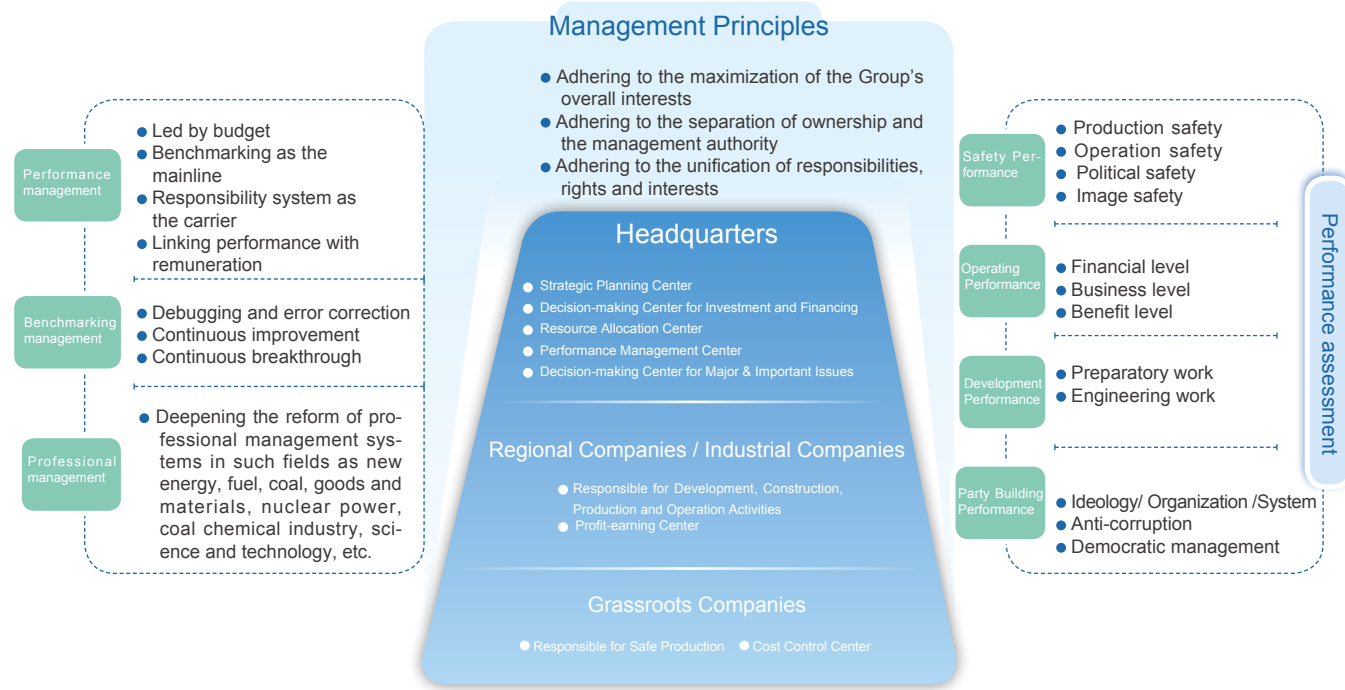
North United Power Co., Ltd.	Huaneng Jilin Power Generation Co., Ltd.	Huaneng Gansu Energy Development Co., Ltd.
Huaneng Lancang River Hydropower Co., Ltd.	Huaneng Heilongjiang Power Generation Co., Ltd.	Huaneng Tibet Power Generation Co., Ltd.
Huaneng Hulunbuir Energy Development Co., Ltd.	Huaneng Hainan Power Generation Co., Ltd.	Huaneng Xinjiang Energy Development Co., Ltd.
Huaneng Shandong Power Generation Co., Ltd.	Huaneng Shaanxi Power Generation Co., Ltd.	China Huaneng Group Hong Kong Co., Ltd.
Huaneng Sichuan Hydropower Co., Ltd.	Huaneng Ningxia Energy Co., Ltd.	Xi'an Thermal Power Research Institute

### Units Directly Managed by China Huaneng Group

Huaneng Shandong Shidaowan Nuclear Power Co., Ltd.	Huaneng Hainan Industrial Co., Ltd.	China Huaneng Group Talent Base Construction Management Center
--	-------------------------------------	--

## Management System

Following the “three-color” corporate mission and focusing on building a world-class enterprise with international competitiveness, Huaneng continues to improve the “three-level management system” comprising of the “headquarters - regional companies / industrial companies - grassroots companies” and the performance evaluation system focusing on security, operation, development and party building to making solid progress in management and constantly improve the scientific management level of the enterprise.



## 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 traditional 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 effort 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**  
Based on global perspective, speed up the pace of “going global” and deepen international exchange and cooperation; 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

### Responsibility Strategy

In 2013, we thoroughly applied the spirit of the Work Conference on the Social Responsibilities of Central State-owned Enterprises held by State-owned Assets Supervision and Administration Commission of the State Council (SASAC). Focusing on building a world-class company with international competitiveness, we implemented our harmonious development strategy by solidly improving our management of social re-

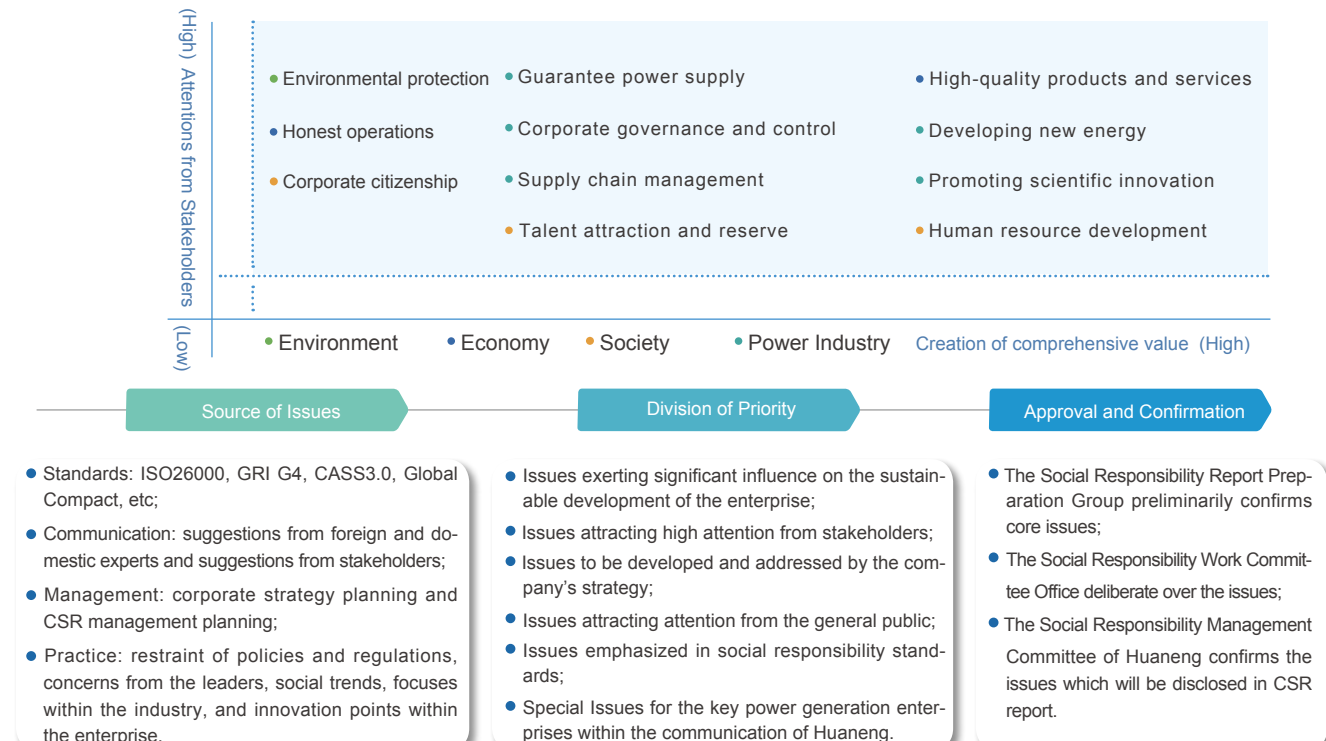
sponsibility, fully integrating the implementation of social responsibility into the operation and development of our company. In order to further improve the performance and level of fully performing CSR, we also made efforts in strengthening responsible strategy planning, improving responsibility management level, improving responsibility communication mechanism and enhancing responsibility capacity construction.

### Responsibility Planning

We formulated the Planning for Advancing Social Responsibility Management (2013-2015) in 2013, further identifying the general requirements, objectives and key missions of our work in social responsibility management, hoping that with three years' efforts, our social responsibility management level is further improved, maintaining advanced domestically, the role of “Five Examples” in our company is more obvious, and the reputation and social influence of our company are further enhanced.



### Core Issues



## Responsibility Governance

Huaneng established a Social Responsibility Management Committee, to formulate and promote our social responsibility strategy and to deliberate over and decide major social responsibility issues. We have also constructed a top-down organization system with a clear division of labor, institutional norms and work mechanism in social responsibility management. Regional subsidiaries and industrial companies have established social responsibility leading groups and designated social responsibility to specific departments. Grassroot enterprises have also identified departments and staff who will be responsible for social responsibility activities in each unit and ensuring that the related performance be reported to the Huaneng Group.



### Huaneng Awarded the “Best Social Responsibility Practice of Central SOEs in 2013” for Developing Green Coal-fired Power.

On December 13, SASAC released “the Best Social Responsibility Practice of Central SOEs in 2013” at a video conference on social responsibility work of central state-owned enterprises. Huaneng was awarded “the Best Social Responsibility Practice of Central SOEs in 2013” for its practice in “Develop Green Coal-fired Power and Build Beautiful China”.



## Responsibility Communication

We have expanded our communication with stakeholders through implementing press spokesman system, establishing media open day, and regularly interacting with stakeholders. We continue to release sustainable development reports at fixed intervals. We have established a special column for social responsibility on our website, providing an efficient channel for the public to learn more about our company. We have made contribution to the sustainable and healthy development of the power industry by actively engaging in industrial exchanges and cooperating closely with partners in the upstream and downstream of the industrial chain.

### Experts and Media Group Visit the IGCC Power Station

On May 9 and 10, 2013, SASAC held the activity of “Visiting Central SOEs - Innovation Drives Tianjin” at Huaneng Tianjin IGCC Power Station. Fifty experts and scholars, along with media reporters, visited the first IGCC power station in China and investigated our recent developments in scientific innovation, as well as our “three-color culture”. During the visit they were introduced to our implementation of green development strategy and the solid construction of green coal-fired plant, experiencing our commitment to environment protection.



**As the first step in Huaneng GreenGen Program, the completion of the full process of Tianjin IGCC Power Station lays a solid foundation to solve the world-class issue of achieving zero emission in coal-fired power station.**

—People’s Daily

**Huaneng insists on pursuing scientific innovation and green development. The company’s approach has resulted in many benefits to combating climate change and the improving energy conversion efficiency. Its development philosophy and innovative spirit are admirable.**

—Hu Angang, Director of Institute for Contemporary China Studies, Tsinghua University



A staff of Shidongkou No.1 Plant is reconditioning the equipment carefully

## Responsibility Capacity

We implemented SASAC’s “Twelfth Five-year” Harmonious Development Strategy of Central State-owned Enterprises and carried out a series of activities to improve our management of social responsibility, to further deepen our philosophy, perfect our system and enrich our business practices. Our social responsibility management experience has been documented and listed in SASAC’s collection of Central SOEs’ experiences on CSR management.

We continued to carry out internal social responsibility training programs through inviting experts and scholars to train our employees in charge of social responsibility affairs on management system, indicator system, core topics, related policies, and development trends of social responsibility to improve the awareness and performance of our staff in social responsibility.

Referring to the specific practices of the power generation industry, we played an active role in researching and studying social responsibility issues and regularly engaged in the discussion and formulation of domestic and overseas social responsibility standards. We proactively supported the activities conducted by social responsibility promotion agencies such as the United Nations Global Compact and the Chinese Academy of Social Science, providing a solid foundation for us to deepen our social responsibility practice.

### Domestic Media Group Reported Huaneng’s Tembusu Project in Singapore

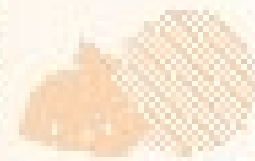
From December 4 to 6, the SASAC press center led a media group comprising of People’s Daily, CCTV, and Qiushi Magazine to visit the Tembusu project of Huaneng Singapore Tuas Power Ltd. The group visited the production site of the Tembusu project in Jurong Island and held in-depth discussions with our senior managers on a broad range of issues related to the project. The exchange allowed the company to outline its development strategy, achievements and social responsibility activities, providing them a deepened understanding, trust and support for Huaneng.



# 02 Safe Development



**Safe development** is the precondition for sustainable development. In order to achieve safe development, we must stick to the production safety philosophy of "people-oriented" regarding safety as benefits, regulations and responsibilities. Huaneng made great efforts to be one of the safest companies through perfecting production safety management system, improving production safety management regulations, implementing safety production responsibility system, enhancing production safety emergency management and improving intrinsically safety level.



## Events

**January**

Huaneng held the first meeting of the Production Safety Committee, emphasizing the safety work for 2014.

**April 16**

Following the 7th meeting of the Supervisory Committee on April 16, 2014, Huaneng initiated emergency plan for major natural disaster and conducted emergency relief work.

**June 4**

Huaneng was officially awarded the title of "National 'Red Award' Energy Enterprise" by the National Energy Administration.

**June 28**

Huaneng held a special conference on the importance of safety inspection, maintenance and design and proposed to conduct production safety activities.

## Improving Safety Management System

### Institutional Construction

We paid attention to the institutional construction of production safety. In 2013, we revised and improved our Regulations of Safe Operation in Power Industry, and issued a range of publications and standards such as the Management Methods for Training Staffs of Power Generation Enterprises on Production Safety, the Guidelines to Implementing Standard Management for Electric Power Overhaul, the Management Methods for Troubleshooting Potential Accidents in Production Safety in the Coal Chemical Companies, and the Comprehensive Management Methods of Gas in Coal Mines. All the publications and standards significantly improved our institutional construction.

### Progressing towards Standardization

The company in-depth promoted production safety standardization. We have constantly strengthened organizational leadership, ensured the implementation of work and carried training programs. We also strive to better manage our policy guidance, technical guidance and evaluation orientation in our work towards standardization. All grassroots enterprises must implement the Company's Work Plan for Reaching the Standard of Production Safety Standardization of Power Generation Companies and conduct self-examinations, self-corrections and self-perfections activities. They should combine the work towards standardization with the construction of production safety management system and safety evaluation to make overall planning, make solid progress and construct a long-term mechanism with consistent improvement of safety performance. In 2013, 33 power plants in Dalian, Manwan and Kangding were recognized as first-grade Standard facilities, and 40 grassroots companies completed on-site evaluations.

### System Construction

We have made solid progress in the construction of production safety system of power generation enterprises. We strictly controlled the quality of our system documents, making the system accord with the situation of our employee, equipment and management. We paid special attention to the implementation and execution of all documents, conducted daily production safety management in accordance with the system documents and made full use of the system to support and guarantee the basic management of our production safety.

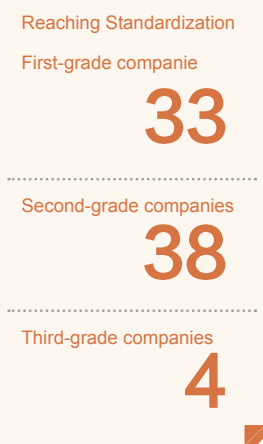
- All the coal-fired power plants have completed the compilation of their production safety system documents in 2013;
- Construction of production safety systems in 35 power plants was confirmed by superordinate industrial and regional companies;
- Production safety systems in 20 power plants were confirmed at the scene by the Head Office.

#### National Gold-medal Machine Units of Thermal Power Generation in Reliability

Capacity	Prize-winning Units
1000MW	Unit 2 of Yuhuan Power Plant
600MW	Unit 3 of Shidongkou II Power Plant
	Unit 2 of Hanfeng Power Plant
300MW	Unit 6 of Xindian Power Plant
	Unit 1 of Dongfang Power Plant
	Unit 1 of Changchun Thermal Power Plant
	Unit 4 of Shang'an Power Plant
	Unit 2 of Dalian Power Plant

#### First Prize of National Thermal Power Units Competition

Capacity	Prize-winning Units
600MW	Unit 4 of Shidongkou II Power Plant
	Unit 6 of Dezhou Power Plant
300MW	Unit 5 of Huaiyin Power Plant
	Unit 3 of Dezhou Power Plant
	Unit 3 of Fuzhou Power Plant
	Unit 3 of Dalian Power Plant



Inspection of barrel-type turbine in Hanfeng power plant

### Emergency Management

We have paid high attention to the emergency management of production safety. We have made efforts in improving organizational system, institutional system and emergency plan system of emergency management. We have proactively promoted the construction of our emergency management platform, strengthened our emergency response exercises and the management of emergency materials, and regularly promoted the construction of our urgent danger prevention system for coal mines.

In 2013, we have carried out safety inspections on hazardous chemicals and training sessions on how to use liquid ammonia. A special emergency exercise for liquid ammonia leakages in our Haimen Power Plant has been organized and company departments and subsidiaries have organized and carried out emergency exercises to deal with power failures, geological disasters, and fire hazards in order to better their internal capacity to deal with production accidents and natural disasters.

Earthquake Relief Work

On April 20, a 7.0 magnitude earthquake hit Lushan County, Ya'an of Sichuan Province. The power supply and communication system in the earthquake-hit area were cut off, roads connecting it to the outside world were blocked, and 383,000 people were impacted by the disaster. Seven hydropower stations (five in service and two under construction) were damaged to varying degrees.

The Sichuan Company immediately initiated its contingency plan, established an on-site command center for earthquake relief work, engaged in the earthquake relief work, and began repairing equipment and recovering power production.

Defending Against a Typhoon

On November 10, the strongest ever Typhoon "Haiyan" hit Hainan island, inflicted significant damage to the entire province. Power grids were frequently affected, voltage was decreased sharply, and circuits at many facilities across the province were tripped.

The Nanshan Power Plant dealt with the typhoon in advance, initiated its contingency plan, and managed to conduct work such as unchoking, troubleshooting and stopping leakages in production facilities. When the typhoon hit, Generator No.2 and No.4 were shut down safely and Generator No. 1 was started urgently, ensuring the safe operation of equipment as well as the power supply in local areas.

Flood Prevention

On July 15, rainstorms hit Hulunbuir for several days, with precipitation exceeding historical record. Enterprises in Yimin, Genhe, Manzhouli, Hailaer, and other places, were severely damaged by the disaster, which brought a serious threat to the safety of power generation.

Hulunbuir Company dealt with the challenge in an orderly manner and in accordance with its contingency plan by troubleshooting, implementing prevention measures, providing disaster-relief personnel and materials, forecasting the viability of precautionary measures, and practicing emergency exercises to ensure the safety of the plant and its workers during the flood season.

## Consolidating Our Foundation for Safety

### Equipment Management

Focusing on the principle of first-class equipment management and excellent maintenance quality, we have formulated and issued the Guidelines to Implement the Standard Management of Electric Power Overhaul to ensure overhaul quality through comprehensively promoting standard management of overhaul and strengthening on-site supervision of units overhaul and whole-process control of the overhaul. We have made efforts to maintain our equipment in good working condition by reducing equipment imperfections and controlling the occurrence of unplanned outage, strengthening daily supervision and management of equipment, doing the statistical analysis of the indicators, enhancing equipment condition monitoring and fault diagnosis, and taking measures to ensure small indicators reaching standard.

- In 2013, 25 of 34 A/B level overhaul coal-fired power units achieved continuous operation, and our equipment equivalent availability factor and unplanned outage factor of coal-fired power units led the industry;
- Power plants in Tongchuan, Taicang, Yushe, Linhe, and Haikou have achieved zero unplanned outage throughout the year, and the Dalat No.1 and No.2 units, the Jiutai No.2 unit, the Dezhou No.3 unit, and the Shidongkou No.2 Plant No.1 unit have achieved uninterrupted operations throughout 2013;
- 28 units won prizes in the National Thermal Power Units Competition in 2013, with the No.4 unit of Shidongkou No.2 Plant, the Dezhou No.3 and No.6 units, the Huaiyin No.5 unit, the Fuzhou No.3 unit and the Dalian No.3 unit being awarded the first prizes.

The number of potential hazards having been checked

33,496

The number of potential hazards having been rectified

31,654

### Special Examinations

In 2013, putting the requirements of the Production Safety Committee of the State Council and other related ministries and departments into practice, we have formulated the implementation plan of safety examinations and conducted large-scale examination for special production safety in accordance with the principle of "full coverage, zero tolerance, strict law-enforcement and emphasizing effectiveness".

- Mobilization and Deployment** We have issued a tailored work program with clear requirements, objectives and key tasks. All the subordinate departments must establish an institutional framework for safety examinations to convene mobilization meetings at each level of the company and conduct in-depth deployment and arrangements.
- Work Progress** All the subordinate departments and branch companies should report their weekly work progress to the Head Office and the Group Company would issue weekly notification of all the progresses, existing problems and typical practices. Leaders at all levels were encouraged to have close ties with grassroots enterprises in order to effectively eliminate potential safety hazards and urge the implementation of necessary work. We have organized unannounced spot-checks over 25 power plants in Jinling and Haikou. Industrial and regional branch companies conducted trawling inspection over local grassroots companies and a dedicated column was established on Huaneng's internal network to track relevant information and report typical methods and approaches to enable the subordinate departments and companies to exchange ideas with and learn from each other.
- Rectification of Potential Hazards** All the subordinate departments and branch companies have totally checked 33,496 potential hazards. The Group Company has allocated 560 million Yuan for the rectification of the potential hazards. In total, 31,654, potential hazards were corrected, a correction rate of 94.5% having been achieved. As a result, we were awarded the title of excellent organization in "Production Safety Month" by the State Administration of Work Safety.

Production Safety in 2009—2013

Items	2009	2010	2011	2012	2013
Major equipment accident	0	0	0	0	0
Common equipment accident	3	0	6	1	3
First Class equipment failure	53	54	62	52	55
Unplanned outages	84	83	91	89	86
Equipment equivalent availability factor(%)	92.27	94.87	94.17	94.46	94.58

### Team Safety

The continuous development and improvement of team safety is the most basic and important element of our work. We adhered to the philosophy of "zero violation of regulations to achieve zero death and zero equipment imperfection to achieve zero accident" and promoted the development of standardized safety management in all of our teams. The implementation of our responsibility system and the execution of rules and regulations allow us to effectively troubleshoot violations and perform risk analysis and pre-controls at our operational sites. We encourage teams to innovate their safety management procedures and solidify their safety foundation system.

#### Laiwu Power Plant Enhanced Team Safety with "Six Smalls"

The Laiwu Power Plant paid attention to its employees' ideological education, skills training and rules execution in the team safety management. The plant also made efforts in improving the self-consciousness of the employees in abiding by the rules and safety engineering level to guarantee the team's production safety.

- Small Rule** Apply rules and regulations to standardize the ideology and behavior of staff in the team.
- Small Model** Promote the well deeds of the individuals in the plant and magnify their model role in teams.
- Small Competition** Improve professional skills in the team by running skills competitions and theory exams.
- Small Discussion** Learn employees' ideological condition and help them resolve practical problems to strengthen their sense of belonging through dialogues and symposiums.
- Small Idea** Establish a team "think tank" and encourage staff to implement small reforms, small inventions, small creations, and award them appropriately.
- Small Punishment** Appropriately punish employees who bring challenges to safety and quality, and raise employees' responsibility awareness to ensure the team's overall safety.



Employee of Manwan Power Plant at Lantsang Company are debugging the unit on site

## Outsourcing Project

The safety management of outsourced projects remains a difficult and challenging aspect of our production safety management system. We paid great attention to safety management of production and infrastructure outsourcing projects and we have strictly executed the Management Method for the Safety of Outsourcing Projects to deliver better results. More specifically, we have implemented strict control over our outsourcing teams' qualification, enhanced safety engineering training, and dynamically evaluated their capacity to assure safety. As for the large-scale safety inspection, we strengthened the safety supervision and inspection at the construction sites under the coordination of all parties engaged in supervision, construction and debugging, especially the inspection over the execution of safety measures and the implementation of related regulations. In addition, we have also recorded safety performance of outsourcing teams, and adopted a "one-vote veto" right over all safety issues to ensure the construction safety of outsourcing projects.

### No Accidents occurred at the Expansion Project of Linyi Power Plant

The Linyi Power Plant has constructed two 350MW CHP (combined heat and power) projects. Throughout the whole projects, the plant has persisted in the work philosophy of strengthening safety through basic management, enhancing safety through emergency management and guaranteeing safety through team construction. As a result, a solid safety basis has been established to achieve the target of being a "zero-accident project".

**Basic management** We have incorporated the "one examination, one report and one assessment per day" approach to strengthen supervision of onsite safety, including organizing and carrying out the "Construction Site with Safe and Civilized Construction and Zero Violation" activity to ensure that our safety management procedures were fully implemented by all parties.

**Emergency management** We have made precautionary measures, predictions and pre-arranged plans in advance and organized emergency exercises concerning fire prevention, flood prevention and high-altitude falling prevention to ensure effective settlements when hazards occurred.

**Team management** We have maintained a strict standard for all qualification examinations, and prohibited borrowed or affiliated qualifications. The Power Plant has offered safety training programs to improve constructors' awareness on safety and skills development to prevent unsafe incidents.

## Strengthening Safety Management in Coal Mines

We continued to strengthen the standardized management of our production safety of coal enterprise by constantly deepening our understanding of safety management in coal production, intensifying our management of and control over the coal production process, and improving production safety in our coal mines.

- In 2013, to perform the responsibility of professional management of the Group's coal industry, the China Huaneng Coal Industry Company established a Safety Office Meeting System, improved the rules and regulations for production safety and management of coal mines, revised and prepared a contingency plan for production safety accidents in coal mines, and developed the overall foundation of production safety in coal mines;
- We advanced a specific campaign of fighting against illegal conducts and the construction of "six systems", learned from the lessons of major accidents in coal mines to facilitate better troubleshooting and rectifying on-site potential hazards, and carried out specific renovations to improve ventilation in the coal mines and solve such problems as gas leakage, coal dust, fire, water leakage;
- We formulated and developed a comprehensive safety examination for the coal industry, established a examination mechanism at regular intervals, carried out monthly safety examinations over companies directly managed by China Huaneng Group, and conducted quarterly random examinations and two overall large-scale safety examinations annually over companies under our trusteeship;
- All production mines have completed the construction of the "six systems". The Jalainur Coal Company had zero casualties during a consecutive production of 33.4 million tons of coal, reaching the advanced level in the domestic coal industry. The Lingdong, Lingquan, Lingbei, Tiebei and Xizhou coal mines were awarded the title of Mine with Safety Quality Standard at National Level in 2012, and another seven coal mines, including one in Chenjiagou, reached the national primary standard.



Passageway in the mine of Huating Coal Industry Co., Ltd

## Safety Education and Training

We have implemented our Management Method of Production Safety Training for Employees in Power Generation Company, increased our input into safety education and training, and conducted daily training and special training based on the conditions of different professions and posts to improve the capacity of full-time (and part-time) safety employees and people engaged in special typte of work in production safety.

- In 2013, Huaneng held 25 training classes on safety supervision, technical supervision, relay protection, and abrasion proof and explosion proof of boilers, with more than 1,300 person participating in the trainings;
- All the subordinate departments and branch companies have carried out safety knowledge competitions and skills competitions. Activities like making safety vows, collecting theme articles and speech contests were effective ways to help raise employees' awareness of production safety.

764

Certified safety engineers in 2013

700

Certified safety engineers in 2012

## Alarm Bells and Reflection

We have maintained a stable and safe production environment in 2013, but casualty accidents haven't been completely eliminated. We must recognize that we still face with severe production safety conditions. Specifically speaking, we have an unbalanced production safety level among our branch companies and subsidiaries. In particular, our production safety base in coal industry is weak. In addition, some subsidiaries have weak management order in production safety and lag behind in the improvement of a long-term mechanism in production safety.

We will continue to put the safety of our people at the first place and pursue the concept of "scientific development and safe development". Focusing on strengthening the base construction of production safety, we will make efforts in the construction of the production safety management system, promoting standardization, governing rule-breaking conducts and checking hidden troubles, employee training and the management of outsourcing projects. We will improve our production safe management through improving management, performing responsibility, improving the system and guaranteeing investment.

### "9.1" Accident in Mine 1 of Bailong Mountain Coal Mine

#### Accident

At 3:57 on September 1, 2013, a coal and gas outburst occurred at the gas extraction roadway on 17+805 floor of Mine No. 1 in the Bailong Mountain Coal Mine of East Yunnan Energy Company. 868 tons of coal was expelled along with 84,130 cubic meter of gas, causing casualties and property damage.

#### Management of the Accident

After the accident, the East Yunnan Energy Company initiated a contingency plan and established a rescue and command leading group responsible for the search and rescue in the mine. We organized the Coal Industry Company, under the support of local government, to investigate the cause of the accident. Nine people were killed in the accident, which caused direct economic loss of RMB 14.469 million.

#### Cause of the Accident

Bailong Mountain Coal Mine is a highly gassy mine. The driving face of floor gas extraction roadway at Mine 1 17+805 floor met with a reverse fault 924 meters away from the starting point. The fault caused the driving face to approach the overlying coal strata. When the roadheader was experimentally clipping after overhaul, it caused the outburst of coal and gas, which led to the accident.

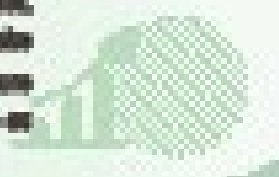
#### Follow-up Measures

Following an investigation into the cause of accident, we implemented administrative and Party disciplinary sanctions as well as economic punishments. We drew lessons from the accident to improve our future work and better grasp the laws of production safety in highly gassy mines. We implemented the Regulations on the Prevention of Coal and Gas Outbursts and "ten bans" to prevent gas outburst, formulated scientific and reasonable gas management plans, and enhanced our troubleshooting procedures and the management of on-site safety to prevent similar accidents.

# 03 Optimal Development



**Optimal development** is an intrinsic requirement for sustainable development. Optimal development requires us to take building a world-class enterprise with international competitiveness as the guide, take improving the quality and efficiency as the center, and take speeding up transformation and upgrading as the main work. We should make great efforts to optimize and adjust the structure of the power supply, industrial structure and regional distribution, and achieve effective, moderate and orderly development so as to further enhance our capacity to pursue sustainable development.



## Events

**January 22**  
 The 12th National People's Congress held its first session in Beijing, electing Hu Jintao as the President of the People's Republic of China.

**February 27**  
 The 12th National People's Congress held its second session in Beijing, discussing and approving the report on the work of the Government.

**April 7**  
 The 12th National People's Congress held its third session in Beijing, discussing and approving the report on the work of the State Court.

**July 27**  
 The 12th National People's Congress held its fourth session in Beijing, discussing and approving the report on the work of the State Audit.

**November 7**  
 The 12th National People's Congress held its fifth session in Beijing, discussing and approving the report on the work of the State Commission for Supervising and Auditing.



## Optimizing Power Supply Structure

We implemented the national energy development strategy and seized the opportunity of strategic adjustment of energy structure to accelerate the transformation of our development model, promote the diversification of our power supply structure, and enhance the whole-process management. We also issued instructions on combined heat and power generation, coal-fired electricity bases, and solar photovoltaics to promote low-carbon and clean development, increase our installed capacity proportion of low-carbon and clean energy, and raise the efficient and clean utilization ratio of traditional energy. In 2013, our installed capacity of low-carbon and clean energy was 35.04 GW, accounting for 24.5% of total installed capacity, a year-on-year increase of 3.5%.



### Hydropower

We continued to put great effort into preliminary work of our hydropower projects and promoted hydropower development and construction in Yunnan, Sichuan, Tibet, and Xinjiang. We have completed the compilation of the Three-year Rolling Plan of Hydropower Development during the Twelfth Five-year Plan, and accelerated our hydropower projects in the upstream of Lantsang River in Tibet.

- Development Plan:** We were in charge of the related demonstration and planning work for power stations in the downstream of the Ya River.
- Projects under Construction:** Construction of the Zangmu Hydropower Station progressed according to the plan.
- Projects Put into Operation:** In 2013, 12 hydropower facilities with a total installed capacity of 4.165GW were put into production; the Nuozhadu and Longkaikou projects both realized putting four new units into production every year, and their total installed hydropower capacity reached 18.350GW.
- Earlier Stage of Project:** The Miaowei, Lidi, Lalashan, Jueba, and Yarang projects had a total capacity of 2410MW and were approved in 2013. The Gushui 1.8GW project received permit.

#### Production of Power Projects in 2013

#### Nuozhadu Hydropower Station Became the Largest Station of the Company

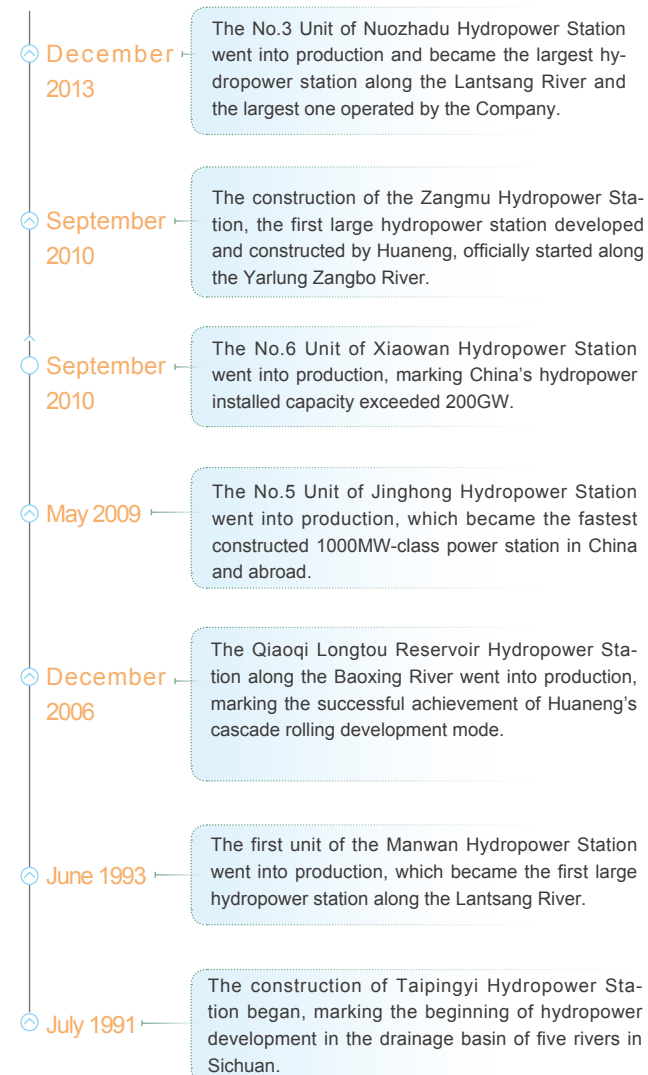
On October 10, 2013, the water level in the reservoir of Nuozhadu Hydropower Station reached a normal pool level of 812 meters, marking that as China's No.1 and the world's No.3 core rock-filled dam, it met all necessary conditions for regular operation. On December 22, the No.3 unit, which had an installed capacity of 4.55GW, was put into production and became the largest power station operated by the Group Company at that time.

The Nuozhadu Hydropower Station is the fifth power station under the project of the "two reservoirs and eight hydropower stations" at the mid- and downstream of the Lantsang River. It has a total installed capacity of 5.85 GW and the dam is 261.5 meters high, the highest dam in Asia and the third highest dam in the world. The reservoir's total capacity is 23.703 billion m<sup>3</sup>, which makes it the largest hydropower station along the Lantsang River, equivalent to the Three Gorges Hydropower Station in size.



Nuozhadu Hydropower Station

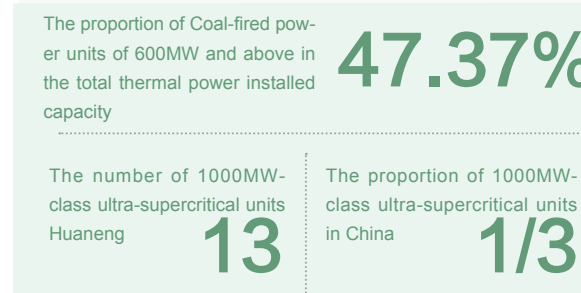
#### Review on Milestones of the Company's Hydropower Development



### Coal-fired Power

The fact that China's primary energy consumption structure is based on coal determines that the structure of power source will be based on coal-fired power in the long run. We continued to develop high-efficient and clean coal-fired power and optimize the capacity structure, technical structure and regional structure of coal-fired power. We took precedence to construct large-capacity, high-parameter and high-efficiency coal-fired power units in our coal electricity bases and load center and developed power generating project with low-heating-value coal in regions with suitable conditions. We currently develop low-calorific value coal-fired power generation projects in areas with suitable conditions and develop co-generation of heat and power projects with priorities in order to improve the quality and benefits of coal-fired power development.

- In 2013, eight coal-fired power units with a total capacity of 2,990MW were put into production. By then, Huaneng had 13 1000MW-class units, ranking first in China.
- Co-generation of heat and power and 300MW supercritical and ultra-supercritical pure condensing coal electricity units occupied 71.1% of our coal electricity installed capacity, and coal-fired power units of 600MW and above accounted for 47.37% of our total installed capacity.



### Wind Power

We tracked national planning formulation adjustments of large wind power bases, and adhered to the combination of concentrated and decentralized development, the combination of offshore and onshore power, as well as the combination of wind power and photovoltaic power. We made efforts to develop efficient wind power projects through enhancing the development of low-wind-speed, distributed and offshore wind power projects in areas with no limitation on electricity in Eastern and Central China, and the construction of wind farms in the high-wind-speed area in the three Norths (for northwest China, north China, and northeast China).

- In 2013, 763 fans went into production, with installed capacity of 1.262 GW, occupying 14.1% of the production capacity for the year, a year-on-year increase of 14.8%;
- 2.74GW wind power project was approved, and the 2.57GW wind power project was included in the third batch of national approved programs;
- Wind power projects in Dafeng of Jiangsu province, Wulanyiligeng and Chifeng of Inner Mongolia were approved. The project in Dafeng was our first offshore wind power project.



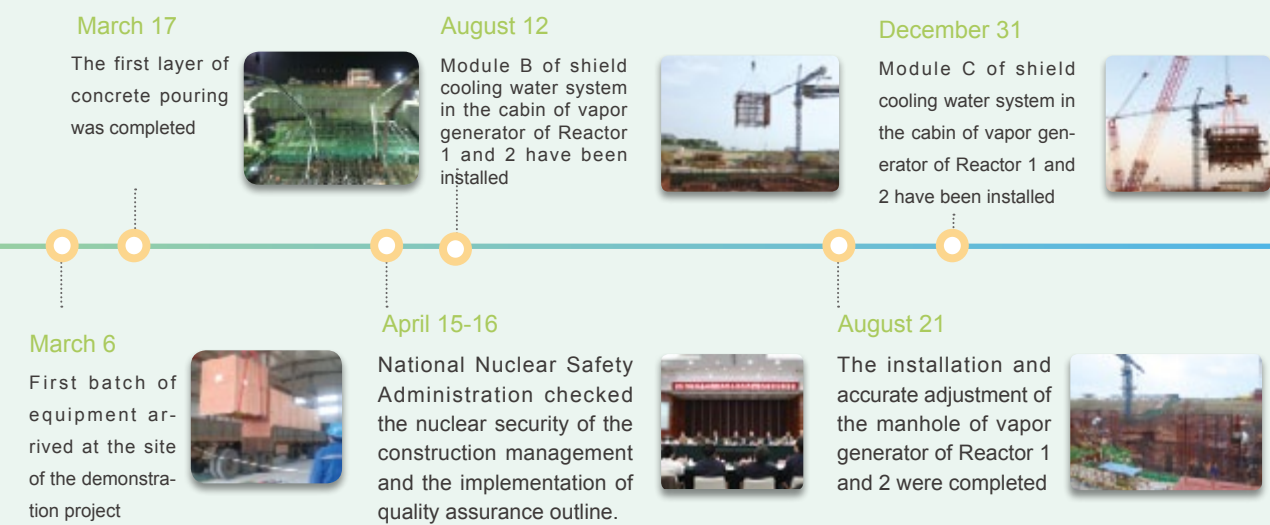
Tongjiang Wind Power Plant in Heilongjiang

## Nuclear Power

We have constantly strengthened strategy management of the nuclear power industry. According to China's Medium-and Long-term Development Plan on Nuclear Power and national laws and regulations on nuclear security, we must formulate a development strategy for our nuclear power business, strengthen the construction of our management and control capacity, and advance our project development, construction, and management in an orderly way.

- Our Nuclear Power Business department has fulfilled its professional management obligations and has established a management framework that covers 14 first-level management fields, 44 second-level management fields, and over 90 third-level management fields in accordance with all relevant standards of the International Atomic Energy Agency and national requirements on quality and environment.
- We remained committed to advancing the construction of demonstration project for high temperature gas-cooled reactor nuclear power. We have intensified our approach to the management and control of nuclear power, the cultivation of talent and the cultural construction of nuclear safety and implemented stringent controls on security, quality, progress, and investments. In 2013, the demonstration project for high temperature gas-cooled reactor nuclear power went well.
- We carried out preliminary work on nuclear power projects in 2013 and promoted the preliminary preparation of the expansion project of Shidaowan pressurized water reactor, as well as the preliminary work on nuclear power projects in Liaoning and Fujian. We also protected resources at our factory sites.

The Schedule of High Temperature Gas-cooled Reactor (HTGR) Demonstration Project of Shidaowan Nuclear Power Plant in 2013



## Solar Power

Rich solar energy is an inexhaustible and green source of energy. The central government is providing great support to the development of the photovoltaic industry. We took this opportunity to accelerate our development project in Xinjiang, Yunnan, Qinghai, and Ningxia where there is rich exploitable solar power. We have achieved a good development momentum with a complete project development process of examination and approval, construction and putting into operation.

In 2013, our photovoltaic projects capacity was 400MW. Eighteen photovoltaic projects went into operation with an installed capacity of 520MW. New large centralized photovoltaic power stations with a total installed capacity of 600MW were also built in Gonghe, Zhongwei, and Xichang,

**100MW Photovoltaic Power Project Connected to the Grid**

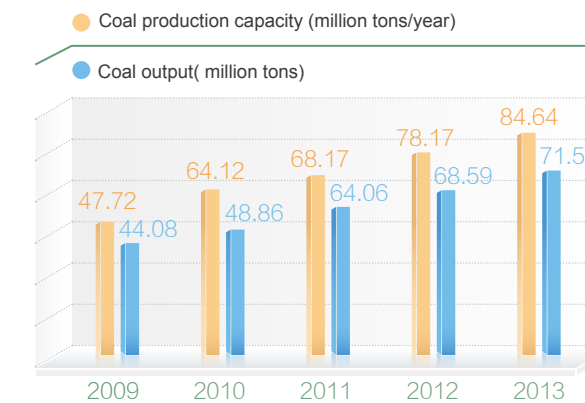
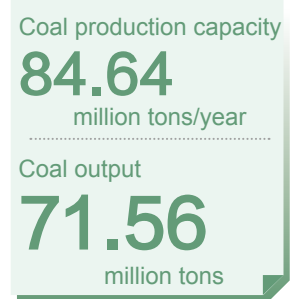
On December 31, 2013, the first 100MW EPC photovoltaic power project in China – the Huaneng Gonghe 100MW photovoltaic power project - was connected to the grid and put into commercial operation. The project was located at the Photovoltaic Power Park of Gonghe County in the eastern part of the Qinghai-Tibet Plateau at an elevation of 3050 m. The project was under construction since September 15 and was expected that the annual on-grid power volume would hit 157,000MWh.

## Strengthening Industrial Collaboration

### Stably Advancing the Development of Coal Resources

We continued to follow a benefits-centered strategy and make use of synergies in the coal industry. We firmly advanced our professional management of the coal industry through further optimizing our development layout, grasping development pace by adopting scientific methods and integrating internal resources. Centering on constructing an outward transporting passage for electricity and coal, we developed high-quality coal resources, prioritized the construction of large coal bases and coordinated the local utilization and outward transportation of coal. We have improved our resource utilization rate and guarantee self-supply power and coal.

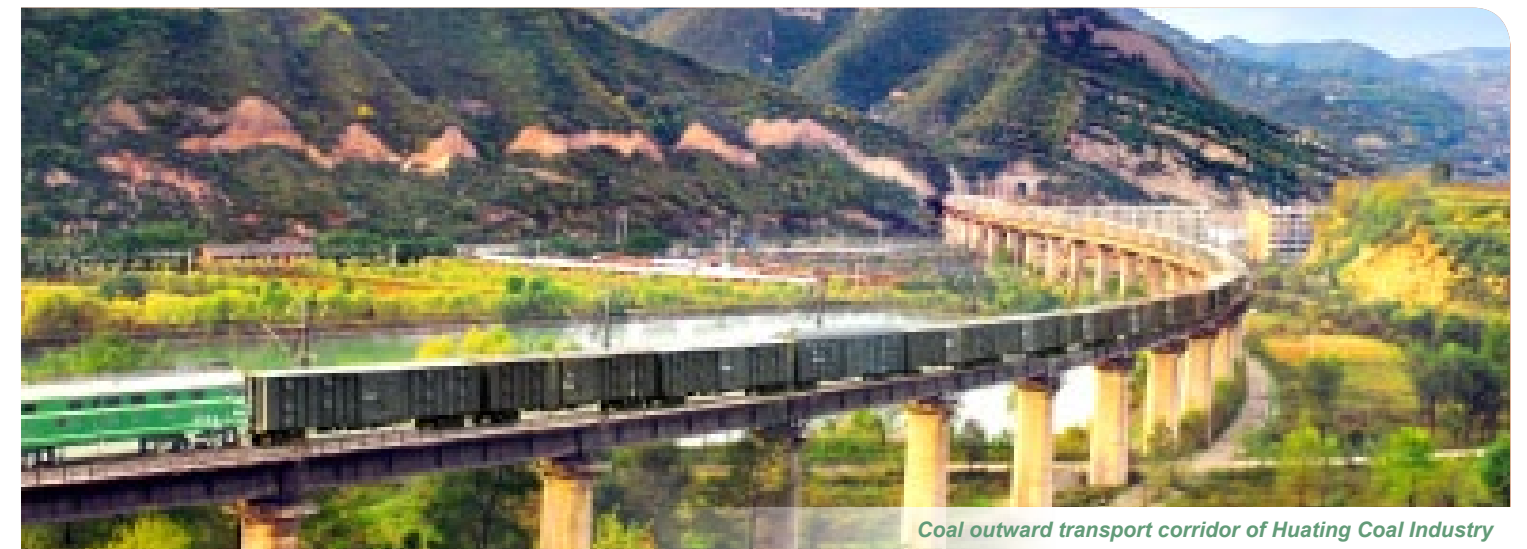
In 2013, the Yuwang Well No.2, the Liuxiang Coal Mine, and the Dongping Coal Mine received permit, and the Linglu Coal Mine went into trial production. Coal preparation plants at the Liuxiang and Qinggangping coal mines went into trial operation. Our coal production capacity reached 84.64 million tons/year and our annual output was 71.56 million tons.



### Developing Shale Gas, Coalbed Methane, and Coal Gasification

We have advanced the development and construction of shale gas, coalbed methane, and coal gas projects, and continued to acquire high-quality coalbed resources. We have made positive progress in the development of shale gas.

- We obtained a controlling stake of the Shale Gas Project in the Dongkuai District of Chongqing Youyang and completed geological surveys and part of the reconnaissance;
- We promoted preliminary work of shale gas in Qujing of Yunnan province and explored the feasibility of the extraction of coalbed Methane and power generation in southwestern Chongqing and eastern Yunnan;
- The Zhudong Coal Gasification Project obtained "permit" for its preliminaries from NDRC.



Coal outward transport corridor of Huating Coal Industry

## Developing the Transportation Industry

We accelerated the construction of logistic system integrating coal, highways, harbors, and transportation sectors. Taking the utilization of professional management as the principle line, we intensified unified and coordinated management, integrated resources in the industry, promoted the development of our logistics system, optimized real-time allocations and transportation and expanded our interregional supply of coal by direct land transportation. The above methods have helped us promote internal industrial collaboration.

- In 2013, 18 seaborne coal electricity plants in coastal areas achieved unified allocation and transportation;
- Ruitong Shipping carried out consecutive voyages of imported coal, completing a quantity of shipment of 11.34 million tons, a year-on-year increase of 26.5%;
- The Taicang and Haimen ports went into operation; the Caofeidian coal wharf was under construction; and Phase II project of the Qingdao Dongjiakou wharf was approved;
- The shipping capacity of our holding shipping companies reached 1.75 million deadweight ton, and internal coal transport volume accounted for 52% of total volume of the seaborne coal.

Shipping Capacity of Holding Shipping Companies

1.75 million deadweight ton

The internal volume of coal accounted for

52% of the total volume of the seaborne coal

### The Wharf at Taicang Port Officially Opened

On December 28, the Huaneng Taicang Port wharf officially opened and put into trial operation. We have planned to construct a double-F interior basin loading and unloading berth and a supporting storage yard with a handling capacity of 45 million ton. The first stage of the Phase I project went into production and consisted of two 150,000-ton coal unloading berths with hydraulic structures, four 5,000-ton loading berths inside the wharf, and three rear coal yards. The total stockpiling capacity was 0.8 million ton.



The Taicang Port wharf is located at the estuary of Yangtze River, enjoying obvious regional advantages, and possesses characteristics of good channel conditions, high-grade berths, complete functional facilities, and flexible systematic scheduling. Once put into full operation, it will provide coal from sea to river for our power plants and will become one of the important bases for the transfer, storage, selection and mixing of coal from sea to river.

## Optimizing Capital Structural Layout

We gave full play to the functional service and performance supporting of financial industry. We stuck to prudent operation and emphasized the integration of industry and finance to establish a standard and effective financial holding operation system and risk prevention system. We continued to strengthen the functionality of our financial platform, enhanced our operational performance and expanded our business scope to provide support to ensure capital supply and cost reductions.

- In 2013, our assets under management in the financial industry exceeded 500 billion Yuan, a new record for our company, and our market share in the trust market increased sharply with management assets ranking 12th in the industry, and the scale of our business exceeding 90 billion Yuan;
- The capital company promoted the integration of resources and the integration of industry and finance, and expanded its business platform to provide financial services such as credit and trust to subsidiary companies; the finance company also established 3.5 billion Yuan of low-interest credit funds for regional companies;
- The New Energy Company completed the first allotment of H-shares, financing HKD 1.577 billion; the transfer of B- to A-shares for Southeast Electric Power liquidized all remaining assets and resulted in a stock appreciation of RMB 557 million.

## Giving Play to the Supporting Role of the Science and Technology Industry

We made the production and management of main business and industrialization as the direct, independent innovation as source, and key projects as the support, and seized the opportunity of industry structural adjustment to accelerate the shift of development mode and strengthen scientific and technological industry.

- We focused on the seven major fields of electric power and environmental protection, energy saving, water saving, smart power generation, new materials, new technology of gas turbine, and new energy, and continued to increase our investment in science and technology in order to strengthen technical support for our main businesses and make significant achievements in scientific research;
- The Thermal Power Research Institute and the Xi'an Clean Energy Research Institute accelerated achievement transformation and industrial development and boosted the promotion of advanced technology and the application of results, leading to sales revenue increase of 50.5% year on year.

The expansion project went into production with an installed capacity of 5.78 million kW

5.78<sub>GW</sub>

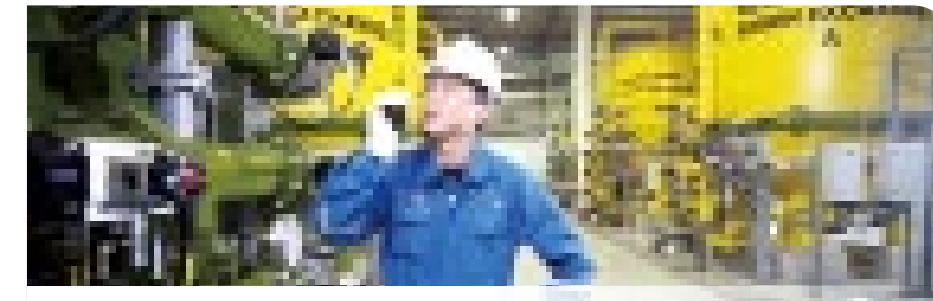
We purchased 51% equity in the Cambodian Sang River Grade II Hydropower Station

51%

## Promoting International Development

We planned the markets and resources both at home and abroad holistically and issued Instructions on Improving the Management System of International Operations. In 2013 our international operations progressed in the following ways:

- The expansion project of the No.5 Unit of Tuas Energy of Phase I project in Tembusu of Singapore went into production, making the overseas controlled installed capacity reach 5.78GW;
- We purchased 51% equity of the Grade II Hydropower Station along River San in Cambodia, which was approved by both the Cambodian and Chinese governments;
- The construction of Mexico gas power station progressed in an orderly manner.



Staffs of Singapore Tuas Energy Co., Ltd is checking the operation of equipment

### Ministry of Electric Power of Myanmar Sent Letter of Thanks to Shweli Hydropower Station for Safe and Stable Power Supply.

In the summer of 2013, Myanmar was confronted with droughts and power shortages. The Shweli Hydropower Station took an active role in adjusting its operational model and coordinating with the Chinese power grid to supply more than 70% of its power to Myanmar. This helped the country overcome significant difficulties, and the Ministry of Electric Power sent a thank-you letter to the Lantsang River Company expressing its thanks for its good management and long-term safe and stable power supply.

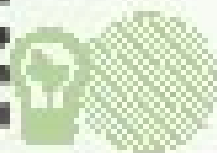
The Shweli Hydropower Station is the largest Chinese hydropower BOT project in Myanmar, and the second largest hydropower station under operation in the country. It is regarded as "the Three Gorges Project of Myanmar". It is an elite project and has a good reputation within state leadership and the Ministry of Electric Power of Myanmar. It was considered as a "model project" of Sino-Myanmar cooperation. This project won the 2012 silver prize for National High-quality Project (Overseas Project).

After connecting to the grid, the Shweli Hydropower project provided efficient power and strengthened the stability of the power supply. Power shortages were reduced and the grid interruption rate decreased by 50%. This positive contribution to economic development in Myanmar has fostered harmonious development among local enterprises.

# 04 Green Development



**Green development** is inseparable to sustainable development. Green development requires to maintaining the industrial policy of energy conservation and emission reduction, relying on strict management and technological progress to lay the potential of energy conservation, improving the high efficiency and clean use of energy and resource, and committed to ecological and environmental protection.



## Events

**May 11**

THE PRESIDENT OF THE PEOPLE'S REPUBLIC OF CHINA XI JINPING ISSUED AN ORDER TO ESTABLISH THE NATIONAL GREEN DEVELOPMENT DAY.

**November 23**

THE PRESIDENT OF THE PEOPLE'S REPUBLIC OF CHINA XI JINPING ISSUED AN ORDER TO ESTABLISH THE NATIONAL ENERGY CONSERVATION DAY.

**December 13**

THE PRESIDENT OF THE PEOPLE'S REPUBLIC OF CHINA XI JINPING ISSUED AN ORDER TO ESTABLISH THE NATIONAL EMISSION REDUCTION DAY.

**December 22**

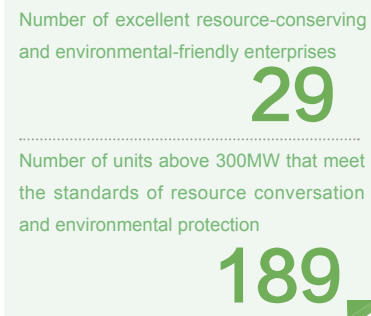
THE PRESIDENT OF THE PEOPLE'S REPUBLIC OF CHINA XI JINPING ISSUED AN ORDER TO ESTABLISH THE NATIONAL ECOLOGICAL ENVIRONMENTAL PROTECTION DAY.

**2015**

THE PRESIDENT OF THE PEOPLE'S REPUBLIC OF CHINA XI JINPING ISSUED AN ORDER TO ESTABLISH THE NATIONAL GREEN DEVELOPMENT DAY.

## Perfecting Management System

Adhering to the concept of green development, we continued to strengthen the management of energy conservation and emission reduction, deeply promoted the construction of an energy-saving and environment-friendly enterprise and carried out activities that helped create excellent performance in energy-consumption indexes. Through clean development, efficient development and low-carbon development, we struggled to improve our clean production, gradually decrease the pollutants and greenhouse gas emission per unit generating capacity to realize the resource conservation and environment protection in the utilization of traditional energy.



## Strengthening Management of Energy Conservation and Emissions Reduction

We implemented national policies on energy conservation and carried reduction and carried out target responsibility management of energy conservation and emissions reduction. Energy conservation and environment protection became an important part in our performance appraisal management, and the "one-vote veto" system was adopted for major energy conservation and environmental protection goals. The performance in energy conservation and environment protection was one of the factors considered in the assessment of the company's gross payroll.

- In 2013, we compiled a technological upgrading project plan on energy conservation and complementary plan on comprehensive upgrading and transforming project during the last three years of the 12th Five-Year Plan. We also formulated and issued the Implementation Plan on Comprehensively Upgrading and Transforming Coal-fired Power Plant and Energy Conservation and Replacement to provide the basis for deepening energy conservation and consumption reduction;
- We organized personnel to compile the Collections of Experience, Measures, and Cases on Energy Conservation and Consumption Reduction of Coal-fired Power Generating Units to provide positive lessons and guidance on systematic energy conservation and emission reduction throughout the company.

## Building the Company into a Resource-saving and Environmental-Friendly Enterprise

To further build the company into a resource-saving and environmentally friendly enterprise, we implemented the "Plan on Building up an Excellent Resource-Saving and Environmentally Friendly Enterprise during the 12th Five-year Plan and further solidified our achievements by promoting experiences, enhancing different guidance to different categories of enterprises, and intensifying our examination process so as to guarantee the quality of building up an excellent resource-saving and environmentally friendly enterprise .

- We strengthened supervision and examination on key indexes and launched dynamic examination and process check for power plants with poor performance in some indexes so as to supervise and urge them to implement relevant work; In 2013, 12 coal-fired power plants passed the quality acceptance of an excellent resource-saving and environmental-friendly enterprise;
- The energy consumption indexes of 189 units above 300 MW capacity reached the standards set for an excellent resource-saving and environmental-friendly enterprise, with rate of reaching the standard exceeding 90%, and the coal consumption rate of 113 of the 189 units exceeded the standard set for an excellent resource-saving and environmental-friendly enterprise by 2g/ kWh .

## Environmental Assessment System

We attached importance to the improvement of our internal audit system of assessment reports on environmental protection and water conservation, and strengthened our training on matters needing attention concerning related policies, laws and regulations, as well as project examining and approving. As for the environmental protection in the construction projects, we made efforts in troubleshooting, checking, rectifying and reforming the problems and promoting environmental protection measures.

- In 2013, we held a coordination meeting to synchronize environmental

impact assessment and "simultaneous design, simultaneous construction and simultaneous operation of environmental protection facilities" with the project construction to discuss solutions to environmental problems. Approval documents for the environmental assessment of the Projects in Huiliuhe, Yantai, and Luoyuan were obtained;

- A number of projects, including the Chaohu Project Phase II and the Zhengning Project, were under review in the environmental impact assessment, and construction projects; The Gongguoqiao Construction Project entered the check and acceptance phase in the environmental impact assessment.

The reservoir area of the Kanjie River of Nuozhadu Hydropower Station

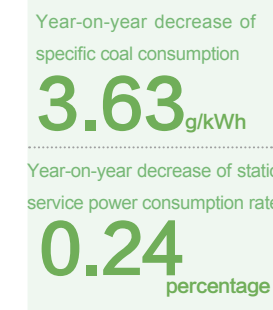


## Tapping into Energy Conserving Potential

### Fine Management

We have made great progress in creating excellence in energy consumption indexes through further promoting fine management of energy conservation and consumption reduction, continuing to carry out standardization governance of small indexes, promoting the application of advanced energy conserving and cost reducing technologies, and implement comprehensive upgrading and transformation of coal-fired power plant and contract energy management.

- The specific coal consumption of our 81 power plants decreased year on year, with 28 plants decreasing by more than 5g/kWh year on year.
- The power consumption rate of 69 power plants decreased year on year and 23 plants decreased by more than 0.3 percentage year on year.
- In 2013, we were honored as "the Top 10 Contributors to Energy Conservation China" at the 4th Releasing Ceremony for the Promotion of Energy-Conservation China and received an "Excellent Enterprise in Emission Reduction in the Third Term of Office" from the State-owned Assets Supervision and Administration Commission of the State Council.



### Managing Energy Conservation

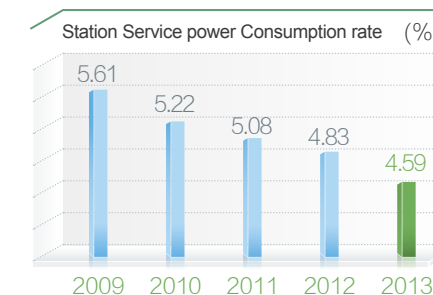
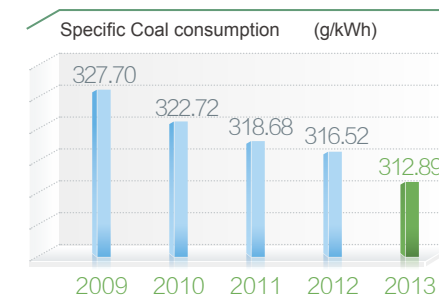
We have carried out the benchmarking of our energy consumption indexes and small indexes. We have formulated an energy conservation and consumption reduction plan for our coal-fired units and assigned appraisal indexes for annual energy consumption. We focused on improving the energy consumption indexes of our 1000MW-class units and units below 135 MW and provided special guide of energy conservation and consumption reduction for our 45 grass-roots power plants.

### Energy-saving Diagnosis

Relying on Xi'an Thermal Power Research Institute, we conducted an energy-saving diagnosis for units that were newly put into operation, whose energy consumption rate exceeded standard, and whose energy consumption rate rebound to substandard level. In total, we have completed on-site diagnosis of 21 units totaling 10,970 MW throughout the year. The energy-saving measures are expected to decrease coal consumption by 0.6g/kWh and reduce the station service power consumption rate by 0.03 percent.

### Upgrading and Transformation

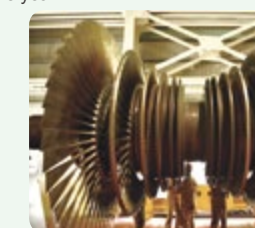
The comprehensive upgrade and transformation of 54 projects and 80 units passed the review organized by the National Energy Administration. The assessed amount of energy saving would be around 1.75 million tons of standard coal. Plans for 16 projects and 19 units were transmitted to lower levels and an estimated 513,000 tons of standard coal would be saved.



### Shantou Power Plant Made Great Achievements in Energy-saving and Transformation

In 2013, the Shantou Power Plant completed the effect-raising transformation of the opening cylinders of turbines in unit No. 3. The economic performance of the unit increased by 1.2 percent, saving approximately 10,000 tons of coal throughout the year.

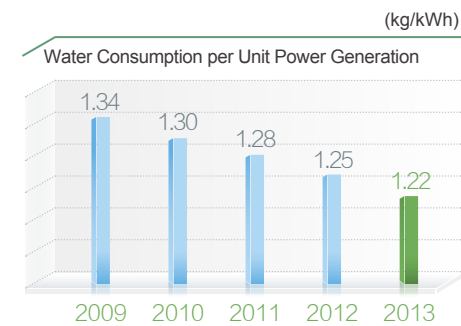
- By expanding the cooling area of the condenser, the company would save 3,300 tons of standard coal annually;
- Transforming the high-frequency electricity source for the cottrell, the company saves 1,320 tons of standard coal annually;
- The combination of induced fans and booster fans and the transformation of the circular flue at the outlet of the new fan would help decrease the flue resistance by around 1,200 Pa and decrease electricity consumption of the fan by about 0.15 percent;
- By transforming the integral sealing and denitration system for the air pre-heater, smoke-exhaust loss could be reduced, and approximately 1,650 tons of standard coal could be saved annually.



## Water Conservation Management

Water is an essential resource in industrial and agricultural production and people's lives. Water consumption at our thermal power plants accounts for a significant portion of our overall industrial water consumption. Thus, reducing the water consumption in power generation will be helpful for the reduction of fresh water consumption. We deepened our water conservation management and took multiple efficient measures to conserve water to the maximum.

- In areas short of fresh water resources and in coastal regions, we construct air cooling power plants and facilities for sea water desalination to reduce the consumption of fresh water;
- In terms of production, we adopted a series of comprehensive water-saving technologies, including sewage treatment, reuse of reclaimed water, dry slag removal, pneumatic ash conveying and closed circulation, to help reduce our consumption of fresh water and achieve zero sewage discharge.



### Saving Water and Increasing the Sources to Reduce Consumption of Fresh Water

**Reutilization of Wastewater** The Yuhuan Power Plant came up with a new technology roadmap to reutilize wastewater throughout its production management, marking the completion of the new industrial research in reutilizing acid-alkali wastewater in thermal power plant. The corresponding technical transformation project, the comprehensive utilization of regenerating wastewater of ion-exchange in the power plant, would create a new method to reuse acid-alkali wastewater in thermal power plant.

**Utilization of Urban Reclaimed Water** Unit 9 and Unit 10 at the Huangtai Power Plant are demonstration projects for Jinan's Clear Water and Blue Sky Program. The project adopts advanced treatment of the reclaimed water and makes use of 6 million tons of urban reclaimed water annually. It is the largest project to utilize reclaimed water in Shandong province. In 2013, the project was awarded National Award for High-quality Projects 2012-2013.

## Standardized Emission

### Fume Treatment

We enforced national fume emission standards in thermal power plants, continued to strengthen the operation management of our environmentally protective facilities for desulfurization, denitration, and dedusting, and constantly renovated our environmentally protective facilities to improve the reliability and operational efficiency of equipment and boost standardized emission.

- **Strengthening Management** We have formulated new technological routes for de-dusting improvement and established management standards for denitration facilities. We further regulated transformation standards for environmentally protective facilities, conducted strict verification, and carried out trainings on denitration technologies and seminars on managing denitration catalyst within the Group Company to further solidify our management approach.
- **Unprecedented Intensive Transformation** We have conducted a feasibility study and preliminary inspection of more than 50 transformation projects, on-site supervision and handling of the transformation projects at 11 of our power plants, and quality spot check of the denitration transformation at 32 power plants and 43 units to guarantee that the projects met our goals and requirements.
- **Strict Supervision** We constructed a real-time monitoring platform for our desulfurization and denitration units during the second phase of the project, and the flue gas bypass of desulfurization in forty-two 20.248GW units were dismantled.

Year-on-year decrease of sulfur dioxide in 2013

**18.75%**

Year-on-year decrease of nitrogen oxides

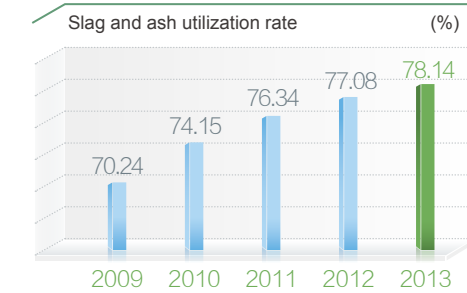
**24.72%**

Year-on-year decrease of dust emission

**18.75%**

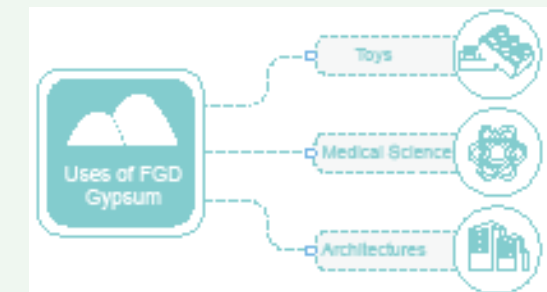
## Waste Treatment

We advocated a development model of "resource-product-waste-renewable resources" and comprehensively utilized such wastes as fly ash, slag and FGD Gypsum by adopting methods including fly ash separation, grinding and processing new-type building materials with gypsum to reduce waste emission, realize closed circulation of the substances in coal-fired power plants and boost highly efficient utilization of resources. In 2013, our comprehensive utilization rate of slag and ash reached 78.14 percent.



### Recycling Waste Materials through Comprehensive Utilization

In 2013, the Changchun Thermal Power Plant generated 180,000 tons of fly ash and 20,000 tons of gypsum, all of which were sold to local enterprises, achieving a 100 percent comprehensive utilization rate of wastes. During the feasibility study of desulfurization transformation, the Fuzhou Power Plant signed agreements with enterprises to use FGD gypsum to produce new-type building materials, so as to improve the utilization rate of desulfurized byproducts.



## Carbon Assets Management

We attached great importance to the management of carbon assets, and established a carbon asset company to uniformly develop, manage, and exchange carbon assets. We also released the Administrative (Trial) Measures on Reducing Emission of Greenhouse Gases, which outlined how we could reduce greenhouse gases emission and manage carbon asset in an orderly way in the future.

In 2013, we collectively developed the first 26 trial projects of voluntary emission reduction of carbon exchange and examined total carbon of 10 power plants in five pilot municipalities of Beijing, Tianjin, Shanghai, Chongqing, and Shenzhen and two pilot provinces of Guangdong and Hubei. The Yangliuqing Thermal Power Plant sold 10,000 tons of the carbon emission allowance in Tianjin and the Shidongkou First Power Plant bought 4,000 tons of carbon emission allowance in Shanghai in 2014.

### What is carbon asset?

- Carbon assets refer to all tangible or intangible assets that are reflected or hidden in an object with the property of value and can be stored, circulated, and transformed into wealth in the field of the low-carbon economy. They cover current and future assets, including CDM assets and any added value generated from the implementation of low-carbon strategies on an annual or monthly basis.

### What is carbon trade?

- Carbon trade is a market mechanism that is adopted to promote reduction in global greenhouse gas emission and global CO<sub>2</sub> emission. It is based on the principle that under a contract, one party purchases the greenhouse gas emission allowance from the other party to fulfill its obligations to reduce emissions, which are calculated by the volume of CO<sub>2</sub> per ton.



## Protecting the Ecological Environment

We proactively implemented ecological environmental protection through an organic combination of the construction of projects with the protection of the ecological environment.

- We made great efforts to protect the biological diversity in the our development of hydropower. We strengthened our protection of rare animals and plants, transplanted the rare plants in the reservoir, set up rescue stations and refuges to protect animals, and carried out fishartificial propagation and releasing in the Lantsang River. In 2013, 2.15 million fishes native in Lantsang River were released into the reservoir above Nuozhadu Hydropower Station;
- We planted trees and grass to protect improperly excavated lands and occupied areas in open pit coal mines to reclaim the mining areas. In 2013, the Weijiamao Coal-fired Power Company used 40.6216 million m<sup>3</sup> of spoil as basement of reclamation to complete vegetation restoration across 3.72 hectares of the mining areas;
- We also strengthened the control of soil and water loss and vegetation recovery. We adjusted measures to local conditions to protect the local environment through protecting forest and supporting sanitary sewage treatment systems.



The artificial propagation and releasing of fish at Nuozhadu Hydropower Station

### Zangmu Hydropower Station Implements Measures to Protect Ecological Environment on the Plateau

The Zangmu Hydropower Station, located in Jiacha County of Shannan, Tibet, has an installed capacity of 510 MW. It is the first hydropower station built on the main stream of the Yarlung Zangbo River. Since its construction began in 2007, great importance has been attached to ecological protection, with 320 million Yuan invested to protect local ecological environment.

**Protecting Biological Diversity** We investigated the fish distribution, hydrology, and the climate along the Yarlung Zangbo River at the Lhasa-Nyingchi Section. We invested 150 million Yuan in the Phase I of the project along with the fishway project. We also constructed fish artificial propagation and releasing to release 100,000 fish annually.

**Controlling water and soil loss** We implemented protective engineering at our slag dumps, collected and deposited spoiled surface soil from our construction areas, and cultivate temporary plants to prevent surface soil loss. We made use of the slag dump in accordance with the principle of blocking first and then deserting. We took measures to block the soil and intercept the water and made sure the waste slag transported to the designated slag dumps.

**Greening construction areas** We implemented ecological recovery and greening measures, including planting cedar and alp poplars in our construction areas. In total, the virescence area reached 10,929 m<sup>2</sup>, with 3,204 arbors and 11,317 bushes planted.

## Strengthening Awareness of Energy Conservation and Environmental Protection

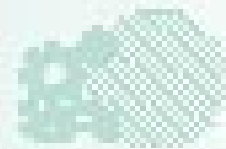
The Company has continued to publicize the concept of environmental protection through cultivating the consciousness of energy conservation and emission reduction among the staff, advocating building green office environment and low-carbon lifestyle, and actively arranging our staff to participate in public environmental welfare activities to create a healthy atmosphere of protecting the environment collaboratively.

- The Company strengthened the management of power conservation of electric equipments, strictly controlled the temperature of air conditioners, and promoted energy-saving lamps.
- The Company strengthened water resource management, used water-saving devices, and recycled reclaimed water as supporting resources of production and for greening, and landscapes.
- The Company strictly regulated the use of official vehicles, approved the purchase of official vehicles of each units according to automobile emission, and controlled the fuel consumption of each vehicle.
- The Company saved office consumables, purchased office supplies according to demands, advocated printing on both sides of paper and fully utilized electronic network system to transfer documents.
- The Company sharply streamlined meetings and gave priority to the mode of video session.

# 05 Healthy Development



Healthy development is the important foundation for sustainable development. To achieve healthy development, we must establish the concept of excellent operation, pursue in intensive and modern management, and operate in compliance with all laws and regulations. We shall improve our business quality and enhance our profitability. We shall realize value preservation and growth of stakeholder assets and continue to build Huaneng into a highly efficient and profitable company.



## Events

<b>January 22</b> HUANENG GROUP ANNOUNCES 2014	<b>February 23</b> HUANENG GROUP ANNOUNCES 2014	<b>June 19</b> HUANENG GROUP ANNOUNCES 2014	<b>July 25</b> HUANENG GROUP ANNOUNCES 2014	<b>November 9</b> HUANENG GROUP ANNOUNCES 2014	<b>2014</b> HUANENG GROUP ANNOUNCES 2014
---	--	--	--	---	---





## Enhancing Management Improvements

The Company has carried out management enhancement activities, in which we have pinpointed 20 key areas that can be improved, and established specific plans for them. We have also pressed ahead with management diagnosis among grassroots units, and completed our tasks at the stages of management enhancement activities. In 2013, our company was named an "Outstanding Work Unit" in the SASAC Management Enhancement Activities.

### Reducing Losses and Increasing Profits

We address challenges that arise from market changes and weak power consumption growth, strive to reduce losses and increase profits, and take it as the key step to enhance our profitability. We have made work plans which focus on increasing the parent company's net profits and providing solutions for big deficit runners, and intensified our efforts in this work. Our Group has set up eight steering groups to strengthen its supervision and guidance of this work and promote the implementation of various working measures.

In 2013, we achieved a substantial rise in our profitability, and made great improvements in our profit structure. Our combined profit and economic value added (EVA) reached 23.619 billion and 10.475 billion respectively, hitting an all-time high. The net profit of parent company came to the highest point in recent years. Our asset-liability ratio was 82.51% in 2013, down 1.25% over the previous year, and our coal-fired and wind-power companies decreased their year-on-year losses by 6.58% and 9.81% respectively. In particular, 19 of our grassroots companies were successfully turned profitable.



Dalian Power Plant

### Budget Management

We have further improved the comprehensive budget management system with the financial budgets as the core, and given full play to its driving role in optimizing the allocation of resources, supporting business and management decisions, and improving the quality of development and benefits.

- **More Innovative Budgeting Method** To define the guideline values for major budget indicators, take reducing losses and increasing profits as a key part and incorporate it into budget management, and give a full consideration to the anticipated benefits of new projects in the business budgets to make budgeting more scientific and prospective.
- **More Rigorous Management, Control and Implementation** To prepare the analysis report on budget performance and economic operation briefings, make regular summaries of budget performance, and strengthen online business management; to make time predictions by analysis, implement the system of making ten-day report on business budget; to strengthen the management and control of funding budget, and regularly track and monitor the projects to ensure the well implementation of budget.

### Risk Management

We continue to strengthen our risk management, strictly enforce the internal control system and standard, and promote the standardized construction of internal control system. We also work hard to transform our risk management methods and enhance our capability of coping with all risks while performing risk management procedures in all links of management and in the full process of business.

- In 2013, we held a conference to promote risk management and internal control, analyzed its situation, and made arrangements in five key areas to deeply drive risk management work forward.
- We printed and issued The Group Guidelines for Internal Control Assessment, urged all business units to prepare and submit internal control manuals, created classified standard for internal control assessment, and carried out on-site internal control assessment and training.
- We strengthened asset management, intensified its auditing and supervision, and formulated the Management Measures on the System of Accountability for Asset Losses and the Management Measures on Post-evaluation of Fixed Assets Investment Project (Trial). In 2013, we completed 1,114 audits and conducted six post-evaluation of investment projects, which has provided the evidence to improve our investment decisions and project management.

Number of audits in 2013

1,114

Post-evaluation of investment projects

6





## Performance Assessment

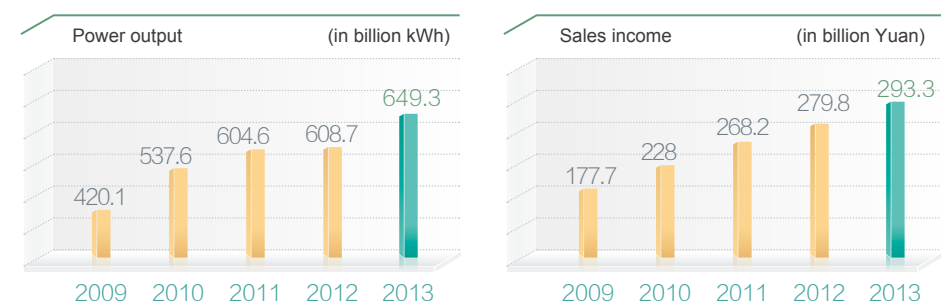
We continue to improve our performance management system which takes budgeting as its core, the benchmarking as its mainline, and the responsibility system as the vehicle, and links performance with compensation, and give full play to its guarantee role in completing our all tasks and enhancing our value creativity.

- Perfecting Indicators** Incorporating the return on equity (ROE) into performance evaluation in the process of designing key indicators, and paying more attention to enhancing parent company's ability to gain profit and preserve and increase the value of state-owned assets.
- Adjusting the Difficulty** Incorporating EVA and ROE into operation difficulty coefficient to make overall planning, and leading all business units to focus on their capability of creating value and preserving and increasing the value of state-owned assets.
- Evaluating through the Linkage** Replacing the achievement rate of general profit target with the growth rate of general profit to highlight the linkage relations between the increase of benefits and the performance payment.
- Liquidating the Performance** Successfully completing the tasks for 2012 and the third-term assessment and liquidation work assigned by the SASAC, and receiving a double-A enterprise award for outstanding business performance and the outstanding enterprise award for excellent performance in energy conservation.

## Actively Expanding Markets

### Electricity Market

In response to the negative effects caused by the slow growth rate of installed capacity and the readjustment of regional distribution and structure, we have worked hard to expand power market, strived for the maximum power supply plan, and participated in the trades in alternative energy markets in connection with the supply-demand situation in the power markets and the fluctuations in the fuel markets. We have also exerted ourselves to generate more electricity, earnestly implemented the national electricity price policy, and made close coordination with power grid companies for better control over the tariff recovery. As of 2013, we generated a total of 639.7 billion KWh in China, an increase of 7.02% over the previous year, and maintained 100% in the recovery of electricity bills.



Power output in China  
**639.7**  
billion kWh

Sales income  
**293.3**  
billion Yuan



Unit Control Room in Pingliang Power Plant



Coal-fired Power

Huaneng has improved its three-tier marketing and management system. All of industrial, regional, and grassroots companies have strengthened their dynamic tracking of power output, utilization hours, and the status of generation units, and made every effort to implement measures and improve the utilization hours of generation units.

Our utilization hours of coal-fired power were on the top in 20 areas, including Jiangsu and the eastern part of Inner Mongolia. Our power structure has been further optimized so much that the utilization hours of 600 MW or higher generation units are 95 hours higher than that of those below 60 MW.



Hydropower

The companies in the Lantsang River regions and Sichuan province have played a leading role in optimizing the graded deployment of waters. In full consideration of the market demands, water feeds and other factors, these companies have been able to measure power generation capacity in real time, strengthened their multilateral communication and coordination and increased the capacity of generation units in these waters.

69.885 billion kWh of power was generated in 2013, a 15.098 billion kWh increase from the previous year.

These companies achieved a total power output of 69.885 billion kWh, a year-on-year increase of 15.098 billion kWh.



Wind Power

We have strengthened wind power marketing and management. We have also avoided much wind curtailment, and effectively increased the utilization rate of wind turbines by improving benchmarking, and participating in various projects like sending surplus wind power from northeast grid to the grid in the northern part of China, exchanging coal-fired power with windpower or new energy at Yimin, and providing a direct power supply to key accounts and others.

We achieved a total power output of 16.895 billion kWh in 2013, up 27.67% over the previous year, reduced wind curtailment rate by 4.48%, and increased power output by 870 million kWh.

### Coal Market

The company has strengthened the research and trend analysis of coal markets, made proactive and timely adjustment in coal procurement policy, and maintained good relationships with large coal enterprises to consolidate the fuel supply in main channels. We persist in multi-channel procurement, give full play to the edges of centralized procurement platform for imported and seaborne coal, and expand the scope of unified coal supply and distribution to control the cost of coal procurement.

- In 2013, the large coal enterprises played a bigger role in the fuel supply of main channels, with their annual contract amount accounting for 52% in the total consumption of thermal coal. We imported 46.18 million tons of coal throughout the year, hitting another historical high.
- 36.65 million tons of coal was supplied by our own internal suppliers, achieving the power coal self-supply rate of 13.7% and the synergy rate of 51.2%. The foreign sales and the volume of coal trades were increased by 16.4% and 11.9% over the previous year.
- We conduct strict management in the quantity and quality inspection of coal as received and coal as fired, and make great effort to carry out the activity of "Creating Model Power Plant in Fuel Management". In 2013, we decreased the caloric value difference by 16 calories/kg, saving the fuel cost of nearly 400 million Yuan.

Annual quantity by contract to total thermal coal consumption

**52%**

The caloric value difference lowered by

**16** kcal/kg

#### Fuel Companies' Adjustment and Optimization of the Coal Supply Structure

Fuel companies have proactively adapted themselves to the reform situation of power coal marketization, and reached an annual market-based ordering plan with their mining partners to effectively avoid risks associated with market fluctuations. According to the changes in the coal markets, our company adjusts the coal supply structure timely, and purchases coal by competitive price, so as to shorten the price gap between the imported and the domestic coal, and between the internally procured and market-based coal.

In 2013, we saw a drastic year-on-year increase of 28% in the total amount of imported coal, whose price per ton was decreased by 22 Yuan on average over the price in domestic coal markets, saving the cost of 825 million Yuan. We also adopted and promoted "One Ticket Through" operating mode in the self-supply of power coal, by which we supplied a total amount of 8.04 million tons of coal, and effectively stabilized the price in the coal market.



## Fund Management

We press ahead with the innovation in the financial management and control methods, strengthen the centralized financial and fund management, and steadily promote the experiments of centralized financial management in regions. In connection with the working goals of “assuring quality, controlling price, and reducing cost” and the working ideas of “three increases and two controls”, we persist in taking the credit as the core, the bonds as the supplement, and the diversified financial products as the complement, make innovation in financing methods, and replace the previous high-interest loan to ensure fund supply and reduce its cost.

- **Controlling Financing Cost** Our company financed 290.3 billion Yuan in 2013, of which the non-credit financing accounts for 34% and bond financing 34%, resulting in a significant decrease in financing cost;
- **Making Innovation in Financing Modes** We made innovation in the distribution of discount financing bonds for the first time, in which we issued RMB bonds in Hong Kong through the shareholding companies, the unsecured dollar bonds outside China through the Hong Kong company, and the private placement bonds through Lantsang River Company;
- **Meeting Fund Demands** We raise and gather funds by various means to meet the fund demands of key projects. We successfully kept running the financial equity financing of 1.8 billion Yuan for Hetaoyu Project. Besides, the International Power Company also refinanced USD 1.822 billion, which has not only improved our debt structure, but also reduced our financial costs.



## Materials Management

We have deepened the reform in our materials management system, promoted the application of material coding, intensified our efforts in the allocation of materials and expanded the scope of centralized procurement to further reduce the cost of procurement.

- **Basic Management** We prepared more than ten rules and regulations including Rules for Material Coding, Data Management Procedures for Material Coding, and set up a material bidding committee and work groups.
- **Platform Building** We built a platform for unified material coding management, and completed the standard coding of materials for coal-fired and hydro power plants, wind farms and coal mines. By now, 91 grassroots companies have adopted the coding system.
- **Bid Invitation** We completed the tenders of two sets of 1 million kWh main units for Tongchuang Power Plant, and the auxiliary units for the power plants in Xining, Luntai, and Laiwu, and the mainframe and auxiliary wind power generating units for wind farms in Dingbian, Jingbian, and Yemaoshan.
- **Resource Allocation** By allocating four idle pipelines, which are 242 meters in total length, for the projects in Yinchun and Laiwu, we effectively activated the idle assets. We also started to count all idle cables to lay foundation for the allocation of idle materials in the future.

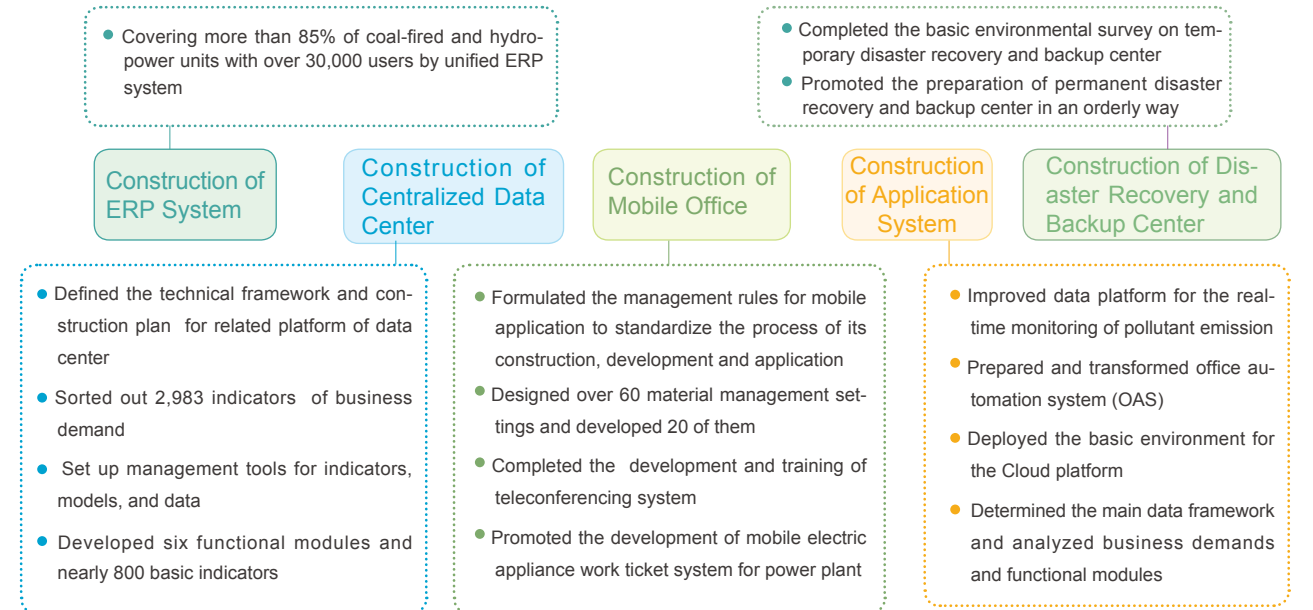
## Infrastructure Construction Management

Adhering to the management philosophy of “infrastructure serves production and the production serves business”, we have strengthened our full-process management throughout the project design, construction, testing, and acceptance to build the first-class project.

- **Design Management** Taking strict measures at the stage of design, benchmarking with typical design, carrying out technological innovation and optimizing the design to bring our generating units in line with the first-class energy-saving targets and the national highest emissions standards.
- **Cost Management** Tightening up the bidding and tenders, intensifying our efforts in cost management and control, doing a good job in the approval, and assessment of budgets to lower construction costs in a reasonable way and make the construction cost of our generating units come to advanced level, lower than that of the other units in terms of time, model, and locality.
- **Quality Management** Establishing a sound quality management system adopting high-efficient quality management mechanism, and promoting the refined management in the construction to ensure the high quality of the engineering, and put new units into the safe, steady, and high-efficient operation.

## Informatization System Construction

We have prepared Planning on Information System and Planning on the Application of Information System to steadily improve the construction of our information systems, including the systems for the integrated asset and finance, human resources, financial management, e-commerce, and online legal work.



## Making Greater Efforts to Combat Corruption and Uphold Integrity

### Promoting Ethical Party and Governmental Responsibility

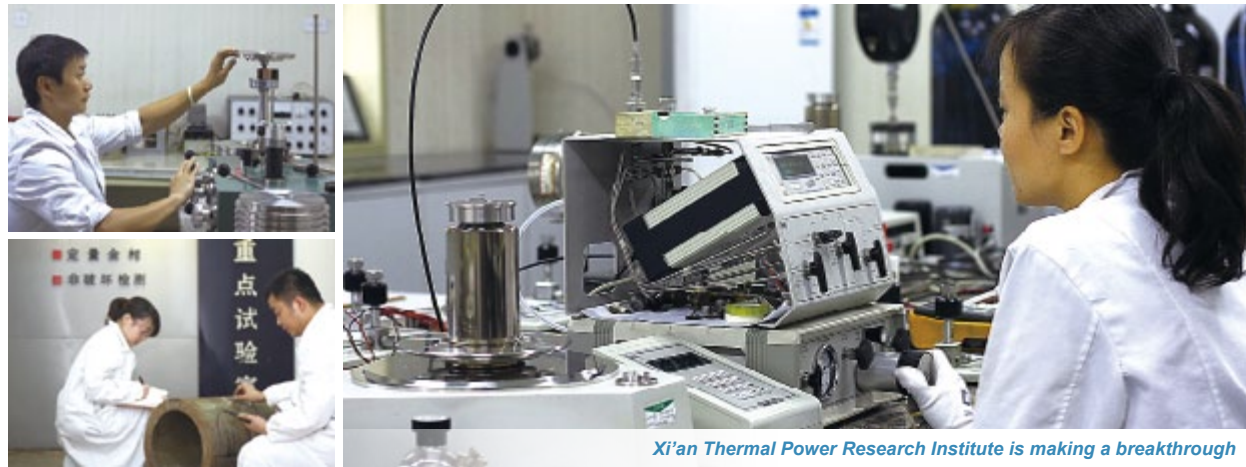
- |   |   |  |
|---|---|--|
| <p><b>Implementation of concrete measures</b></p> <ul style="list-style-type: none"> <li>● All industrial/regional companies and grassroots enterprises have anti-corruption leading groups;</li> <li>● The members of the Company's system signed 3,686 copies of the Letter of Responsibility for improving the Party's style and building a clean enterprise. The leaders at all levels made a commitment to be incorruptible and self-discipline;</li> <li>● Made a thorough inspection on the implementation of responsibility system among all business units.</li> </ul> | <p><b>Carrying out the prevention and control of corruption risks</b></p> <ul style="list-style-type: none"> <li>● Spread the prevention and control of corruption risks to all major business areas, business matters and key links;</li> <li>● Establish and earnestly implement a regular evaluation mechanism for the prevention and control of corruption risks in connection with the actual condition of enterprises.</li> </ul> | <p><b>Carrying out the construction of anti-corruption culture</b></p> <ul style="list-style-type: none"> <li>● Printed and issued The Guidelines for the Construction of Anti-corruption Culture Battlefield;</li> <li>● Conducted Anti-Corruption Educational Activities for leaders of grassroots enterprises;</li> <li>● Conducted the education activities of vocational ethics by means of “One Book One Film”;</li> <li>● Organized 1,970 anti-corruption educational events with a total of 105,000 participants.</li> </ul> |
|---|---|--|

### Efficiency Inspection

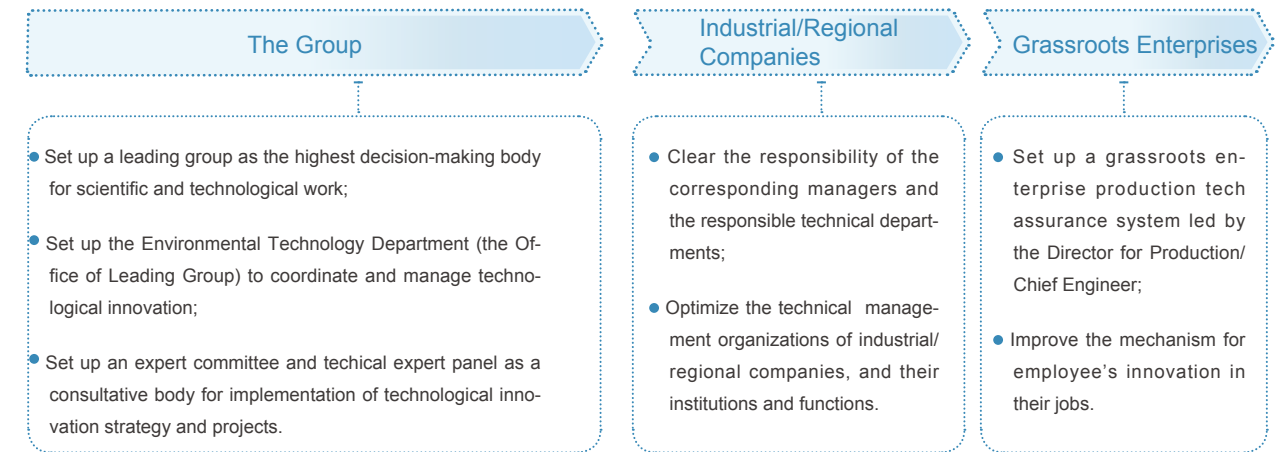
In 2013, we conducted efficiency inspection (EI) in the management of bid invitation, fuel, and collective decision-making system, overhaul and technical reform, and the management of waste and used materials. During the inspection, we inspected 284 projects, developed 932 rules and systems, avoided the potential losses of 73.6 million, recovered the economic losses of 7.7 million Yuan, saved 198 million Yuan, and achieved an additional economic benefit of 70.37 million Yuan. We also made 2,070 inspections on offshore assets, engineering projects, business cars, appointment and recruitment and others, found and corrected 304 problems, which has effectively ensured the healthy development of our enterprises.





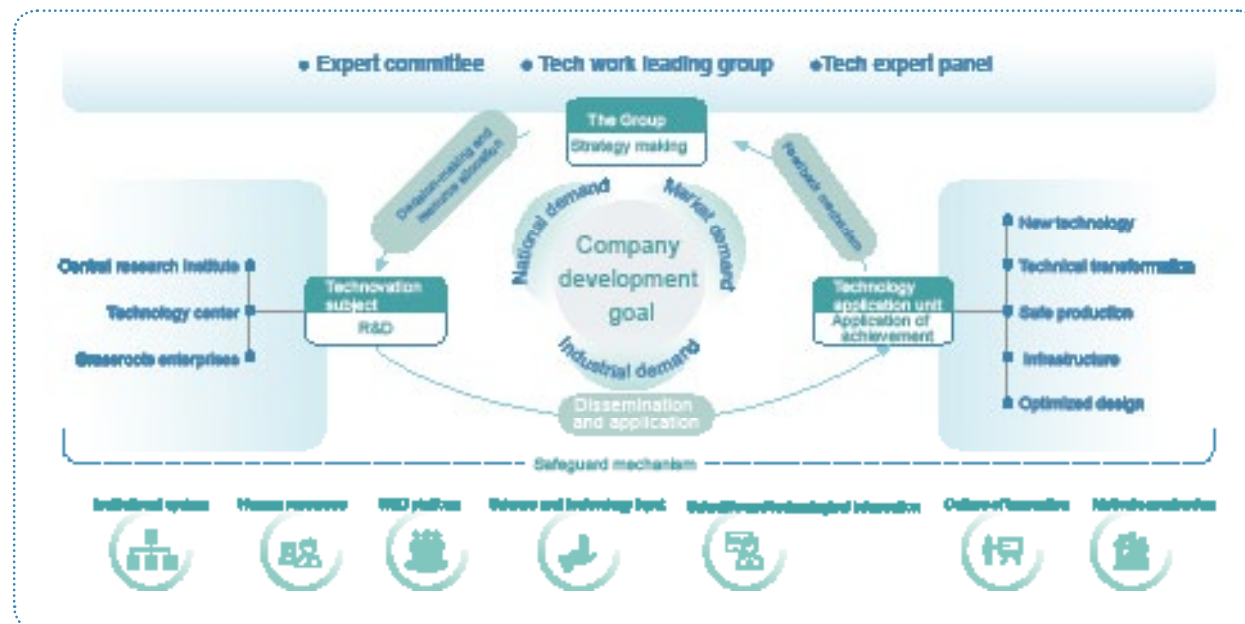


### Three-level Technological Innovation System



## Implementing Technological Innovation Strategy

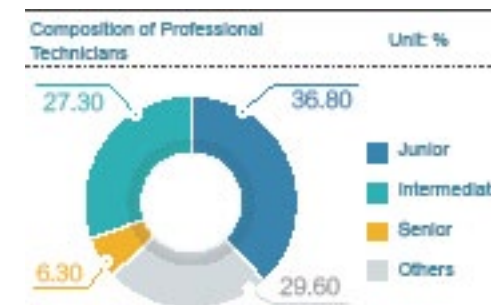
We firmly implement our technological innovation strategy and exert great efforts to promote the construction of new businesses. Adhering to the principles of "Three Serves, Three Towards, and Three Missions", we have streamlined and improved the three-level technological innovation system to provide technical support for our faster transformation and upgrading and our better quality and benefits. In 2013, we achieved positive progress. We continued to implement the Medium and Long Term Development Plan for Science and Technology, the Plan for Major Scientific and Technological Projects during the Twelfth Five-Year Plan, and the Plan for Implementing Technological Innovation Strategy to Build a World-Class Enterprise, revised the Regulations on Technological Work and other rules and regulations, and pushed forward the construction of technological innovation platform and the research of major scientific and technological projects. Our company was listed as one of model central enterprises in building technological innovation system by the SASAC.



## Cultivating Technology Talented Personnel

We attach great importance to scientific and technological personnel training, and identify, cultivate, create and gather all kinds of talents in the practice. We have cooperated with the well-known universities at home and abroad to build training platforms and cultivate sci-tech personnel for emerging industries. We will continue to implement the Medium and Long Term Talent Cultivation Plan (2012 – 2020) and promote the national

high-level talents introduction programs such as the "Thousand Talents Program". Taking Huaneng Talent Innovation and Entrepreneurial Base as the basis, and its major technological projects as the carrier, we will cultivate a large number of young and middle-aged high-level talents for technological innovation, management and industrialization, and create a number of world-class management teams specialized in scientific and technological development and industrialization.



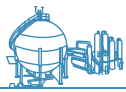
### Our Technical Teams

- 1 academician
- 8 high-level overseas technical talents in the Thousand Talents Program
- 35 experts who have outstanding contributions and enjoy the special allowance awarded by the government
- 2,874 people who are active in scientific and technological activities

### "Thousand Talents Program" Going Well at Huaneng

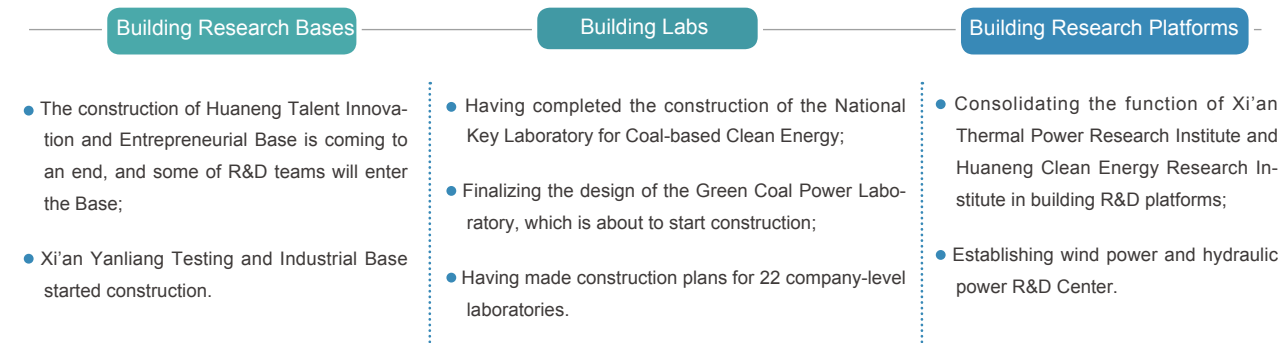
We firmly implement the national "Thousand Talent Program", and exert ourselves to bring in high-level overseas talents. We also improve the environment and platforms for the talents to make innovation, give full play to the leading role of high-level talents, and strive to create a virtuous cycle featured with a sound mechanism, rational hierarchical structure and effective innovation.

In 2013, we selected one specialist from the Thousand Talents Program, bringing the total to eight. Two of our R&D projects were accepted. Besides, we have launched eight new projects on solar energy, green coal power system simulation, shale gas CO<sub>2</sub> fracturing, ultra-supercritical high temperature materials, methanation catalysts, denitrification technology, whose total contract value comes to 47 million Yuan.



## Strengthening the Construction of R&D Platforms

We steadily promote the construction of our research bases, R&D centres, national-level R&D platforms, and a number of laboratories, and increasingly improve our technological innovation and R&D system. All of these have laid a solid foundation for the transformation and industrialization of our scientific and technological achievements.



### Lantsang River Company: Pushing forward the construction of R&D platform in an orderly way

Lantsang River Company has made positive progress in scientific and technological innovation by implementing the Group's technological innovation strategy, fulfilling the main responsibility of hydro-power technology innovation, and strengthening the construction of technological research and development platform.

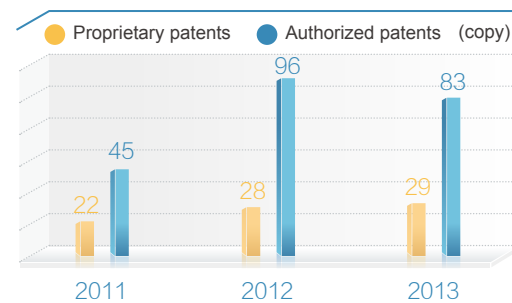
In 2013, we took efforts to push forward the construction of the National Sub-center for High-Efficient Use of Hydro-Energy and Research of Dam Safety, and defined the organizational structures and personnel arrangements for its three labs (Basin geological disaster monitoring and forecasting lab, project safety assessment and monitoring lab, and optimization and dispatching lab) and three bases (ecological protection and demonstration base, integrated basin management and research demonstration base, project quality monitoring demonstration base).

In addition, we pushed ahead with its construction of three of the Group's key laboratories for project safety monitoring technology, highly efficient use of hydro-energy technology, and the basins' environmental protection technology, and was approved to set up a post-doctoral research workstation.



## Promoting Key Technology Projects

Centring on the core power industry, our company takes the initiative to implement the major R&D projects at the national/provincial/ministry level, attaches great importance to the R&D of core technology and steadily promotes the construction of demonstration projects. In 2013, we set up 26 major technological projects at the Group level and 120 research projects in industrial companies, and made a number of important scientific and technological achievements in many fields such as renewable energy, green coal-fired power, dust cleaning and greenhouse gas emission reduction, and the clean and efficient use of coal.



### Renewable Energy

- Achieving progress in the research of wave power generation technology;
- The Fresnel Solar Thermal Power Generation Project passed acceptance;
- Propelling the construction of Shidaowan high-temperature gas-cooled reactor demonstration project.

### Green Coal Power

- Based on Tianjin IGCC Demonstration Power Station, three key projects in the National 863 Program passed acceptance;
- The research and demonstration project of IGCC-based CO<sub>2</sub> collection, utilization, and sequestration passed national mid-term inspection;
- The detailed design of CO<sub>2</sub> capturing device is completed and its demonstration device is under construction.

Achievements in the key scientific research fields

### Clean and Efficient Use of Coal

- Completing the design and preliminary work of testing platform for key components of 700°C ultra-supercritical coal-fired power generation;
- The key technology and the application project of 300MW-class CFB boiler optimized combustion and SNCR high-efficient combined denitrification technology passed technical appraisal and the technology is now being widely used;
- The research results of oxidized synergetic mercury removal technology for coal-fired power plants are applied to the engineering project in China for the first time;
- The Supercritical Circulating Fluidized Bed Project passed its acceptance test;
- Starting the Research and application of 60°C ultra-supercritical double reheat unit;
- The study of modification and dewatering of lignite for urban water source deodorization and purification passed acceptance.

### Pollution Control & Emissions Reduction

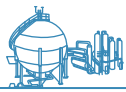
- Developed China's first flue gas CO<sub>2</sub> capturing device with capacity of 1,000 tons/year, which has successfully passed the test of 3,000-hour non-stop operation;
- Made breakthroughs in the development of CO<sub>2</sub> absorbents, which are used in the CO<sub>2</sub> capturing devices in Beijing and Shanghai, saving more energy;
- SCR denitrification catalyst performance testing laboratory passed acceptance;
- Key R&D in the wet ESP industry was successful and demonstrated on 0.3 million kW units of three power plants (Shidongkou 1st Plant and plants in Western Inner Mongolia and Huangtai).

### China's First Gas-fired CO<sub>2</sub> Capturing Device Going into Operation

In 2013, our 1,000 tons/year gas-fired CO<sub>2</sub> capturing device, the first of its kind in China, was commissioned for 3,000 hours of non-stop operation at the Beijing Miyun Testing Base. The project passed the technical appraisal of the Chinese Society of Electrical Engineering (CSEE). All of major technical indicators met the advanced international standard, and its environmental indicator came up to the highest air emissions standards in North Europe, which indicates that China has mastered key gas CO<sub>2</sub> capturing technology for gas-fired power plants.



Gas-fired CO<sub>2</sub> capturing device



## Spreading and Applying Scientific Achievements

Our company has developed the Implementation Measures on Accelerating the Development of Technology Industry, and introduced the policy and measures on supporting the promotion and application of scientific achievements to promote their transformation into real productivity. Xi'an Thermal Power Research Institute and Huaneng Clean Energy Research Institute give full play to their technical edges, strengthen the promotion and application of advanced technological achievements, and provide a full range of technical support and services in the industry as well as in the Group network.

In 2013, we won 20 provincial or ministerial-level prizes for technological achievement and obtained 83 patents with 29 invention patents. The sales of Xi'an Thermal Power Research Institute and Huaneng Clean Energy Research Institute grew by 50.5% over the previous year.

### A Showcase of Technological Awards

SN	Project	Award	Level
1	Research on the Properties of Key Materials in 600°C Ultra-Supercritical Boiler and its Engineering Application	National Energy Award for Technological Progress	First Prize
2	Integrated Research and Application on Improving the Performance of Coal-fired Power Plant Steam Turbines		Second Prize
3	Development of 250MW IGCC System Control Technology and its Engineering Application		Second Prize
4	Study on Safe Operation of 300m Arch Dam Impoundment and Its Engineering Application		Second Prize
5	Development of The Intelligent Cooling Water Purifier for Generators and its Application		Third Prize
6	Development of the Bituminous Coal Combustion System for Lean Coal Boiler Burning Expansion and Its Engineering Application		Third Prize
7	Formulation and Application of the Technical Specifications and Testing Methodologies of Powdered Ion Exchange Resins for Water Treatment		Third Prize
8	China's First Independent Invention of the FCS165 Fieldbus Control System and Its Engineering Demonstration	China Electric Power Science and Technology Award	Second Prize
9	The Group-level Remote Controlled Centralized Simulator for Thermal Power Plants		Second Prize
10	Study on Treatment of Erosion-damaged Overcurrent Parts in Wet FGD Systems and its Engineering Application		Third Prize
11	Development of Oxidized Mercury Removal Technology for Coal Power Plants and its Engineering Application		Third Prize
12	Development and Application of Key Technology of Desalinating Solvents for Coal-fired Power Plants		Third Prize
13	Research in Preventing Large Amounts of Oxidized Coatings from Peeling Off and Piling from Sides of Boiler Steam Pipes: Operational Controls	Shaanxi Science and Technology Award	Third Prize

### Xi'an Thermal Power Research Institute

- Provided its customers with 2300 on-site technical services in the fields of coal-fired power, wind power, petrochemicals, combustion engine, nuclear power, and photovoltaic power, covering 31 provinces, municipalities and autonomous regions in China and 14 countries around the world;
- Received 18 technology awards from province and ministry level agencies, obtained 37 patents with 13 invention patents, and 18 software copyrights;
- Finished more than 1,800 technical reports and prepared the Study Report on the Development of Coal-fired Power Unit in China.

### Huaneng Clean Energy Research Institute

- Filed 79 national patents, obtained 40 national authorized patents and 11 invention patents, published 27 papers, acquired two software copyrights, and won two provincial and ministerial-level prizes for technological achievement;
- Undertook Sino-American joint research in CO<sub>2</sub> capture and storage under China's International Technological Cooperation Program, the Testing and Demonstration Project for the Whole Process of CO<sub>2</sub> Capture, and the Coalbed Methane Recovery and Utilization under the Twelfth Five-Year National Science and Technological Program;
- Organized and participated in the drafting of two sets of technical standards, that is, Acceptance and Testing of HCOG Units, and the Technical Specifications for CFB Boiler Combustion.

### A thorough Solution to SSR Problem in Shangdu Power Plant

On 26 September, the test of SSR SEDC and GTSDC Integrated 500 KV System, which was jointly developed by Shangdu Power Plant and the other technology providers, was successful at Shangdu Power Plant of Huaneng's Northern Company,

The generator terminal subsynchronous damping controller (GTSDC) was a major scientific project of Huaneng Northern Company, Shangdu Power Plant and other related units. They took three years' efforts to tackle this technology, which has provided a thorough solution to the restricted output caused by SSR in Shangdu Power Plant, and an effective solution to SSR in China's AC series compensated transmission system and DC transmission systems. When this project is implemented, it will produce an annual increase of 2 billion kWh.



## Technology Exchanges and Cooperation

By cooperating and exchanging with universities and research institutes, and participating in the construction of various associations and standard committees, we have formed an open technological cooperation mechanism that combines production, learning and research.

- In 2013, we prepared and established CCUS (Carbon Capture, Utilization and Storage) Industrial Technology Innovation and Strategy Alliance;
- In strengthening cooperation with key universities, we signed a Framework Agreement on Integrating Innovation and Cooperation with Production, Learning and Research with Zhejiang University, and financed some R&D projects in the universities like Tsinghua University and North China Electric Power University.

### Leading the establishment of CCUS Industrial Technology Innovation and Strategy Alliance

In recent years, our company has actively organized research teams to make breakthroughs in carbon capturing technology, and built a number of demonstration projects in Beijing, Shanghai and Tianjin, which has led us to enjoy the leading position in the research and application of CCUS technology among domestic enterprises.

On 6 November, the Conference on the Establishment of CCUS Industrial Technology Innovation and Strategy Alliance was held in Beijing, and Huaneng was elected as one of its four directors.

As the Alliance is established, it will strongly promote CCUS technology innovation and its demonstration projects in China, and exert its efforts to create technology innovation and cooperation organization featured with "joint development, complementary advantages, benefit sharing and risk sharing". It will also enhance the overall technical level in CCUS, and give full play to its important role in ensuring energy conservation and coping with climate change in our country.

# 07 Harmonious Development



**Harmonious development** is an important guarantee for sustainable development. To achieve harmonious development, the Company must adhere to the basic principles of multi-cooperation, mutual benefits and win-win situation, fully perform our social responsibility, strive to create a favorable internal and external business environment, constantly improve the brand image, and share the fruits of development with our stakeholders to build up a credible Huaren, a harmonious Huaren, a responsible Huaren, and a brand Huaren and become a modern corporate citizen.

## Events

<p><b>January 19</b></p> <p>THE BOARD OF DIRECTORS OF CHINA HUAREN POWER GROUP CO., LTD. HELD A MEETING IN BEIJING TO REVIEW THE 2014 ANNUAL REPORT AND APPROVE THE 2015 BUSINESS PLAN.</p>	<p><b>September 25</b></p> <p>CHINA HUAREN POWER GROUP CO., LTD. HELD A MEETING IN BEIJING TO REVIEW THE 2014 ANNUAL REPORT AND APPROVE THE 2015 BUSINESS PLAN.</p>	<p><b>October</b></p> <p>THE BOARD OF DIRECTORS OF CHINA HUAREN POWER GROUP CO., LTD. HELD A MEETING IN BEIJING TO REVIEW THE 2014 ANNUAL REPORT AND APPROVE THE 2015 BUSINESS PLAN.</p>	<p><b>December 19</b></p> <p>CHINA HUAREN POWER GROUP CO., LTD. HELD A MEETING IN BEIJING TO REVIEW THE 2014 ANNUAL REPORT AND APPROVE THE 2015 BUSINESS PLAN.</p>	<p><b>December 19</b></p> <p>CHINA HUAREN POWER GROUP CO., LTD. HELD A MEETING IN BEIJING TO REVIEW THE 2014 ANNUAL REPORT AND APPROVE THE 2015 BUSINESS PLAN.</p>
---	---	--	--	--

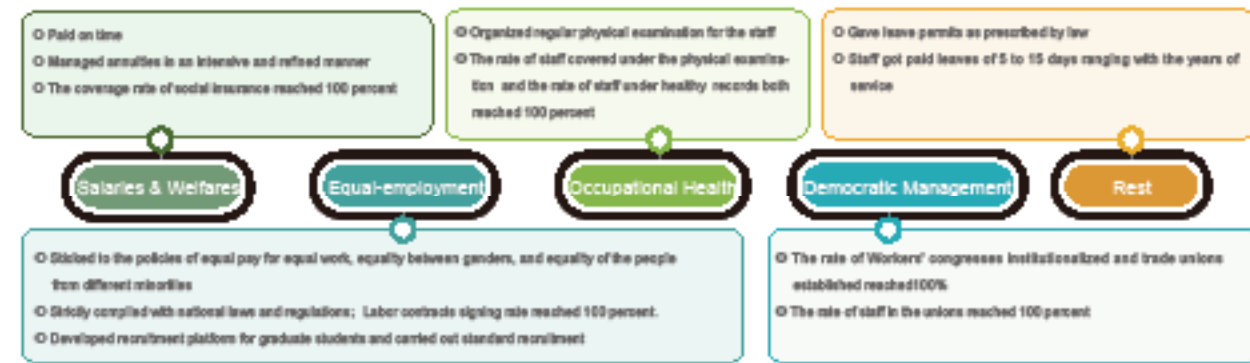




## Promoting Employee Development

### Employees' Rights and Interests

Abiding by the Labor Contract Law and the relevant regulations, we signed labor contract with our employees, paid them social insurance, strengthened the management of labor using and salaries and welfares, respected human rights, and protected their privacy. As a result, no labor dispute arose in 2013. By the end of 2013, we had employed 137,779 employees.



### Employee 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 sound and fast development.

- In 2013 we carried out training sessions for 210,200 people, among which 2,181 were from the Huaneng Group Company;
- All the departments and subsidiaries of the Group conducted over 220 exchange activities of technical innovation and received more than 13,900 suggestions from employee, yielding direct and indirect economic value of 448 million Yuan;
- 109 skill competitions were organized by industrial/regional companies, and more than 6,200 employees took part in the competitions;
- 276 grassroots units held labor contests and 86,309 employees participated in the contests. They also held 1,236 skill competitions and over 49,000 employees participated in the competitions.

### Employee Care

Huaneng actively constructed a harmonious relationship with its employees, worked hard to protect their basic rights and interests, respected their personality development, paid attention to their work and life balance, improved assistance system for needy staff, and raised their work and life happiness index.

- In 2013, financial and material support worthy of 17.75 million Yuan was distributed to help 7,802 needy employees. We paid visits to 310 enterprises and 9,683 needy employees and gave out funds and goods worthy of 9.36 million Yuan during the New Year's Day and the Spring Festival;
- We issued incentive policies for talented staff working in remote regions such as Tibet, Xinjiang, and Qinhai and set up a mechanism to support the development of enterprises in such areas.
- We paid attention to the construction of cultural, sports, and recreational facilities and we had 495 ven-

ues for leisure activities and 269 reading rooms for our staff. In 2013, more than 1,800 cultural and sports activities were held;

National technical experts

21 experts

Technical experts from central SOEs

47 experts

Technical experts in the power industry

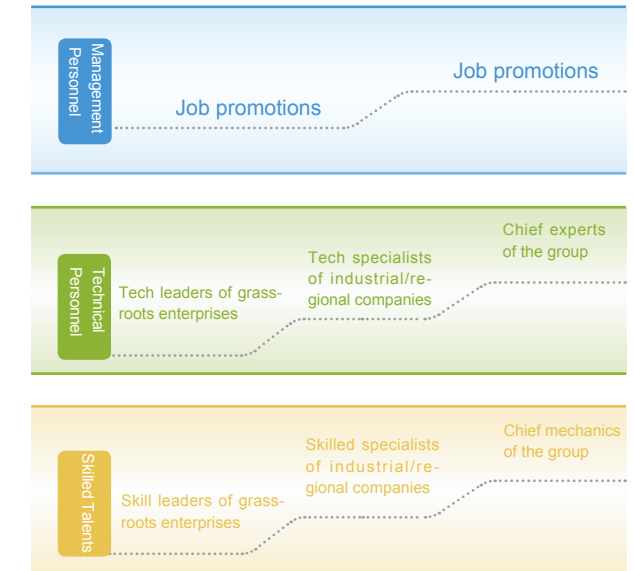
50 experts

### Career Development

We have established a career development platform and clear diverse career development channels to help our staff realize their value.

- In 2013, we formulated and issued the *Management Methods to Select Senior Professional and Technical Talents and the Management Methods to Select Senior Skilled Talents* to help build a three-tier talent selection mechanism based on the characteristics of the techniques and skills of the talents;
- We started to put the educational training scheme into practice, nurture international talents, adjust the overhaul management system of power enterprises, and improve the research project on the controlling mechanism of the labor employment. We also built up our enterprise leadership through temporary post, exchanges, and training;
- We strove to improve the comprehensive examination and evaluation methods of our leadership and carried out "Lianghua" evaluation of our leadership. Employees of industrial/regional companies were selected based on the guideline of "One Report Two Evaluations" and a pilot program to train executives was implemented;
- We added a new post training class for newly appointed plant leaders and a new leadership promotion class for young leaders to the Huaneng Party School, which is used to train executive leadership. In 2013, 482 leaders and executives received training and 42 executives practiced in temporary and second posts.

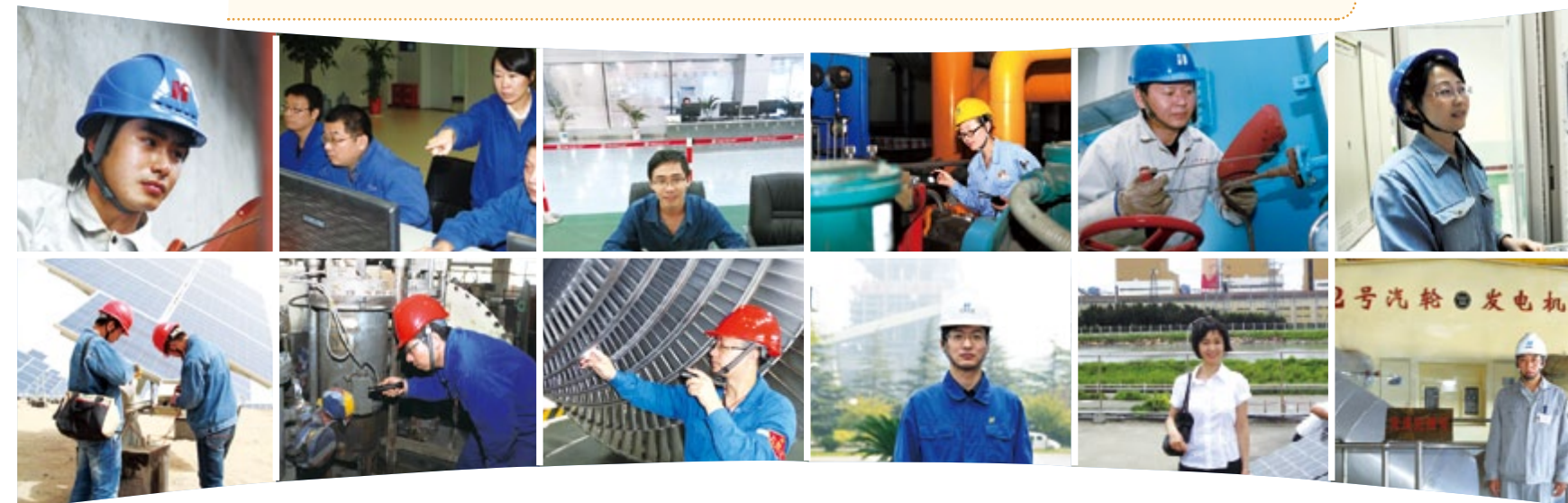
### Multi-channel Development Mechanism for Talents



### In Search for "The Most Beautiful Frontline Workers"

Our workers, as the constructors of beautiful China, held fast to their duties and performed their responsibilities in mountains, on gobis, and plateaus. In 2013, we launched a campaign to search for "the Most Beautiful Frontline Workers". We aimed to publicize the excellent workers working at grassroots, to disseminate their occupational morals of cherishing posts and devoting wholeheartedly to work, practicing skills diligently, struggling to innovate, and the spirit of utter devotion, and to carry forward their bold struggling spirit of dreaming, chasing dream, and realizing dream. 36 workers and 10 teams were selected as our Most Beautiful Frontline Workers.

These workers served as exemplary models for all staff in Huaneng. They were expert not only in professional skills in our company and in their own duties but also in learning skills to pursue self development. They were dedicated to going beyond the tasks associated with their jobs. They had dreams and aspirations that propelled them to work harder and achieve more for both them and their grassroots level organization.





## Join Hands with Partners to Achieve a Win-win Outcome

### Providing Quality Services

**Ensuring Safe Power Supply** We worked hard to provide our community safe, clean, efficient, and reasonably priced electricity by proactively establishing good relationships with grid companies, following grid deployment, and maintaining electricity market order. To ensure the secure and stable operation of the grids, we positively coped with major natural disasters and extreme weather and spared no effort to guarantee production safety.

**Ensuring Safe Thermal Supply** Enterprises responsible for thermal supplies should guarantee stable and safe heat supply. They were required to establish a 24-hour service hotline and emergence crew for heat supply keeping on duty 24 hours in order to solve problems timely.

#### Stakeholder Comments

*"Winters used to be the toughest season for us living in this community before 2009, when each household in the community had poor heating supply. Temperature inside the houses was no higher than 15°C and sometimes as low as 7 or 8°C. The elder had to put on cotton-padded shoes and jackets and the children often caught a cold and had runny noses. But since Huaneng's Dandong Power Plant started to provide central heating for our community, winters become much easier for us. Room temperature reaches over 18°C and even over 20°C during the New Year's Day and the Spring Festival. It is said that commercial residential buildings with heating supply by Huaneng in Donggang City are very popular."*

— Yu Zhong'en, citizen from Donggang City, Liaoning Province.



Hegang Power Plant

### Creating a Responsible Industrial Chain

We have always adhered to managing enterprise according to law and honest operation. We improved our rules and regulations on purchasing management and promoted sunshine purchase to build a responsible industrial chain. We also explored centralized purchasing pattern and strengthened dynamic management of our suppliers depending on e-commerce platform. In our audition of suppliers, we took in consideration not only the quality of their service and products and their capacity to commit contracts, but also their efforts in environmental protection and labor protection. We proactively pushed our suppliers to perform social responsibility and achieved contract fulfillment rate of 100 percent.

### Building Strategic Cooperation Platforms

We continued to improve our industrial/regional layout and expand our cooperation channels. We improved our communication with local governments and enterprises in the construction of our projects and business management. In 2013, we signed cooperation agreements with the provinces of Qinghai, Hainan, Inner Mongolia, Hunan, Fujian, Shaanxi, Ningxia, Jiangxi, and Henan, and the enterprises of China National Nuclear Corporation, China Southern Power Grid Company Limited, the State Development & Investment Corporation, and TBEA Co.,Ltd to promote reciprocal collaboration and common development.

## Membership in Major Social Groups and Organizations

Name of organizations	Position	Name of organizations	Position
China Center for International Economic Exchanges	Standing Director	China Association of Chief Financial Officers	Standing Director
United Nations Global Compact	Member	National Association of Financial Market Institutional Investors	Standing Director
Association of the Electricity Supply Industry of East Asia and the Western Pacific	Member	China Federation of Industrial Economics	Standing Director
Central Enterprises Party Building & Ideological and Political Work Seminar	Vice Chairman	China Corporate Culture Institute	Standing Director
China Electricity Council	Vice Director-General	China Electric Power Equipment Management Association	Vice Director-General
China Electric Power Employees Ideological & Political Work Seminar	Vice Chairman	Chinese Nuclear Society	Standing Director
China Enterprise Confederation & China Enterprise Directors Association	Director	China Nuclear Energy Association	Vice Director-General
China Group Companies Association	Vice Chairman	China International Institute of Multinational Corporations	Vice Chairman
Chinese Society for Electrical Engineering	Vice Director-General	Chinese Society for Hydroelectric Engineering	Vice Director-General
China Power Supervision Standardization Technical Committee	Member	China Institute of Internal Audit	Standing Director
China Association of Work Safety	Vice Chairman	China Electric Power Construction Association	Vice Chairman
China Association for the Promotion of Industrial Development	Director	China Information Industry Association	Vice Director-General
China Supervision Association Power Branch	Vice Chairman	World Association of Nuclear Operators (WANO)	First-class Member
China Association of Resource Comprehensive Utilization	Vice Chairman	China Promotion Consortium for Special Equipment and Energy-Saving	Vice Chairman
China Electric Power Equipment Management Association	Vice Chairman		

## Promoting Social Harmony

### Building Harmonious Enterprises

We stuck to the principle of multi-cooperation and mutual benefit and win-win result. We held ourselves accountable to our clients, partners, and communities and were eager to give back to the society, share with stakeholders the achievements of our development, and build harmonious partnerships with the goals of building a creditable Huaneng, a humanistic Huaneng, a responsible Huaneng, and a brand Huaneng.

In 2013, as a key enterprise associated with SASAC's efforts to carry out the implementation outline of harmonious development in the Twelfth Five-Year Plan, we took steps to implement our harmonious development strategy and made arrangements to build demonstration unit for harmonious enterprises. Eight grassroots enterprises have been selected as demonstration unit of harmonious development, accumulating experience and laying foundation for harmonious development of enterprises.



Yuhuan Power Plant holds popular science educational activity for primary and middle school students

### Building the Huaneng Motuo Yarang Hydropower Station

On December 25, the construction of Huaneng Yarang Hydropower Station began in Motuo County, Tibet. The station would be the principle power supply in Motuo County, where people had no access to electricity. Its static investment was about 208 million Yuan, and would be installed with four 1.25MW units. The station was expected to be put into operation at the end of 2015.

Surrounded by high mountains, the electric power construction in Motuo County had been hindered by steep hill rock and inconvenient traffic. The county has been "isolated in the dark", where a fourth of population lived with no electricity. Once put into operation, the station would supply power to 34,300 people.





## Supporting Public Welfare

We persisted in the philosophy of “constructing a power station, stimulating the local economy, protecting the local environment, benefiting local people, and promoting complete harmony.” Our subsidiary companies took proper measures to assist Xinjiang, Tibet, and Qinhai and advance poverty alleviation and development, and, at the same time, carried out disaster relief and donation in support of public causes.

- In 2013, Huaneng invested 9.2 million Yuan to help build Biedieli Huanneng New Village and Jialangqi New City Primary School in Aheqi County of Xinjiang, one of the national frontier poverty alleviation pilot counties;
- We continued our assistance to Tibet. 9.6 million Yuan was invested to procure new gas turbine and overhaul the units at the transitional power source station in Ali;
- 4.4 million Yuan was allocated for the counterpart aid of Jianzha County, Huangnan Prefecture, Qinghai Province, to carry out six supporting projects, including culture, education, healthcare, and talent training;
- 57.17 million Yuan was allocated to construct power supply projects in areas of Xinjiang, Tibet, and Qinghai, where people had no access to electricity;
- 4.3 million Yuan was allocated to support rural industrial development and carry out public projects, including drinking water project, talent cultivation project, and new village building project, in Hengshan County and Jingbian County, Shaanxi Province;
- Huaneng took an active role in the “Central Enterprises’ Goodness Program” and donated 1 million Yuan to the China Foundation for Disabled Persons in support of disability causes in China.



### Sichuan Branch Company actively participated in earthquake relief in Lushan, Ya’an

When an 7.0-magnitude earthquake hit Lushan County of Ya’an City, Sichuan Province, in April 20, 2013, Sichuan Branch Company instantly started an emergency plan and sent people and materials to help with disaster relief, while carrying out self aid by production in the power station.



- Sichuan Branch Company sent more than 200 people to help with disaster relief and assist over 180 victims to move out of the stricken area; The company also built over 80 tents, flattened about 10,000 square meter of ground near Lushan Vocational School, and resettled nearly 2000 victims;
- The company established disaster relief teams to blow up fallen boulders on the roads and restore the traffic capacity of the State Highway 318;
- The company opened corporate communication facilities for more than 2,000 local people to connect with their relatives and friends outside Lushan;
- Under the delegation of the Group Company, the Sichuan Branch Company also donated 8 million Yuan to assist self-aid and reconstruction in the earthquake-hit area.

### The Longkaikou Hydropower Project found a way back to nurture New Village

Since its construction 6 years ago, the Longkaikou Hydropower Project has always held firmly to performing its social responsibility in its diligent search for ways back to “nurture” China’s New Village Project. A total of 4.97 million yuan has been administered to support the construction of 3 Huaneng Hope Primary Schools, 5 rural infirmaries, 5 rural cultural rooms, 9 water drinking projects to meet the needs of people and animals, and 10 villiage renovation projects in such regions as Heqing, Lijiang Ancient Town, Yongsheng, and Yulong. In addition, the project supported 60 rural teachers to receive training outside town, 767 primary and middle school students to finish their studies, over 100 junior and senior high school students to continue their vocational education, 3200 workers to complete transitional job training, and 17,000 villagers to participate in the New Rural Cooperative Medical System. All these figures signified how the Longkaikou Hydropower Project – a landmark project of Lantsang River Company’s cross-basin development strategy – performed its corporate social responsibility and embodied its role in bridging social gaps with honor and compassion. The success of Longkaikou Hydropower Project in CSR development embodied the spirit of harmonious development for enterprises.

*The enterprise to its locality is fish to water, a Phoenix to Chinese parasol –both are always complementary to each other and depend on each other. The relationship between Hydropower Project Development and New Village Construction is like that. Only by parallel development of both sides can we give full paly to each other’s advantages and produce win-win outcomes. We should always keep in mind that our responsibility is not simply about giving but about trying our best to improve their capacity to seek development.*

—A Longkaikou Hydropower Station Quote

## Volunteering Work

We actively organized young volunteers’ service work. Our efforts have led to an increasing number of volunteers who helped build communities, protect the environment, and support students and the needy. In 2013, we carried out more than a thousand volunteer activities involving over 60,000 volunteers.

- We established lecturer mission composed of lecturers with PhD to teach primary school students and hold fellowship activities in poverty-stricken areas;
- We organized a campaign of “Donating Old Calendars and Care for the Blind Children”. In total, we collected about 30,000 old calendars and donated them to more than 2,000 blind children;
- We cooperated with Huailai County, Hebei province, and donated office supplies, recreational and sports equipments, and items for daily use such as beds and bedcovers for three local primary schools; We also equipped two primary schools with computer-aided and multimedia-based classrooms, and built the Huaneng Youth Forest; We were honored the Award of Contributions to the Hope Project in Hebei Province.
- We organized young volunteers to donate blood and serve for the communities, charity houses, and nursing homes.



Yuyang Power Plant Staff as volunteers



Jiaxiang Power Plant staff donating blood

Awards	#
National May 1st Labor Award (paper)	3
National May 1st Labor Merit (medal)	3
National Workers Pioneer Cup	8
Central Enterprise Outstanding Team	6
Central Enterprise Model Worker	9
Top Ten Institutional Contributors in the 4th Energy-Conservation China	1
Outstanding Energy-saving and Emission-reducing Enterprise in the SASAC 3rd Term of Office	1
Model Institution for Building Tech Innovation Systems in Central Enterprises	1
Grade A in SASAC Informatization Assessment in 2012	1
SASAC Outstanding Organizer of Project Researches	1
Outstanding Achievement in Researches of Ideologies and Politics in Central Enterprises	15
Top 30 Competitors for Corporate Culture over the Past 35 Years of Opening-up and Reform	1
National Advanced Institution for Public Sports.	1



# Prospect in 2014



## Indicator Index

Contents	CASS- CSR3.0	GRI(G4)	Page Number
About this Report	P1.1- P1.5	3.1- 3.12	Title page 1
Declaration on Sustainable Development	G1.1	4.8- 4.9	Title page 2
Huaneng's Sustainable Development Mode	G1.1	4.8	Title page 3
Message from Company Leaders	P3.1- P3.2	1.1- 1.2,4.4	p2- 3
Members of the Management Team			P4
Stakeholders	G5.1	4.16- 4.17	P5
Key Performance	P5.2,S3.6- S3.7,ELS3.8- ELS3.11,ELE2.7- ELE2.8, ELE2.11,S1.5,M1.4- M1.6, M2.9-M2.10, S1.8, P4.5, S2.1- S2.2, S2.4, S2.22, S4.12, S4.14	2.1,EC9	p6- 7
Special Subject: Beautiful Huaneng in Action	P5.1, S1.6, ELE2.11, ELE3.2, ELE3.3	EN16- EN18,	P10- 11
Strategy and Management	Company Profile	P4.1- P4.2, P4.4	p14
	Organization Structure	P4.3	p15
	Management System	P4.7	p16
	Development Strategy		p16
Safe Development	Responsibility Management	P2.2- P2.3, G1.1, G1.3- G1.4, G2.1- G2.5, G3.1, G4.1, G5.1, G5.3- G5.6, G6.1- G6.4, M1.3	p17- 19
	Improving SafetyManagement System	S3.1- S3.2	p22- 23
	Consolidating Foundation for Safety	ELS3.7	p24- 26
	Strengthening Safety Management in Coal Mines		p26
Optimal Development	Safety Education and Training	S3.3- S3.4	p27
	Alarm Bells and Reflection		p27
	Optimizing Power Supply Structure	E2.5- E2.6,ELE2.10, ELE2.11	p30- 32
Green Development	Strengthening Industrial Collaboration		p33- 35
	Promoting International Development		p35
	Perfecting Management System	S4.1- S4.2, E1.1, E1.4	p38
	Tapping into Energy Conserving Potentia	E2.1- E2.2,E2.9- E2.10	p39- 40
Healthy Development	Standardized Emissions	E2.7- E2.8,E2.11- E2.15, E2.18, ELE2.14- ELE2.15, ELE3.2- ELE3.3, ELE3.5- ELE3.6	p40- 42
	Protecting the Ecological Environment	E4.1- E4.3, E4.5,ELE1.11	p42- 43
	Strengthening Awareness of Energy Conservation and Environmental Protection	E1.6- E1.8,E1.10- E1.12	p43
Innovative Development	Enhancing Management Improvements	M1.4- M1.6	p46- 48
	Actively Expanding Markets		p48- 50
	Informalization Construction		p51
	Making greater efforts to combat corruption and uphold integrity	S1.1- S1.4	p51
Harmonious Development	Implementing Technological Innovation Strategy	M2.7	p54- 55
	Cultivating Technology Talented Personnel	M2.9	p55
	Strengthening the Construction of R&D Platforms		p56
	Promoting Key Technology Projects	M2.10	p56- 57
	Spreading and Applying Scientific Achievements	M2.12	p58- 59
Anti-corruption	Technology Exchanges and Cooperation	4.13	p59
	Promoting Staff Development	S2.1- S2.4, S2.6, S2.9, S2.11,S2.22,S2.24- S2.27,S2.29	HR3,HR7,LA1-LA2,LA3-LA5,LA7-LA8,LA14,4.5,4.7,EC5,EC7,LA9-LA13,LA15
	Joining Hands with Partners to Achieve a Win-win Outcome	P4.6, G3.2,M2.1, M3.1,M3.2- M3.4, M3.7- M3.9	4.13,EC6,PR5
Prospect in 2014	S4.4, S4.9, S4.12- S4.14	EC6,EC8,SO1,SO10	p62- 63
Indicator Index			p64- 65
Rating Report	A1		p65- 67
Feedback Questionnaire	A3		p68- 69
	A2		p70- 71
	A4		p72
			p73- 74

## 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 Nation Global Compact. It actively performs the ten basic principles of the UN Glocal 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	P62- 63	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	P62- 63	
Labor	Uphold the freedom of association and recognize	P62	Abide by the national laws and regulations on labor issue, forbide 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	P62	
	Effective abolition of child labor	P62	
	Eliminate discrimination in employment and industry	P62	
Environment	Take a precautionary approach to environmental challenges	P8- 9/P38- 43	Continue to optimize industrial structure, accelerate the elimination of outdated capacity and develop various clean energies to cope with global climate change; Develop clean coal power generation technology, establish energy-conserving and environmental-friendly coal-fired.
	Actively increase responsibilities on environmental protection	P38- 43	
	Encourage the development and promotion of environmental-friendly technologies	P8/P38- 43/P57	
Anti-corruption	Counter any forms of corruption, including fraud, blackmail and offering or accepting bribery	P10- 11/P16/P51	Continue to optimize industrial structure, accelerate the elimination of outdated capacity and develop various clean energies to cope with global climate change; Develop clean coal power generation technology, establish energy-conserving and environmental-friendly coal-fired.



# Rating Report on Sustainable Development Report of China Huaneng Group 2013

Upon the delegation of China Huaneng Group, Research Center for Corporate Social Responsibility of Chinese Academy of Social Science selected experts from the Chinese Expert Committee on CSR Report Rating to form China Huaneng Group Sustainability Report 2013 Rating Team. The rating team rated the China Huaneng Sustainability Report 2013 ("Report").

## I. Rating Basis

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

## II. Rating Procedures

1. The Process Evaluation Group interviewed members of China Huaneng Group's social responsibility department.
2. The Process Evaluation Group reviewed on site the documents involved in the compiling process of the Sustainable Development Report of China Huaneng Group and its subsidiary companies.
3. The Rating Group evaluated the management procedure of China Huaneng Group's sustainable development report and the information disclosed in the Report, management procedures and the information disclosed in the Report.
4. This rating evaluation is based on the integrity and reliability of China Huaneng Group.

## III. Rating Results

Process : (★★★★☆)

1) The Political Work Department of China Huaneng Group led the report compilation team, and the senior leaders were engaged in facilitating the compilation and examining the report; 2) the team identified the stakeholders, listed them in order, and conducted a survey on the suggestions from some stakeholders; 3) the team identified the essential subjects based on major events, pertinent national policies, and industrial benchmark analysis; and 4) the team mapped out a report launching scheme and presented the Report in printed, electronic, and multilingual versions. An excellent manifestation of process has been observed.

Substantiveness: (★★★★★)

The Report discloses in details the key issues in the power industry, including "power supply assurance", "safe working environment", "green power development", "the environmental evaluation system for construction projects", "resource and energy saving", "development of circular economy", "environmental control in and around the plants". An outstanding substantiality has thus been observed. It shows a high degree of substantiveness.

Completeness: (★★★★☆)

The Report covers 84% of the core indicators in the power generation industry from the perspective of "strategy and management", "safe development", "optimized development", "green development", "healthy development", "innovative development", and

"harmonious development", among other aspects. An excellent degree of completeness has thus been observed.

Balance: (★★★★★)

The Report contains negative information and data including "the number of general equipment accidents", "the number of human casualties", "the number of first class faults". It discloses in detail the cause of the accident in Mt. Bailong coal mine 1 in September 1 and the measures taken to rectify the coal mine, and the process and results of the "Safety Risk Identification and Rectification." An outstanding balance has thus been observed.

Comparability: (★★★★★)

The Report contains historical data of 38 key performance indicators in 5 consecutive years and compares the installed capacity with that of its foreign counterparts and other facts. An excellent comparability has thus been observed.

Readability (★★★★★)

The Report is well written in a balanced structure, coherent in paragraphing, fluent in explication, and properly arranged with technical terms explained to make it easier for readers to understand, as well as a large variety of expressive forms, including images, tables, and flowcharts, to create an air of freshness and smoothness. An outstanding readability has thus been observed.

Innovativeness: (★★★★☆)

With special subject of "the Declaration of Sustainable Development" "Beautiful Huaneng in Action", and report outlook as the introductory part, the Report fully presents the priorities, key practices, responsibility targets, and the next year's improvement measures of sustainable development in a well-arranged, focused, and goal-oriented manner, helpful for the involved parties to comprehensively estimate the realities and trends of China Huaneng Group's sustainable development. An excellent capability to advance has thus been observed.

Overall rating: (★★★★★)

Upon evaluation by the Rating Group, China Huaneng Group's Sustainable Development Report 2013 is awarded five stars and acknowledged as an outstanding CSR report.

## IV. Suggestions

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

The Rating Group

Head: Zhixuan Wang, Secretary General of China Electricity Council

Members: Peiyuan Guo, General Manager of SynTao Co.,Ltd

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

Central Process Evaluators: Xiaojing Fang, Mengjuan Wang

Peng Huagang

Chairman of Rating Panel  
Executive Vice Chairman of the Research Center for Corporate Social Responsibility of Chinese Academy of Social Science

Zhong Hongwu

Head of Rating Panel  
Member of the Research Center for Corporate Social Responsibility of Chinese Academy of Social Science

Wang Zhixuan

Director of the Rating Group  
Member of Rating Panel



# Feedback Questionnaire

Your Personal Information

Dear Readers,

This report is a Sustainability Report (2013) 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)

Name: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 Position: \_\_\_\_\_  
 Tel: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 E-mail 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?			

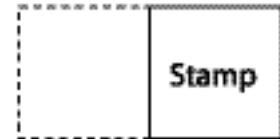
## Open Question

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.

CHINA HUANENG GROUP

1 0 0 0 3 1



No. 6, Fuxingmennei Street, Xicheng District, Beijing

**China Huaneng Group**



Postal Code: