

Beautiful China
Beautiful Huaneng

Improving Management · Striving to Create the Best

Sustainability Report 2012

About this Report:

Time Covered

Jan 01, 2012 – Dec 31, 2012. When 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 seventh report since 2006.

Main Contents

This report outlines our performance in 2012 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

This report is compiled in accordance with the Guidelines on Performing Social Responsibility by Central Enterprises released by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council and in light of the Sustainability Reporting Guidelines (G3.1) from the Global Reporting Initiative (GRI), Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 2.0) by the Chinese Academy of Social Sciences (CASS), ISO 26000: Guidance on Social Responsibility by International Organization for Standardization, and Guidelines on Social Responsibilities of Chinese Industrial Enterprises and Industrial Associations by the China Federation of Industrial Economics (CFIE).

Major Changes

The report's main theme is "Improving Management-Striving to Create the Best." It further improves Huaneng's sustainable development model, systematically illustrates the concepts, objectives, measures, performance and typical cases of the Company in promoting safe development, optimal development, green development, healthy development, innovative development and harmonious development. The report includes a special feature that demonstrates the Company's practice of improving management and building a world-class energy group, as well as the progress of promoting demonstration project in technological innovation.

References to China Huaneng Group

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

Corporate Core Values

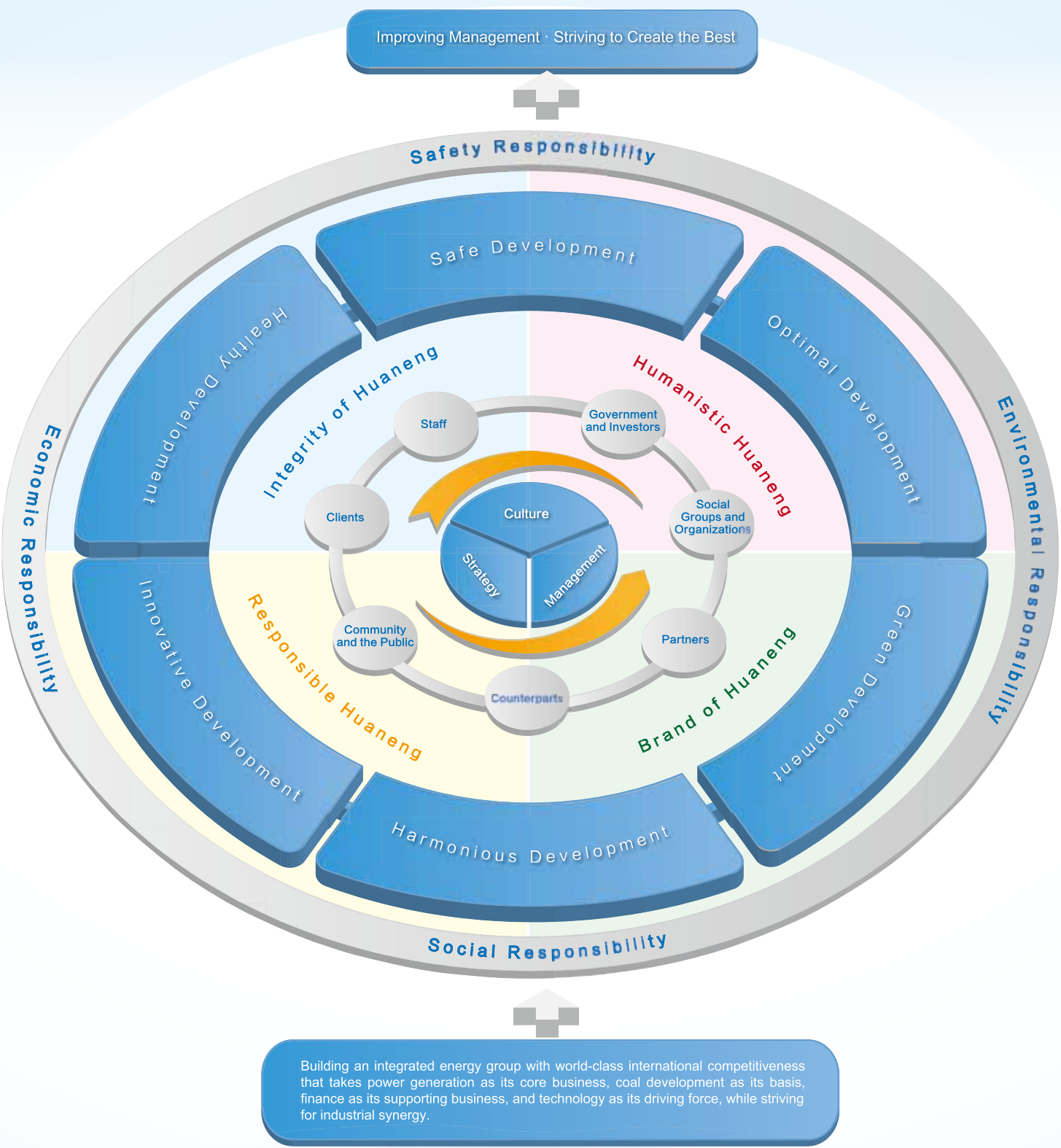
- Integrity, Cooperation;
- Continuous Innovation and Progress;
- Performance-oriented and Serving the Nation.

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.

Beautiful China Beautiful Huaneng

Huaneng's Sustainable Development Mode



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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

In 2012, China Huaneng Group has made significant progress in building itself into a world-class enterprise with international competitiveness. Facing difficulties and challenges, with the Scientific Outlook on Development as guideline, Huaneng Group focused on improving quality and efficiency, took transformation and upgrading as the priority, and has overcome difficulties and achieved remarkable results in production and operation. In 2012, the installed capacity of Huaneng in China and abroad totalled 135.08 GW, among which low-carbon installed capacity constituted 28.3 GW. For the year, 608.7 billion kWh power was generated and 68.59 million tons of coal was produced. Operation income mounted to 277.7 billion yuan, the highest profit since the inception of the Group. In the meantime, coal consumption, sulfur dioxide and nitrogen oxides emission per kWh continued to drop, maintaining a leadership position in the industry. We have consecutively achieved A-level performance evaluated by the State-owned Assets Supervision and Administration Commission (SASAC) for the seventh year, and ranked 246th globally among Fortune 500 companies. Huaneng Tianjin IGCC Demonstration Power Plant, the first IGCC power plant in China, started to generate power, which marked a crucial breakthrough in China's clean energy power technology. China's key science and technology project, the nuclear power plant demonstration project with high-temperature gas-cooled reactor technology, over which China owned independent intellectual property rights, started construction. Huaneng officially became the fourth central SOE that acquired the qualification to develop nuclear power.

It is the honorable mission of central SOEs to fulfill corporate social responsibilities, tackle challenges in resources and environment and promote the comprehensive, coordinated and sustainable development, which is also the path to become an outstanding and world-class enterprise. As a key SOE, Huaneng has always integrated CSR into our whole process of production, operation and management. We stick to the path of safe development, optimal development, green development, healthy development, innovative development, and harmonious development. To fulfill our economic responsibilities, we provide sufficient and stable power supply to support China's social and economic development; we ensure the maintenance and appreciation of state owned assets. To fulfill our environmental responsibilities, we enhance energy conservation and emission reduction and promote green and low-carbon development, so as to build a energy-saving and environmentally friendly society. To fulfill our social responsibilities, we sincerely respond to all the stakeholders, and have made important contributions in building a harmonious society.

“ In 2013, Huaneng Group will further study and carry out the guiding principles of the 18th National Congress of the CPC; we will deepen reforms and innovation, optimize structures, and enhance management and team building so as to build Huaneng into a world-class enterprise with international competitiveness. ”

The 18th National Congress of the Communist Party of China put forward measures to accelerate strategic structural adjustment of the economy, to foster new vitality, driving forces for the growth of the economy, to significantly promote ecological and environmental health, and to promote energy production and consumption reforms. In response to the new situation, in 2013, Huaneng Group will further study and carry out the guiding principles of 18th National Congress of the CPC; we will deepen reform and innovation, optimize structure, and enhance management and team building so as to build Huaneng into a world-class enterprise with international competitiveness. We will further strengthen safety management to consolidate our foundation of safe production; we will give full attention to business management to enhance our profitability; we will accelerate structural adjustments and continue to benefit from quality development. Huaneng will promote industrial synergy to maximize our efficiency of the utilization of resources. We will put great stress on capital management and internationalized management. Huaneng Group will make further efforts to save energy and reduce emissions and build our company into an energy-saving and environmentally friendly enterprise. We will promote science and technology innovation and improve our ability to innovate independently. Huaneng will consolidate Party building, and make Party building more scientific in all respects, so as to take Huaneng's sustainable development to a new level.

Responsibility guides our direction and development into future and leads to prosperity. The reinvigoration of the Chinese nation and to bring moderate society to China are the dreams and pursuit of all the Chinese people. As a large and integrated energy Group, Huaneng will always bear the sacred responsibility on our shoulders and follow the Ten Principles of the United Nations Global Compact and abide by international standards and principles pertaining to enterprises. We will actively respond to the difficulties and challenges ahead, and continue to be a responsible corporate citizen. Huaneng will continue to pursue the comprehensive value of an enterprise, steadily promote the balanced and sustainable development of the economy, society, and environment. We will spare no efforts in ensuring China's energy security and power supply, so as to build a beautiful Huaneng Group and a beautiful China!

胡启生 黄永达

March 2012

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)

Na Xizhi, Vice President of CHNG and Member of the CPC Huaneng Committee (second from right in the front row)

Huang Long, Vice President of CHNG and Member of the CPC Huaneng Committee (first from left in the front row)

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

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

Hu Jianmin, Vice President of CHNG and Member of the CPC Huaneng Committee (second from right in the back row)

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

Wu Dawei, Chief Economist of CHNG (first from right in the back row)

Hu Shihai, Chief Engineer of CHNG (first from left in the back row)

Key Performance Indicators

Environmental Indicator	Unit	2008	2009	2010	2011	2012
Proportion of clean energy	%	12.40	15.01	17.70	19.12	20.95
Coal consumption rate for power generation	g/kWh	333.59	327.70	322.72	318.68	316.52
Comprehensive service-power consumption rate of power plant	%	5.90	5.61	5.22	5.08	4.84
Slag and ash utilization rate	%	63.03	70.24	74.15	76.34	77.08

Economic Indica-tor	Unit	2008	2009	2010	2011	2012
Installed capacity	10 MW	8586.20	10438.20	11343.42	12537.84	13507.66
Power production	100 million kWh	3645.00	4200.95	5376.44	6046.31	6087.00
Coal production	10 thousand tons	2249	4408	4886	6406	6859
Total asset	100 million yuan (RMB)	4635.94	5782.81	6623.99	7531.88	7950.24
Total revenue	100 million yuan (RMB)	1513.75	1777.40	2279.94	2681.73	2797.78
Tax delivery	100 million yuan (RMB)	141.20	166.48	172.66	195.78	261.43
Profit	100 million yuan (RMB)	- 58.41	68.85	77.83	61.41	139.52

Social Indicator	Unit	2008	2009	2010	2011	2012
Equivalent utilization coefficient of power generation equipment	%	91.69	92.27	94.87	94.17	94.46
Major injury and death accident	No.	0	0	0	0	0
Major equipment accident	No.	0	0	0	0	0
Common equipment accident	No.	4	3	0	6	1
Staff	No.	98560	129992	131816	133270	136510
Female staff	No.	26633	27088	31384	32636	34400
Signing rate of labor contract	%	100	100	100	100	100
Coverage rate of collective contract	%	100	100	100	100	100
Membership rate in labor union	%	100	100	100	100	100
Donation amount	10 thousand yuan (RMB)	11465	11107	10770	4603	7439



Improving Management Striving to Create the Best

Deepening Reform

Optimizing the Structure

Strengthening Management

Building Good Teams

The Company shoulders the lofty mission of key state-owned enterprises, and takes "To be stronger, better and world-class enterprise" as the goal. Integrating a strong sense of mission into the Company's development strategy, corporate culture and management, we accelerate the transformation of development mode, improve the quality and efficiency of development, deepen the comprehensive benchmarking management, and carry out the management improvement activities, so as to strive to become world-class enterprises with international competitiveness in about 8 years.



Detailing Strategic Measures and Promoting Implementation

In 2012, the Company developed an overall guideline and a work plan for Creating the Best and made detailed plans and specific measures for the "Seven Strategies, Three Guarantees." The Company also established an index system and compiled a three-year improvement plan for Creating the Best, so as to ensure the work of Creating the Best will be carried out from macro level to micro step by step, from headquarters to grass-roots companies, from the core business to the supporting industries.

Huaneng Power International Inc. (HPI)

HPI established the evaluation index system for the international world-class public power company, and defined 20 key evaluation indexes in eight dimensions, including business scale, operating performance, development potential, international competitiveness, operation level, brand reputation, human resources management, company governance and risk management. At the same time, HPI set down the calculation method and evaluation standard of each index, and strived to create a world-class public power company in three stages.

Regional Company Industrial Company



Huaneng Lancang River Hydropower Co., Ltd. . . .

Lancang River Hydropower Co., Ltd. carried out research and inspections in grass-roots companies on work of "Creating the Best," to analyze and study the existing problems. Facing the problems and difficulties of "Creating the Best", Lancang River Hydropower Co., Ltd. adhered to the principles of high positioning, high level plan and high standards. Aiming at the difficult problems, Lancang River Hydropower courageously put forward innovation and carried out trials, and actively carried out the work of "Creating the Best" in stages according to work plans.

Yuhuan Power Plant

Yuhuan Power Plant compiled the work plan of "Creating the Best" at the plant level and department level, and compiled the benchmark index system. Using theme webpage, bulletins, exhibition windows and other carriers, Yuhuan publicize "Creating the Best." Yuhuan Power Plant also carried out activity of soliciting suggestions, and organized cadres and workers to write more than 50 articles on the suggestions. Through monthly manager meeting and weekly coordination arrangement meeting, Yuhuan Power Plant made arrangements for the work of "Creating the Best," and tracked and inspected the implementation of the work, made it into part of the normal working mechanism.

Grass-roots Company



Yimin Coal Company . . .

Actively relying on their solid foundation of enterprise management, teams of talents that can manage the development of large-scale coal bases and their deep corporate culture, Yimin Coal Company fully utilized their resource advantage in coal and water, and improved the level of large-scale operation and profit ability. Therefore, Yimin Coal Company sped up the implementation of the plan of Yimin energy base, and strived to lay a solid foundation for creating a first-class enterprise.

Zou Deyu from Chaohu Power Plant

"There is no ending for Creating the Best. We always persist in production safety of high standard, operation benefits with high returns, enterprise management with high efficiency, party and team construction with high effectiveness. We will spare no effort to achieve development and strive to create a first-class power generation enterprise."

Staff

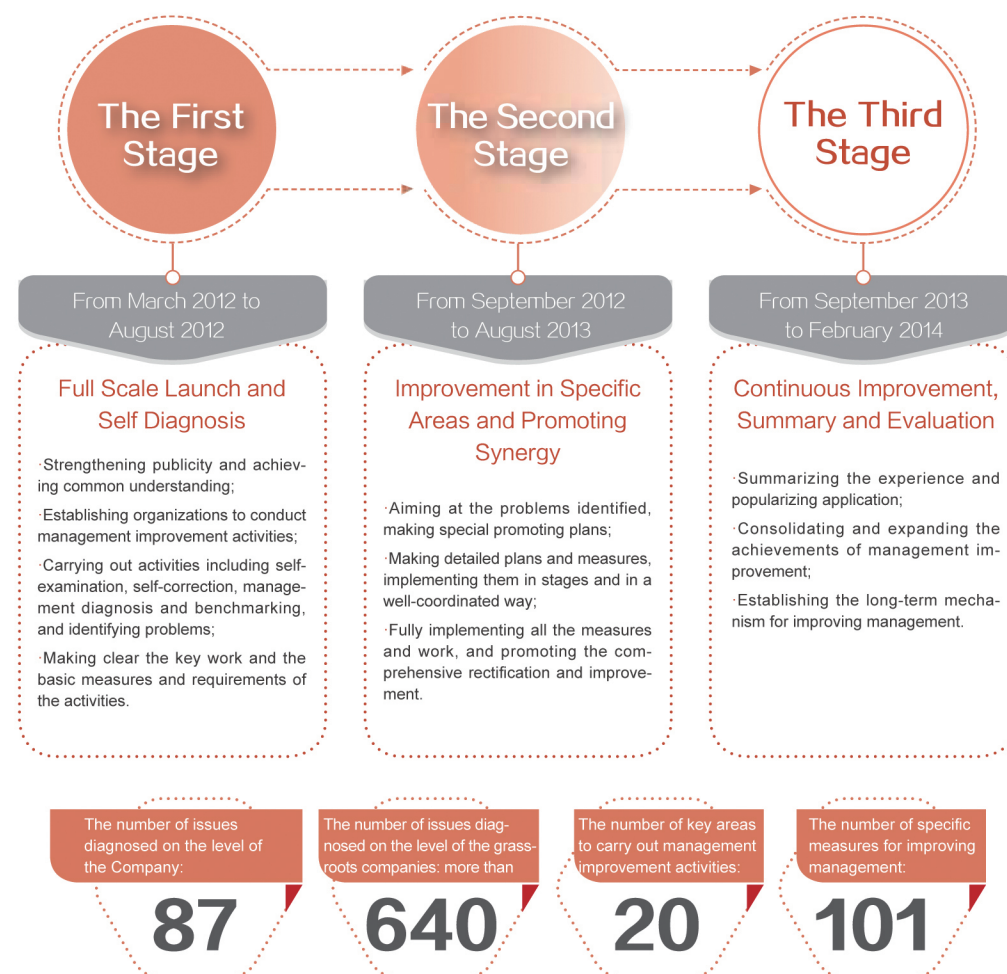


Hou Jiangang from Huating Coal Industry Company . . .

"Over the past year, we have experienced busy time and stagnation of coal market. But facing the winter of the market, we advanced against hardship. Over the past year, we made some measures to ensure the sales volume, and bore the pressure of the market sluggishness, to realize growth and stable production. Over the past year, we strived to create a first-class enterprise, and made concerted efforts to input positive energy for Huaneng's development."

Carrying out Comprehensive Management Improvement Activities

In 2012, taking management improvement activities as the vehicle, the Company made a comprehensive inspection of the weak links in management, and carried out a wide range of problem diagnosis. We determined the key areas of our work, and formulated measures and the improvement plans for all areas. We continued to implement improvement plans and ensured stable growth of the Company's management level. In the past year, the Company was named Excellent Unit in the Organization of Management Improvement Activities by the SASAC of the State Council.





Constructing Demonstration Projects Leading the Future Development

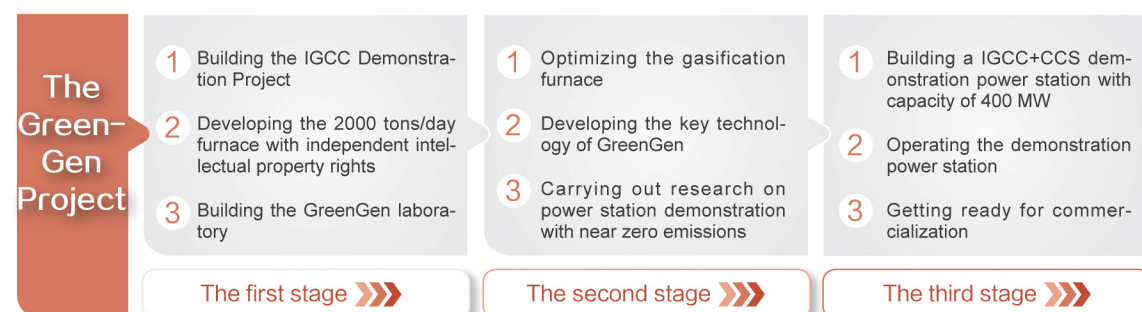
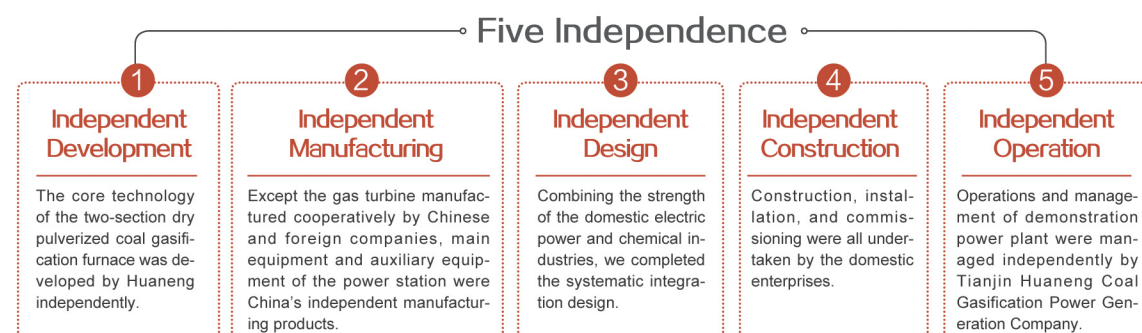
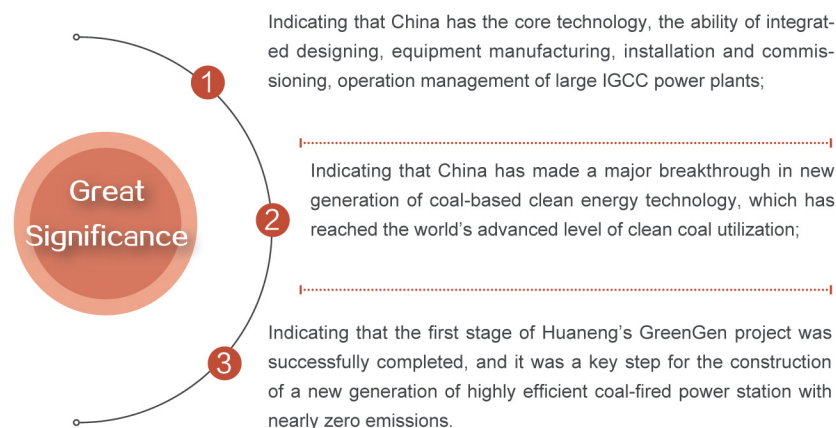
China's First IGCC Power Plant Demonstration Project

China's First Fresnel Solar-thermal Power Station

The World's First Nuclear Power Plant Demonstration with High-temperature and Gas-cooled Reactor

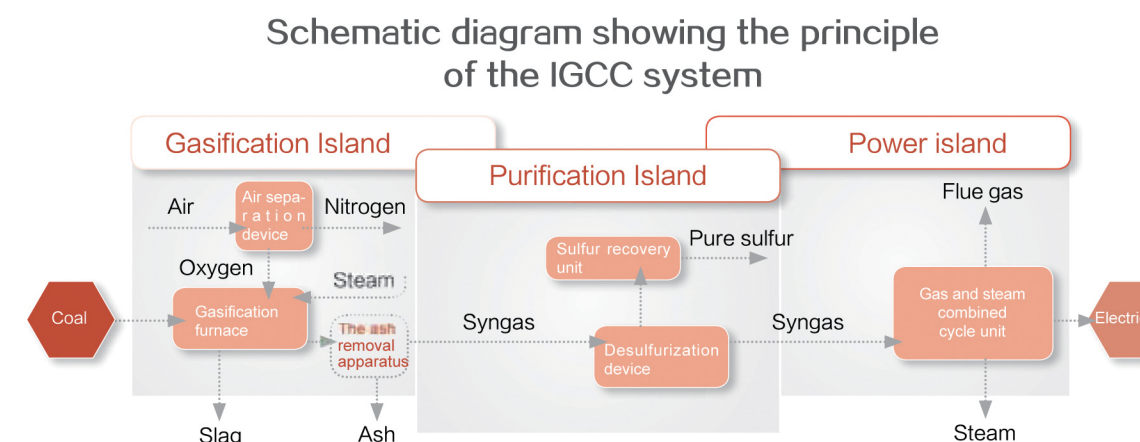
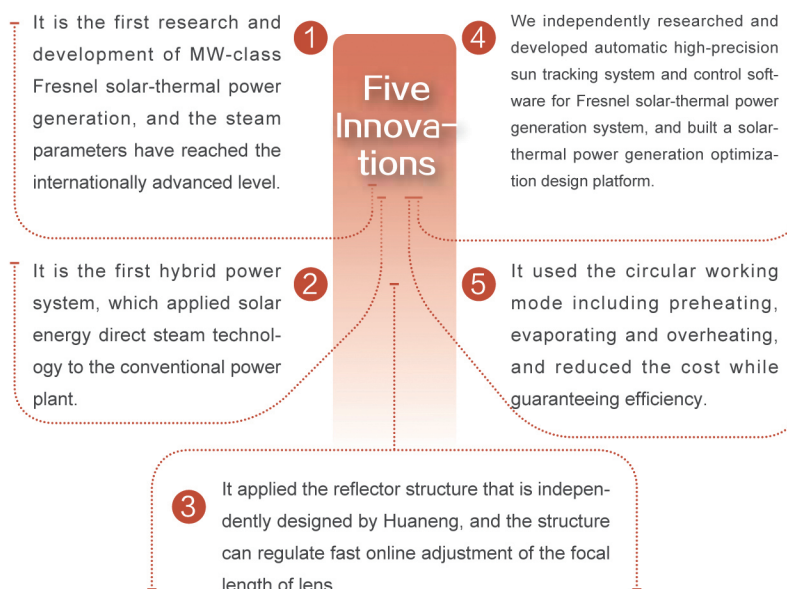
The Operation of China's First IGCC Power Plant Demonstration Project

On November 6th, the demonstration project of Huaneng Tianjin IGCC Power Plant successfully completed the trial operation of 72+24 hours, and was officially put into operation. This is China's first integrated gasification combined cycle power plant with independent intellectual property rights. The power station applied a variety of new technology, including two-segment pulverized coal gasifier with Huaneng's independent intellectual property rights. As China's most environmentally friendly coal-fired power station, the station has high power generation efficiency, good environmental protection performance, and stands for the future direction of development of clean coal-fired power generation technology.



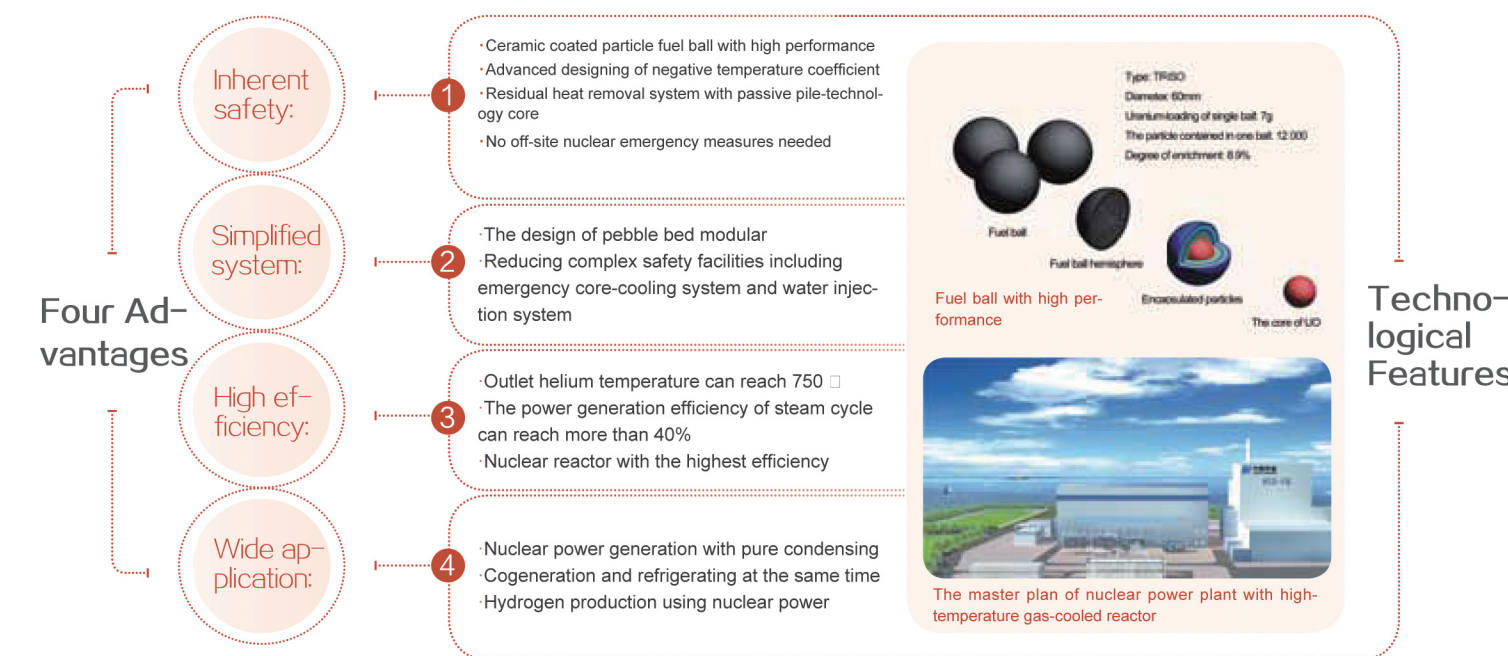
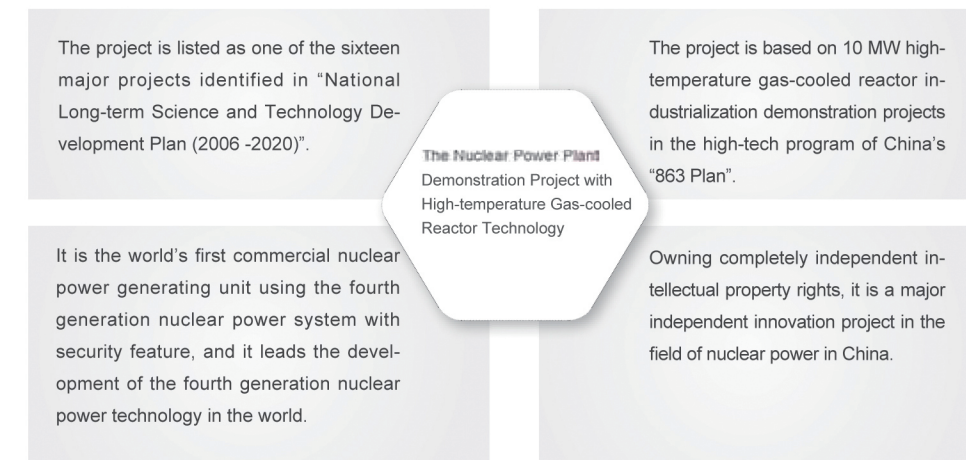
Building China's First Fresnel Solar-thermal Power Station

On October 30th, the solar-thermal power generation technology demonstration project of Huaneng Nanshan Power Plant was completed and put into operation. As a key science and technology demonstration project of the National Energy Administration, this project applied the first set of direct steam condensing solar thermal power generation device in our country, which was developed by Huaneng Independently. Also, all the devices were made domestically and the Company owns the independent intellectual property rights. The operation of this project highly improved the technological level in area of solar-thermal power generation in our country, and it's of great significance for the development and application of large-scale solar generation technology.



Starting to Build the World's First Nuclear Power Plant Demonstration Project with High-temperature Gas-cooled Reactor Technology

On December 21st, the first layer of nuclear island floor concrete pouring of Huaneng Shidao Bay Nuclear Power Plant Demonstration Project was completed. As the major national science and technology project, the demonstration plant applied high-temperature gas-cooled reactor technology, which marked the beginning of the world's first nuclear power plant construction in modular high-temperature gas-cooled reactor. With two pebble bed modular high-temperature gas-cooled reactors driving a steam turbine generator unit, the demonstration project can reach a total thermal capacity of 500MW, and a power capacity of 200MW. According to the schedule, the project will be completed and put into production at the end of 2017.





On October 9th, 2012, the opening ceremony of preparatory office of Huaneng Tibet Medog Electric Power Co., Ltd. was held in Lhasa, which marked that power assistance to Tibet in the 12th Five-year Plan was officially carried out after supporting transition power sources in Lhasa and Ali during the 11th Five-year Plan. It was another concrete practice while Huaneng has been always actively supporting Tibet's economic and social development.

On December 18th, the ceremony of 2012 National Enterprise Culture (Huaneng Power International Inc.) on-the-spot meeting and the demonstration base of enterprise culture was host in Beijing by China Enterprise Confederation and China Entrepreneur Association. Huaneng Power International Inc. was awarded the title of Demonstration Base of National Enterprise Culture. It was another major achievement when Huaneng actively promoted the construction of Humanistic Huaneng in recent years.



Social Responsibility Management



In 2012, the Company implemented the guiding principles of Social Responsibility Conference for Central SOEs held by the State-owned Assets Supervision Administration Commission (SASAC) of the State Council. We implemented a harmonious development strategy and further enhanced social responsibility management, combining with activities including Creating a World-class Enterprise with International Competitiveness and Management Improvement, and further strengthened the management of social responsibility. We have integrated social responsibility into the our entire process of operation and development, while intensifying works of responsibility planning, responsibility governance, responsibility integration, responsibility communication, and responsibility research, so we could further improve our social responsibility performance.

Responsibility Strategy

Adhering to the "Three-color" corporate mission, the Company earnestly implemented the four responsibilities including safety responsibility, economic responsibility, social responsibility and environmental responsibility, and promoted the comprehensive, balanced and sustainable development of enterprises, and strived to realize the five objectives in Declaration on Sustainable Development of the Company. In 2012, the Company developed The Action Plan to Create a World-class Enterprise and to Implement Harmonious Development Strategy. Taking strengthening the construction of the Integrity of Huaneng, the Humanistic Huaneng, the Responsible Huaneng, the Brand of Huaneng as the carrier, we will take the sustainable development of the Company up to a new level. The Company was identified as a key enterprise in implementing the harmonious development strategy by SASAC.

Responsibility Governance

The Company established Social Responsibility Management Committee, which is responsible for deliberation and decision making of important events in relevant with corporate social responsibility. The Company also formed a social responsibility management system with well-structured organization and clear regulations, and a working mechanism.

In 2012, the Company further improved the social responsibility management system, set up specialized agencies which were equipped with professional personnel, so as to strengthen and refine the Company's social responsibility management.

Responsibility Integration

Combining fulfilling the corporate social responsibility with promoting the scientific development, the Company paid great attention to production safety, energy-saving and emission reduction, promoting the transformation and upgrading as well as innovation, continuously strengthening the comprehensive ability to create value, and promoted the all-round development of staff, to realize the balanced development of the Company, the society, and the environment.

In 2012, the Company listed social responsibility management as one of the 20 key areas of Management Improvement activity. We further strengthened the plan of work and the construction of management system, and improved the index evaluation system. The Company also actively carried out the pilot projects of harmonious enterprise construction, and strived to improve our management in social responsibility.

Responsibility Research

Combining with the practices, the Company actively carried out social responsibility researches, and participated in the development and research of social responsibility standard. We also participated in the activities of the United Nations Global Compact, and took part in major social responsibility research activities at home and overseas, so as to lay a theoretical foundation for further carrying out practices of social responsibility.

In 2012, as an expert company, we took full participation in the data collection, discussion and results audit of Research on the Content and Method of Electric Power Enterprises Sustainable Development Reports, which was held by China Electricity Council. This research made solid theoretical preparation for the compilation of sustainable development reports on the power industry.

The Company pays great attention to communication with various communities and social groups and earnestly respond to the concerns of stakeholders. In February 2012, a group of journalists, from Xinhua News Agency, CCTV, The Central People's Broadcasting Station, *Economic Daily*, *Guangming Daily*, China News Agency, *China Daily*, *China Electric Power News* and others, went to interview the Company and Huaneng Lancang River Hydropower Co.,Ltd. Through the interviews the journalists gained a good understanding of Huaneng's measures and achievements in performing our social responsibilities and a good understanding of Huaneng's social responsibility ideas—"Five Principles": building a power plant, stimulating the local economy, protecting the environment, bringing benefit to the people, and building a harmonious place. The media gave in-depth reports which have received wide attention and acknowledge from people from all walks of life.

Responsibility Communication

The Company set up a platform to communicate with the stakeholders and made smooth the communication channels. We established spokesperson system and set open days for media and communicated effectively with stakeholders. We regularly delivered sustainable development reports and set up a "Social Responsibility Column" on the Company's website, to let the public know better about Huaneng. Meanwhile, the Company actively participated in industry exchanges, and sought cooperation and partnership from the upstream and downstream of the industry chain, so as to continue to contribute to the healthy development of the industry.

Responsibility Performance

In 2012, our social responsibility management systems and communication mechanism have been further improved. Social responsibility training has been carried out, and employees have enhanced their awareness on social responsibility. The brand of our social responsibility has better coverage and influence. Huaneng's campaign of Adhering to Green Development and Building a World-class Enterprise was named the best case in environmental protection by the China Network Center of Global Compact. In the Social Responsibility Report on China's Enterprises (2012) released by the Chinese Academy of Social Sciences, Huaneng's social responsibility development index ranks the forefront in the power industry.



01 | Strategy and Management

Events

- ◆ | On January 1st The Company issued the “General Guidance for Further Promoting the Creation of a World-class Enterprise with International Competitiveness”, and made overall plans and arrangements to build the Company into a world-class enterprise.
- ◆ | On February 13th The Company held a general meeting of cadres from headquarters to make arrangements for strengthening the building of the headquarters from eight aspects and to ensure the achievement of the objectives and tasks of the year.
- ◆ | On June 6th The Company held a meeting to make further plans and mobilization to promote Creating the World-class Enterprise and Management Improvement .
- ◆ | On July 9th *Fortune* magazine released the list of the world's top 500 companies in 2012 and Huaneng ranked 246th, up by 30 places over the previous year.
- ◆ | On July 25th SASAC ranked Huaneng as an A-level Enterprise for Business Performance among central SOEs. Since the implementation of this assessment, it's the seventh consecutive time that the Company wins an A-level.






Company Profile

China Huaneng Group is a key state-owned enterprise approved by the State Council. The registered capital of China Huaneng Group is RMB 20 billion yuan. The Company is engaged in the following businesses: development, investment, construction, operation and management of power sources, power (thermal power) production and sale, production and sale of business and products related to finance, coal, transportation, new energy and environmental protection, as well as industrial investment, operations and management.

China Huaneng Group was first incorporated in 1985. Since then, the Company has provided experience in the reform, development, and technological innovation for the power industry. The Company has played an exemplary role in improving enterprise management and increasing economic benefit for power enterprises. Also the Company made great contribution in meeting power demand for economic and social growth, as well as maintaining and adding value to state-owned assets. The Company has adhered to the concepts of “clear direction, continuous innovation, extensive cooperation, and mutual benefits”, and has cultivated corporate culture with Huaneng characteristics, such as the “three-color” corporate mission of “a Red company serving the need of socialism, a Green company advocating technology advancement and environmental protection, a Blue company emphasizing continuous innovation and internationalization”, and the core values of “Integrity, Cooperation, Innovation, Performance-oriented, and Serving the Nation” etc.

China Huaneng Group is committed to building itself into a large enterprise group with international competitiveness. By the end of 2012, the Company had total installed capacity of 135GW, with assets distributed in 30 provinces (municipalities, and autonomous regions) of 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 join the ranks of Fortune 500 Companies, ranking 246th in 2012, while 376th in 2011.

Industrial Distribution

	Electric Power Industry	It's the core industry of the Company. In 2012, the Company has total installed capacity of 135.08GW, ranking the first in Asia, second in the world. Among them, 133.01GW was in China and 2.07GW abroad; 112.35GW was from thermal power, 14.17GW was from hydropower and 8.48GW was from wind power.
	Coal Industry	Serving the electric power industry and ensuring safety, the Company actively seeks high-quality coal resources and subsequent resources, and promotes the transformation and expansion of the existing coal mines. We focused on the coal mine projects with strong cooperative ability and functional benefits. Meanwhile, we also sped up the construction of large-scale coal (coal power) bases. In 2012, our coal production capacity has reached 78.17million tons per year.
	Transportation Industry	Serving the coal transportation, the Company achieved overall development in port, shipping and railway logistics business, and has built a stable, reliable and efficient coal transportation system. In 2012, the Company has its port (wharf) handling capacity of 28.2million tons per year and shipping capacity of 1.297million tons per year.
	Financial Industry	The Company attaches great importance to the integration of industry and finance, and owns financial companies, such as Huaneng Capital Service Co., Ltd, the Great Wall Securities, Alltrust Insurance. Each company operates steadily around their main business, and gives full play to the service function and performance support of finance in the Company.
	Technology Industry	The Company owns six national key labs (research centers) as well as Xi'an Thermal Power Research Institute and Clean Energy Technology Research Institute. We actively promote the application of advanced technology, equipment, research and develop advanced power generation technology, promote the transformation of scientific and technological achievements into practical productive forces.

Organization Structure

Departments of the Headquarters

General Administration Department
Department of Capital Operations and Equity Management
Supervision Department
Department of Planning and Development
Department of Safe Production
Auditing Department
Department of Budget and General Planning
Department of Environmental Protection and Science and Technology
Department of Ideological and Political Work
Department of Corporate Governance and Legal Affairs
Engineering Department
Labor Union Working Committee
Department of Operations
International Cooperation Department
Finance Department
Human Resources Department

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 Northeast 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)
China Huaneng Group Shanxi Branch
China Huaneng Group Henan Branch

Regional Subsidiaries

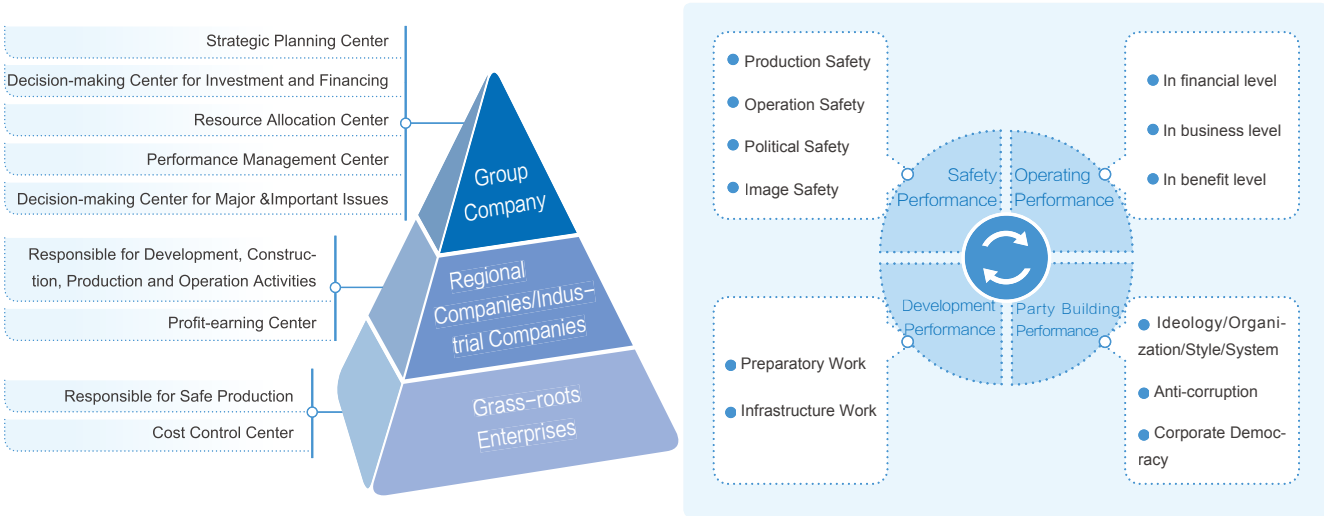
North United Power Co., Ltd.
Huaneng Jilin Power Generation Co., Ltd.
Huaneng Gansu Energy Development Co., Ltd.
Huaneng Lancang River Hydropower Co., Ltd.
Huaneng Heilongjiang Power Generation Co., Ltd.
Huaneng Tibet Power Generation Co., Ltd.
Huaneng Hulunbuir Energy Development Co., Ltd.
Huaneng Hainan 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.
Huaneng Caofeidian Port Co., Ltd.
China Huaneng Group Human Resources Base Management Center

Management System

The Company continues to strengthen its three-level management system, comprised of the “headquarters-regional companies/industrial companies-grass-roots companies”. Along with building itself into a world-class enterprise and improving management, Huaneng made further adjustments to define job responsibilities, and implemented the mechanism that HPI participates in the Group’s decision-making. We gave full authorization to six branch companies and established Coal Company, Materials Company and Nuclear Power Department to promote the steady improvement of specialized management. Furthermore, Huaneng improved evaluation and management systems centered on the “Four Evaluation Systems”, namely security, management, development and party building, in the secondary and tertiary companies, and improved indicators and way of calculation, so as to better mobilize responsible entities. Huaneng also formulated and promulgated an internal control manual for the headquarters and rules for collective decision-making system, and gave full play to the role of the professional and specialized committees such as the Management Committee, the Committees of Experts, Production Safety, Financial Budget. As a result, there is a further improvement in the Company’s abilities in decision-making, management, and execution.



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, high-efficiency and clean use of traditional energy, energy service and others, 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 Company’s forward position, 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, develop the circular economy, constantly improve the level of energy conservation and environment protection.
Internationalized Management Strategy	Based on global perspective, speed up the pace of “going global”, deepen international exchange and cooperation, allocate the resources of capital, talent and markets effectively, gradually expand the business abroad, strengthen the operational supervision and risk prevention, and improve the level of international operations.
Excellent Operational Strategy	Give full play of the supporting role of scientific management, constantly improve the management of production and operation, marketing, financial costs and project construction, effectively integrate economic factors and system resources, and continuously improve the profitability and management of the Company.
Talent-Intensive Strategy	Stick to the “Scientific Outlook on Development” as the overall guidance in human resources, constantly improve the incentive mechanism for fostering, attracting, employing and managing human resources, 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, wholeheartedly rely on employees in conducting the business, and actively perform corporate social responsibilities, while enhancing the economic, social and environmental value creation capabilities, shaping Huaneng’s good image and striving to build a harmonious enterprise.

Opportunities and Challenges

Major Opportunities

- ◆ The 18th CPC National Congress and Central Economic Work Conference put forward new requirements, new plans and new measures for the economic work in the current time and coming years. Therefore, the Company saw new opportunities in changing our development mode and promoting transformation and upgrading.
- ◆ We set the overall goal of speeding up building Huaneng into a world-class enterprise with international competitiveness. The Company has reached a broad consensus in improving the quality and efficiency of development, and creating a world-class enterprise. We have made significant progress in turning losses into profits, structural adjustment, reform and innovation.
- ◆ The long-term prospects of economic and social development are promising, and the effects of macro-control policies are gradually realized. The three markets, including electric power, coal, and finance market are generally stable. The external environment for the Company's production and management maintains steady. All of these aspects are favorable for this year's management operation of the Company.
- ◆ By carrying out activities including Excelling in Performance and learning the spirit of the Eighteenth National Congress of the CPC, cadres and staff are of one mind and committed to overcoming difficulties, so as to enhance our ability to promote development and create favorable conditions for the completion of the tasks.

Major Challenges

- ◆ The world economy is still in stagnation, and the Chinese economy is still confronted with unbalanced, uncoordinated and unsustainable contradictions and problems and complicated with increasing instability and economic recovery uncertainties. These issues will affect the growth of electric power, especially in some areas.
- ◆ The integration of coal price and electric power price will bring new impacts to the coal market. Certain relevant policies and external conditions for some grass-roots enterprises, such as policies and conditions concerning including power delivery, power consumption, price subsidies and others, need to be further implemented. The above factors make the Company's business environment remain complex.
- ◆ The Company's profitability, competitiveness and sustainable development capacity didn't match the goal of creating a world-class enterprise, and the level of profitability is still not stable enough. The losses of some grass-roots enterprises and the losses of thermal power enterprises remain relatively serious.
- ◆ The basis for sustainable development of the company is not solid enough, and the index level including EVA, the rate of return on net assets, net profit attribution to the parent company is still relatively low. The structural adjustment is not harmonized with some external conditions, and the work progress between enterprises is not balanced.

Shuiniujia Hydropower Station



Corresponding Measures

Laying Solid Safety Foundation

Strengthening the building of long-term mechanism of production safety and promoting the construction and standardization of electric power production safety management system, the Company enhanced supervision, guidance and one to one assistance, and paid great attention to equipment management and technological transformation. We also strengthened safety management of outsourcing projects and the construction of emergency mechanism, and concentrated on safety supervision in the field of coal and wind power, so as to further improve the level of safety in production.

Reducing Cost and Increasing Efficiency

We took measures to turn losses into profits, further strengthened the market expansion and marketing management, and actively responded to the changes of the fuel market. Effectively controlling the fuel cost, we spared no efforts to keep down the operating costs, and reduce the occupation of working capital, so as to further enhance the level of profitability.

Optimizing and Readjusting the Structure

Implementing the principles of "extensive investigations, selection of the best, good construction, strict management", the Company straightened the relationship between preliminary work, budget and infrastructure, and strengthened the input and output management. We also made great efforts to develop clean energies, including hydropower, wind power, gas-fired generation, nuclear power and others, and optimized the development of coal-fired power generation, to achieve orderly, moderate, effective development.

Promoting Industrial Synergy

Adhering to the market-oriented operation, maximizing the releasing and digesting of internal coal production capacity, the Company strived to establish a long-term coordinated mechanism of coal and electricity, and concentrated on coal resources and project development. We also developed the transportation industry, and optimized financial industry and the industry of science and technology, to achieve the maximization of Group's overall benefits.

Strengthening International Operation

Adhering to the principles of "advancing in some areas while retracting in others", we optimized the stock assets, and intensified the asset liquidation. With improving the internationalized management, and improving management system of overseas projects, we did well in overseas project investment and development, actively explored overseas market of electric power technology, and expanded exportation of technology, products and service.

Strengthening Energy Conservation and Emissions Reduction

We strengthened statistical analysis, the construction of monitoring and evaluation system of energy saving and emission reduction, and promoted the comprehensive upgrading of coal-fired power plants. We also enhanced the operation and maintenance management of the environmental protection facilities to build Huaneng into an excellent environmentally-friendly enterprise, and improved the mechanism of carbon asset management, to make sure that the main index of energy consumption and emissions maintain continuous improvement and a leading position in the industry.

Promoting Science and Technology Innovation

We strengthened the construction of science and technology innovation management system, and improved the evaluation standard, the incentive mechanism and the mechanism to translate science and technology innovation into productions. We have steadily pressed ahead with demonstration projects like the high temperature gas-cooled reactor nuclear power plant and Tianjin IGCC power plant. Also, we pressed forward the construction of research and develop platform and accelerated the research and development of such projects as 700°C ultra-supercritical power generation technology and 1260MW large-scale high-efficient generation units. Therefore, the independent innovation capacity of the Company has been improved.

Improving Management Level

The Company strengthened the study on strategic planning, improved specialized management system in areas including regional management, wind power, materials, fuels and others. By carrying out the activities such as Creating the Best Campaign and Management Improvement Campaign, we enhanced benchmarking management and overall budget management. Promoting the information system construction, we gave full play to the roles of internal control system, supervision, audit and supervision, to effectively prevent business risks.

Strengthening Party Building

Thoroughly studying and fully implementing the guiding principles of the 18th National Congress of the CPC, we focused on keeping and maintaining the Party's advanced nature and purity, and strengthened the building of grass-roots Party organizations and Party member teams. We also have continued to strengthen the building of our cadre team and staff team as well as the talent team, effectively changed the style of work and prevented corruption, so as to enhance the team's cohesion and competitiveness, and ensure the Company can retain its vitality.

Anti-corruption

Promoting Accountability for Anti-corruption

All levels of leading groups for anti-corruption conscientiously performed their duties, and arranged the work to promote anti-corruption. The main leadership of the Company signed 3014 responsible agreements of anti-corruption with the headquarters departments, each company and unit, and the major party and government leadership of each company and its subordinate enterprises, to further consolidate the work pattern of "the upper level governs the next level and implementation in all levels". All of these efforts were made to ensure the effective implementation of accountability at all levels. In 2012, there was no major and serious criminal cases inside the Company.

Carrying out Effectiveness Supervision and Inspection

In 2012, we carried out 196 actions on effectiveness supervision and inspection in all subsidiary and affiliated companies, covering 15 areas, including the important decision-making management, fuel, bidding and material purchasing. We received 1267 supervision suggestions, worked out 1182 rules, reduced economic losses of 60.1794 million yuan, increased economic revenue of 19.4178 million yuan directly. The empirical materials of strengthening the effectiveness supervision were compiled into the Enterprise Anti-corruption Management Handbook by SASAC. The fuel management efficiency supervision in Luohuang Power Plant and Baotou II Thermal Power Plant was rated as demonstration projects of central enterprises effectiveness inspection.

Fully Intensifying the Prevention and Control of Corruption Risks

The industrial companies, regional companies and subsidiary companies carried out in-depth risk investigation and assessment, and sorted out the measures for corruption risk prevention and control as well as supervision and evaluation methods. Also, we compiled the *Manual on Prevention and Control of Corruption Risks*, and all the companies have passed the examination and inspection. All units of the Company actively explored the normal operating mechanism of risk prevention and control, and achieved positive progress. In the past year, we held three seminars on anti-corruption of cadres, and all the 241 members of the leadership from secondary enterprises participated. Consequently, we further enhanced the anti-corruption awareness of the Company.

Strengthening the Team Building of Inspection and Supervision

In 2012, the Company appointed 27 discipline inspection team leaders from secondary companies, and established 8 discipline inspection groups. Since the end of 2010, the number of discipline inspection groups increased from 173 to 199, the number of supervisory organs increased from 122 to 162, and the discipline inspection and supervision personnel number increased from 435 to 547. Also, 92 discipline inspection cadres participated in the training of "state-owned enterprises discipline inspection and supervision", so as to further improve their ability in anti-corruption inspection and supervision.



Stakeholders

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



02 | Safe Development

Events

- ◆ On January 6th The Company held the year's first enlarged meeting of the Production Safety Committee and made arrangements on production safety work in 2012.
- ◆ On May 1st The Company started a five-month campaign of "Against Violations of Regulations and Rules" to ensure the safe production of electric power enterprises.
- ◆ On June 3rd The Company carried out a "Safety Production Month" Campaign with the theme of "Scientific Development and Safe Development".
- ◆ On June 16th The Company was awarded the "Safe Production and Well-being Enterprise" by Work Safety Committee of the State Council.
- ◆ On July 27th At Zhamei Coal Company, the Company held a meeting of building the Six Systems for coal production safety and avoiding risk, and made arrangements to accelerate the building of coal safety system.

Concept of Safe Development

Safe development is the pre-condition for sustainable development. In order to achieve safe development, we must stick to the scientific concept of "putting people first," regarding safety as benefits, reputation and competitiveness. Huaneng aims to be the safest company and raise safety at all levels through the following endeavors: building a comprehensive safety management system, improving the system, implementing production safety responsibility system, and enhancing our emergency management mechanism.

Objectives of Safe Development

- ◎ To prevent serious equipment malfunctions, fires, or related traffic accidents;
- ◎ To prevent any other incidents that may affect the image of the Company.

Measures of Safe Development

- ◎ Building a comprehensive production safety management system, strengthening the building of the emergency management mechanism and implementing the safety responsibility;
- ◎ Promoting the standardized criteria for team safety, strengthening the safety supervision over outsourcing projects and coal mine safety management, and solidifying foundations of safety;
- ◎ Carrying out safety evaluation, identifying and removing hidden dangers, strengthening equipment checking and management and improving our ability to prevent risks and ensure safe production;
- ◎ Emphasizing on safety education, carrying out safety culture campaigns and improve staff's safety awareness and ability in handling accidents.

Improving Safety Management System

Systems Development

The Company continued to create and improve rules and regulations concerning production safety, to promote the systematization and standardization of safety production management. In 2012, the Company revised and issued Electric Power Production Accident Investigation Procedure (2012 Edition), Wind Power Enterprises Production Safety Management System Standard Normative Text (Trial) and other five regulations. The Company also issued 11 thermal power, 12 hydropower and 8 wind power technical supervision standards to further consolidate the basis of safety production system.

The Company steadily promoted the building of safety production management system for power plants. Companies at Lancang River, Shandong and Sichuan, and many other companies worked to create their systems. The companies at Hulun Buir, Hainan and Shaanxi focused on the construction of key power plants. Grass-roots power enterprises strengthened the leadership and organization of systematic construction, and compiled system file, carried out system operation. Companies at Nantong, Shantou, Taicang and Nanjing passed the Group's system verification. Power plants at Haikou, Yimin, Kangding, Rizhao completed their self-evaluation system.



In 2012, Shandong Company further promoted the building of safety management system and all thermal power enterprises have completed the management system documentation, and began trial operation in succession. Shandong Company also carried out the construction activities of safety standardization in grass-root companies, and 17 power plants were up to the standard of safety level 2 enterprise standards. Dezhou Power Plant and Huangtai Power Plant, have passed the check and acceptance of creating the A-level enterprises by the State Electricity Regulatory Commission.



Rizhao Power Plant

Work Deployment

The Company has always persisted in the safety as the first priority, carefully analyses and manages the situation of production safety. Every year on the first weekday, the Company will hold its first enlarged meeting of the Production Safety Committee and make deployments on production safety work for next year. In 2012, giving full consideration to the main tasks and new focuses of the year, the Company held a series of events to discuss production safety, including conference on power production safety work, a video conference on the quarterly safe production of electric power and energy consumption index release, a briefing meeting on typical accidents, a mobilization meeting for summer peaks and flood control work, a symposium with the responsible persons of safety supervision agencies in regional companies, a mobilization meeting for guaranteeing power supply during the period of the 18th National Congress of the CPC. Through the above mentioned activities, the Company summarized the work accomplished and analyzed the existing problems. The Company also made the deployment of production safety for the next stage, to ensure the safety production.

Implementing Responsibility

We implemented the nation's policies, laws, and regulations on production safety through our Safety Production Responsibility System, which used a closed-loop management system that ensured decomposition, implementation and performance assessment of responsibility. All companies have signed a Production Safety Responsibility Agreement to guarantee the implementation of the safe production responsibility system. In this way, responsibilities for safety are designated level by level to each subsidiary, grass-roots company, department, team and post.

We quantified our safety indicators, and divided them into four major indicators covering production safety, operational safety, political safety, and image safety for measurement and assessment. These indicators became the basis for assessing performance and determining responsibility. In addition, we have strictly implemented Accountability and Punishment Measures for Accidents to strengthen investigations into whoever is responsible for accidents. We assessed annually each company's safety performance targets and issued warnings and corresponding penalties to those that fell short of their targets.

Emergency Management

The Company has improved the emergency management system, formulated preventive action plans, carried out emergency drills, and formed an emergency response team. We believe that preventive measures should be implemented effectively and that emergencies need to be controlled.

In 2012, the Company formulated and revised 4 emergency plans including emergency accidents, and held drills to prevent flooding at the Rizhao Power Plant. The grass-roots companies comprehensively revised site disposal plans and carried out training more than 1500 times over the year, so as to improve the emergency response and disposal capacity. Power plants such as Beijing Cogeneration Power Plant and Tianjin Yangliuqing Power Plant organized meticulously and took measures in place to achieve the successful completion of power guarantee task during the 18th National Congress of the CPC.



The coal mine rescue team of Huaneng Diandong Energy Corporation

In 2012, power plants of Yuhuan, Dalian and Weihai promptly launched the emergency plans, successfully carried through strong typhoon of "Saolaa", "Damrey", "Bolaven", "Tembin", "Haikui" and heavy rainfall and therefore ensured safe and stable production.

Consolidating the Foundations for Production Safety

Standardization for safety management

The Company took solid measures to meet the production safety standard and compiled the Group's Plan to Meet the Production Safety Standard, which enabled Xi'an Thermal Power Research Institute to become qualified to assess levels of production safety, and guided secondary companies and grass-roots enterprises to complete of the building of management system. Meanwhile, the Company began the standardization of safety levels, and took on-site

inspection for system building work in power plants of Yimin, Rizhao and Haikou and took audit inspection in Shantou and Taicang power plants. In 2012, pilot work of safety management system construction in Qidong, Huitengxile, Tongyu, Tongjiang and Laizhou Wind Power has achieved progress. Seven power plants including Yuhuan, Fuzhou, Dezhou, Huangtai and Haimen won the honor of "Standard A-level Enterprise".



Team Building

We treated team building as an essential aspect of safety management. We reinforced the concept of "ensuring zero death with zero breach of regulations, and ensuring zero accident with zero defect." We continued to carry out the activities of "being an excellent group and excellent employees." We encouraged each group to innovate around safety management, and have comprehensively advanced group safety standardization, increased safety education and training. We have continuously consolidated the foundations of the enterprise's safe production.



Zhamei Coal Company regarded building "Five-A Team" as the guideline, the improvement of staff's quality as the focus. Zhamei Coal Company strived to realize the goal of safety production through "well structured and detailed requirements, indicator indexes, standard procedures, evaluations based on data, and standardized management, "Zhamei Coal Company has pushed forward their team building. Zhamei Coal Company's Tiebei mine excavation team Unit 91 won the title of "Five-A Team" of the Group.

Management on the Safety of Infrastructure Construction

Taking the standardization of infrastructure construction safety as the starting point, the Group improved the infrastructure construction safety management system, strengthened the safety education and training of infrastructure construction. In addition the Group has implemented the system that only staff with qualification certificate can work on the infrastructure construction. The Group has strengthened management of outsourcing projects and made strict requirements on construction teams. We carried out the campaign of "Against Violations of Regulations and Rules", and have identified and removed hidden dangers, so as to maintain the infrastructure construction safety.

In 2012, the Company strictly carried out the "Black List" system of the outsourcing construction companies, and enlisted into the "Black List" equipment manufacturers which have poor credit and poor performance and frequent quality accident. In consequence, we have barred eight companies from participating in equipment manufacturing projects and from bidding for equipment projects.



Infrastructure Safety Inspection

◆ Coal Safety Management

Further strengthening production safety specification construction for coal enterprises, enhancing the management and control in process of coal production, the Company carefully drew lessons from major coal mine accidents happened to similar coal mines, and carried out comprehensive safety inspection. The Company paid great attention to the investigation and rectification of hidden dangers, so as to raise the level of safety in coal production. In 2012, the safety condition of coal production maintained stable. More than 30 coal mines, including Lingdong, Chenjiagou and Gaotouyao had seen zero casualties. Ten coal mines, including Lingquan, Shanzai, Matigou and others, won the title of “Safety Quality Standard Coal Mine of the National Level”. And Zhongxu Coal Chemical Company received the honor of “Second Level Standard Company”.



The comprehensive mining highwall of Datong Coal Mine



According to different types of work, Wusigedu Coal Mine popularized the safe operation method of “Gesture and Statement” in different teams and districts. Through a series of actions, including thinking, watching, pointing by finger and talking, workers managed “the mouth follows the eyes, the eyes follow the mind and the hands follow the mouth” during the operation. As a result, they formed a closed-loop process of identification, confirmation and operation, so as to prevent man-made unsafe operations. This method has been applied to the workers of different departments of Wusigedu, including automobile drivers, machine transport team, fully-mechanized mining team, mechanized excavation team, shearer drivers, development machine drivers, scraper conveyor drivers, emulsion pump station drivers, winch drivers, equipment maintenance staff, etc.

Extended Reading:

The Six Systems of safety and risk-preventing in coal mines mainly includes: monitoring system, personnel positioning system, communication system, emergency risk-preventing system, air pressure self-help system and water supply rescue system. Strengthening the building of the Six Systems is an important measure in coal mine production safety areas which emphasizes preventive measures in the coal mines so as to effectively reduce and curb accidents, and minimize possible harms incurred.

■ Prevention and Control of Safety Risks

◆ Carrying out Special Action of “Against Violations of Regulations and Rules”

Holding the concept of “Regulation violations equal to accidents”, the Company has carried out the special action of “Against Violations of Regulations and Rules” and worked to identify and remove hidden dangers and rectify breach of rules. We compiled and enforced “Action Plan Against Violations of Regulations and Rules for Electric Power Enterprises” and “Action Plan for Identification and Rectification of Hidden Dangers”. The secondary companies and grass-roots enterprises carefully fulfilled their safety responsibilities, enhanced efforts to investigate, identify and punish violations of regulations. In 2012, we altogether discovered and punished 10,478 actions breaching regulations, including 5,265 cases concerning behaviors, 4,265 concerning devices or equipment and 948 concerning management. 22,364 hidden dangers were identified, in which 21,269 were rectified and we have identified 22 major hazards and 10 in them have been rectified.



On-site Safety Production Check

Overview of Prize-winning Coal-fired Generating Units in National Competition

Capacity	Awards	Prize-winning Units
100 MW	Second Prize	Unit 1 of Yuhuan Power Plant
		Unit 1 of Haimen Power Plant
600MW USC Unit	Second Prize	Unit 5 of Weihai Power Plant
	Third Prize	Unit 3 of Shidongkou II Power Plant
600MW Supercritical Unit	Second Prize	Unit 4 of Rizhao Power Plant
	Third Prize	Unit 4 of Taicang Power Plant
		Unit 3 of Rizhao Power Plant
600MW Subcritical Unit	First Prize	Unit 6 of Dezhou Power Plant
	Second Prize	Unit 6 of Luohuang Power Plant
	Third Prize	Unit 2 of Diandong II Power Plant
600MW Air Cooling (Ultra-)Supercritical Unit	First Prize	Unit 6 of Shang'an Power Plant
	Second Prize	Unit 6 of Pingliang Power Plant
600MW Air Cooling Subcritical Unit	Second Prize	Unit 2 of Tongchuan Power Plant
	Third Prize	Unit 1 of Tongchuan Power Plant
300MW Pure Condensing Wet Cooling Unit	First Prize	Unit 4 of Dezhou Power Plant
		Unit 8 of Haikou Power Plant
		Unit 3 of WeihaiPower Plant
	Second Prize	Unit 3 of Huaiyin Power Plant
		Unit 2 of Shantou Power Plant
	Third Prize	Unit 4 of Huaiyin Power Plant
		Unit 1& 2 of Taicang Power Plant
		Unit 1 of Pingliang Power Plant
350MW Imported Unit	First Prize	Unit 3 of Fuzhou Power Plant
	Second Prize	Unit 4 of Dalian Power Plant
		Unit 4 of Luohuang Power Plant
	Third Prize	Unit 1 of Fuzhou Power Plant
		Unit 2 of Fuzhou Power Plant
		Unit 1 of Dalian Power Plant
		Unit 4 of Nantong Power Plant
		Unit 1 of Ruijin Power Plant



Safety Supervision and Inspection

◆ Safety Inspection

The Company organized safety evaluation review and production safety supervision, and provided guidance and assistance on safety supervision to some enterprises. In 2012, the Company and Huaneng Power International Inc. respectively set up the expert groups of safety production management, to carry out safety inspection and “looking back” activities for 26 power plants and 10 coal mines, including Baotou Second Thermal Power Plant, Xi-aowan Power Plant, Huating and Yanbei coal mine. We carried out safety evaluation review in 7 power plants, including Jiutai and Jinghong power plants; they offered production safety technical advisory for coal mines, for example Xicuan, and put forward 1430 rectification ideas and suggestions. Huaneng Renewables Corporation and Lancang River Hydropower Co., Ltd. enhanced the frequency and depth of safety inspections in grass-roots enterprises, so as to further improve the safety capability.



In 2012, Huaneng Renewables Corporation strengthened the building of production safety management system, formulated and implemented “Assessment Methods of Production Safety”. In March and the second half of the year, the Company carried out comprehensive safety inspection in 19 grass-roots enterprises in 7 areas including Shandong and Shanxi, and in wind power enterprises in Inner Mongolia, Jilin, Liaoning and other places. We implemented the standardized safety rating and organized safety training, so that 6 companies completed the standard rating, and more than 400 people received training on safety management, emergency management and standardization.

◆ Equipment Management

Adhering to the goal of “first-class equipment management” and “excellent maintenance quality”, the Company promoted the quality control over the whole process of maintenance and standardized management and carried out on-site overhaul inspection and “reduce defects and control non-planned stop” campaigns. The Company also strengthened technical supervision management, and had the equipment reliability level increased. In 2012, the Company has finished the overhaul of 36 units, and after the overhaul, 26 units continuous operated for more than 100 days. Moreover, the excellent rate increased, and equipment equivalent available coefficient and unplanned outage factor maintained a leading position in power generation industry. Ten thermal power units ran continuously for more than 365 days, among them, the Unit 4 of Shang'an Power Plant and Unit 6 of Xindian Power Plant has continuously operated for 700 days and 628 days respectively. The Unit 4 of Dalian Power Plant won the title of National Reliable Thermal Power Unit Gold Metal, and seven units including the Unit 6 of Dezhou Power Plant won the first prize of the national thermal power unit competition.



In May 2012, in the National Electric Reliability Supervision and Management Conference as well as the Electric Reliability Index Conference, the Unit 4 of Shang'an Power Plant won the Annual Gold Metal of State Electricity Regulatory Commission for 2011 in group of 300MW thermal power generation unit, for its stable operation for more than 700 days. At the same time, Shang'an Power Plant was named the National Electric Reliability Supervision and Management Advanced Unit for years 2008- 2011.

◆ Fostering Safety Culture

◆ Employee Training on Safety

The Company has constantly improved the safety education and training system for staff, and established the concept that “Being short of training is a great hidden danger”. According to the demands and requirements of different posts, we increased the safety training. We strengthened training in safety management, qualification certification and professional skills as the main content of the staff's safety education and training, so as to improve employee safety awareness and ability.

In 2012, the company has organized 22 programs of qualification certification and training class for main leaders of the grass-roots companies, production manager and technical supervision, and 1473 persons had been trained. The number of registered safety engineers in the company system has reached more than 700 people, up by 26%. Besides, Huaneng Power International Inc., Shidao Bay Company and Hulun Buir Company carried out unique safety education and training activities.

◆ Safety Culture Activities

The Company promoted the campaign of “Production Safety Month” with “scientific development and safe development” as the theme. All the companies actively participated in the electric power production safety knowledge contest. We carried out a series of activities such as vowing and signing for safety, essay competition themed production safety, speeches on safety and other forms of publicity and education activities. These activities helped to create a strong safety culture atmosphere. In 2012, the Company was named outstanding company in the organization of the “Production Safety Month” by State Adminiation of Work Safety.



◆ Safe Development Performance

- No serious equipment accidents, no serious fire accidents, no major traffic accidents, or large-scale pollution accidents occurred in 2012.
- In 2012, one serious operation-related accident leading to death occurred in a power enterprise.
- One common equipment accidents in power generation occurred in 2012, five less than the previous year.
- Fifty-two Class 1 equipment failures occurred in 2012, a decrease of 10 compared with 2011.
- The ratio of unplanned outages was 0.14%, 0.02% higher than 2011.
- No incidents or accidents that may impact the stability and image of the Company occurred in 2012.

Overview of the Company's Production Safety (2008-2012)

Item	Unit	2008	2009	2010	2011	2012
Major equipment accident	times	0	0	0	0	0
Common equipment accident	times	4	3	0	6	1
Casualty-causing accident	times	3	2	1	1	1
Class1 equipment failure	times	114	53	54	62	52
Unplanned outages	times	173	84	83	91	89
Equipment utilization ratios	%	91.69	92.27	94.87	94.17	94.46

◆ Alarm Bells and Reflection

In 2012, the Company maintained a general stable situation as regards the safe production, but did not put an end to casualty-causing accidents. We must realize soberly that the production safety situation is still grim, and systematic safe production level is not balanced. The order of safe production management needs to be improved in some enterprises, and we have not normalize activities against violations of regulations and the identification and treatment of hidden dangers. In a word, there is still a long way to go to build the effective long-term mechanism of safety production.

We shall remain constantly on guard, firmly putting people first and persist in the idea of “scientific development and safe development”. Regarding strengthening production safety infrastructure construction as the focus, we shall concentrate on production safety management system construction and standardization, and pay attention to the violations of regulations and the identification and treatment of hidden dangers, and stress staff training and outsourcing project management. Through measures concerning management improvement, accountability, improving the system and guaranteeing investment, we shall improve the safe production management level and ensure intrinsic safety.



03 | Optimal Development

Events

- ◆ On January 10th Longkaikou Hydropower Station Project was officially approved by the state and it's the first hydropower station that the Company builds in the middle reaches of Jinsha River.
- ◆ On March 6th Unit 5 of Qinbei Power Plant was put into commercial operation and it's the tenth 1000MW ultra-supercritical coal-fired generation unit.
- ◆ On March 16th The Renewables Corporation and Yancheng City People's Government of Jiangsu Province signed the Jiangsu Dafeng 300MW Offshore Wind Power Demonstration Project Cooperation Agreement.
- ◆ On September 6th The first unit of Nuozhadu Hydropower Station was put into operation, which is part of the two major national projects, i.e., West-East Electricity Transmission Project and Yunnan Electricity Power Delivery Project.

Concept of Optimal Development

Optimal development is the intrinsic requirement for sustainable development. To promote optimal development, we should take building a world-class enterprise with international competitiveness as the driving force, take improving the quality and efficiency as the center, and take speeding up transformation and upgrading as the focus. We should focus on optimizing and adjusting the power structure, industrial structure and regional distribution, and achieve effective, moderate and orderly development so as to further enhance our abilities to pursue sustainable development.

Objectives of Optimal Development

- ◎ To achieve coal production capacity of 15.2 million tons per year;
- ◎ To increase generating capacity of clean energy to 4457.3 MW.

Measures of Optimal Development

- ◎ Making greater efforts in hydropower, optimizing the development of coal-fired power, striving to develop nuclear power, developing wind power and other clean and low-carbon energy;
- ◎ Actively developing coal resources, planning the development of the transportation industry as a whole, enhancing industry-finance integration, and emphasizing the supporting role of science and technology;
- ◎ Optimizing and readjusting regional distributions and striving to form new advantages in this respect;
- ◎ Implementing the international development strategy, cultivating the internationalized operate subject, preventing the international business risk and improving the operation and management of our overseas assets.

Optimizing the Power Sources Structure

Persisting in keeping the electric power industry as the core business and adhering to the concept of green development, the Company accelerated the pace of structural adjustment, optimized the development of coal power, made great efforts to develop hydropower. We also actively develop the wind power, solar energy and other new energy power generation, strived to develop nuclear power, and keep on the development of natural gas power generation. In consequence, we have continuously improved the low-carbon clean energy installed proportion, and continuously improved the level of efficient and clean use of traditional energy.

In 2012, the clean energy installed capacity that was put into operation amounted to 4,295MW, accounting for 40.9% of production capacity, up by 8.7 percentage points, which marked a new record. By the end of 2012, the Company's clean energy installed capacity had reached 28.3GW, accounting for 20.95%, and maintained the leading position in the industry.

Low-carbon clean energy installed capacity newly operated in 2012:

4.295_{GW}

Proportion:

40.90%

Up by:

8.7%

The Company's clean energy installed capacity:

28.3_{GW}

Proportion:

20.95%



Optimizing the Development of Coal-fired Power

The Company actively promoted the construction of high-efficiency and large clean coal-fired generating units, and put into operation a number of coal-fired power generating units with high capacity, high parameter, good regional distribution and economic returns. In 2012, thermal power units that the Company put into operation was 6470MW, among them the clean and efficient units accounted for 77%. The Company's 600MW or over units accounted for 47.9% of the installed coal-fired generating units, up by 1% than the previous year and the number of 1000MW unit has reached 12 sets.

The Company fully implemented national industrial development policies, accelerated the pace of eliminating backward production capacity, and further promoted the work of "developing large generating units, and closing down small ones". In 2012, the Company shut down small and medium-sized coal-fired generating units that have high energy consumption, long time of service, and poor economic efficiency. The capacity of units shut down reached 916MW.



The Phase III of Qinbei Power Plant Project is the first 1000MW thermal power unit that the Company invested and built in Henan province. It was listed as 21st Century demonstration coal-fired power plant for its optimized design which is of international design standards. In March and December 2012, two sets of 1000MW supercritical coal-fired generating units have been put into operation. As a result, the installed capacity of Qinbei Power Plant has reached 440MW, and Qinbei Power Plant has become the most energy saving and environmental-friendly coal-fired plant in the central region, with the highest single unit installed capacity and the largest installed capacity.



Making Great Efforts to Develop Hydropower

According to the principle of "focusing on river basin development, balancing between large and small, combining purchasing and building", the Company sped up the hydropower development process in Lancang River and Yunnan region, consolidating and expanding the achievements of Sichuan hydropower development. The Company also steadily pushed forward the development of hydropower resources in Tibet, Qinghai, Xinjiang and other places, which has seen positive progress. In 2012, hydropower stations of Gongguo Bridge, Biedieli, Xiangqi, Suzi River, Hengdan and the III hydropower station of the upper reaches of Dang River were put into operation in succession. By the end of 2012, the Company's installed capacity of hydropower reached 14,000 MW.



On September 6th, 2012, the first unit of Nuozhadu Hydropower Station was officially put into operation. On September 28th and December 3rd, the second and the third units were put into operation, and we realized the goal that three units were put into operation in a year. The installed capacity of hydropower in Lancang River has exceeded 10GW.

Nuozhadu Hydropower Station is the fifth station of the "Two reservoirs and eight stations" in the lower and middle reaches of Lancang River. The total installed capacity is 5850MW (9 × 650MW). Its capacity is the fourth largest among the built and building hydropower projects in China. The dam is 261.5 meters high, ranks the first in Asia and the third in the world. With the largest storage capacity in Lancang River, the station's total capacity is 23.703 billion cubic meters, almost on a par with Three Gorges Power Station's flood control capacity.



Nuozhadu Hydropower Station



On February 10th, Huaneng Longkaikou Hydropower Station was approved by the National Development and Reform Commission. Located in the middle reaches of Jinsha River in the Dali Heqing County of Yunnan Province, the station is the first hydropower project built by Huaneng in the middle reaches of the Jinsha River, and it's the sixth cascade hydropower station planned in the middle reaches of Jinsha River. The power plant has a total installed capacity of 1800MW, with the installation of 5 units of 360MW, and the average generation capacity reached 7.4 billion kWh per year. After the completion of the station, apart from electricity generation, the station will provide 79.37 million cubic meters of irrigation water for 0.108 million acres of farmland and 2.02 million cubic meters of domestic water every year in Heqing County and Yongsheng County.

Pressing Ahead with the Development of New Energy

The Company steadily promoted wind power development, and developed profit-oriented wind power base in an orderly way including Fuxi, and 1,000MW-level of wind power bases including the wind farm at Bayin, Damao. We have built a number of profit-oriented wind farms in Yunnan, Guizhou, Guangdong and other regions. China's first distributed wind power project, Shaanxi Dingbian Langergou Wind Power, was put into operation. By the end of 2012, the Company's wind power installed capacity has reached 8480 MW.

Additionally, the Company actively developed solar photovoltaic generation and other clean energy generating projects. The Golmud Photovoltaic Power Station Phase III were put into operation, and other photovoltaic projects including the one in Hami were approved. Apart from that, the Company actively promoted shale gas exploration.

Striving to Develop Nuclear Power

The Company conscientiously implemented the national long-term nuclear power development plan, promoted the examination and approval of the high-temperature gas-cooled reactor nuclear power plant demonstration project and the preparatory work and preliminary work of pressurized water reactor extension project. We continued to strengthen our management and control abilities of nuclear power, further carried the preparatory work for projects and site resources reserves, and steadily developed



In 2012, the 50MW Photovoltaic Generation Project of Golmud Photovoltaic Power Station has generated 87.5 million kWh power, exceeding the annual power generation targets. It has gained good economic and social benefits and become the model enterprise of the Qaidam Basin million-kilowatt photovoltaic base.



joint stock nuclear power projects. In 2012, Shidao Bay High-temperature Gas-cooled Reactor Nuclear Power Demonstration Project was officially put into construction. Consequently Huaneng has become China's fourth central SOE with nuclear power development qualification.

Strengthening Industrial Synergy

The Company fully implemented the industrial development planning during the period of the 12th Five-year Plan, optimizing and readjusting industrial structures and strengthening industrial synergy. Taking power generation as the core business, the Company actively developed coal resources, and made overall plans for the development of transportation with coal transportation as the main business. The Company also accelerated the integration between industry and finance, and gave full play to the supporting role of finance. Additionally, the Company sped up the development of science and technology and emerging industries, built high-efficiency and synergetic industry systems, and strived to achieve coordinated development between scale, speed, quality and benefits.

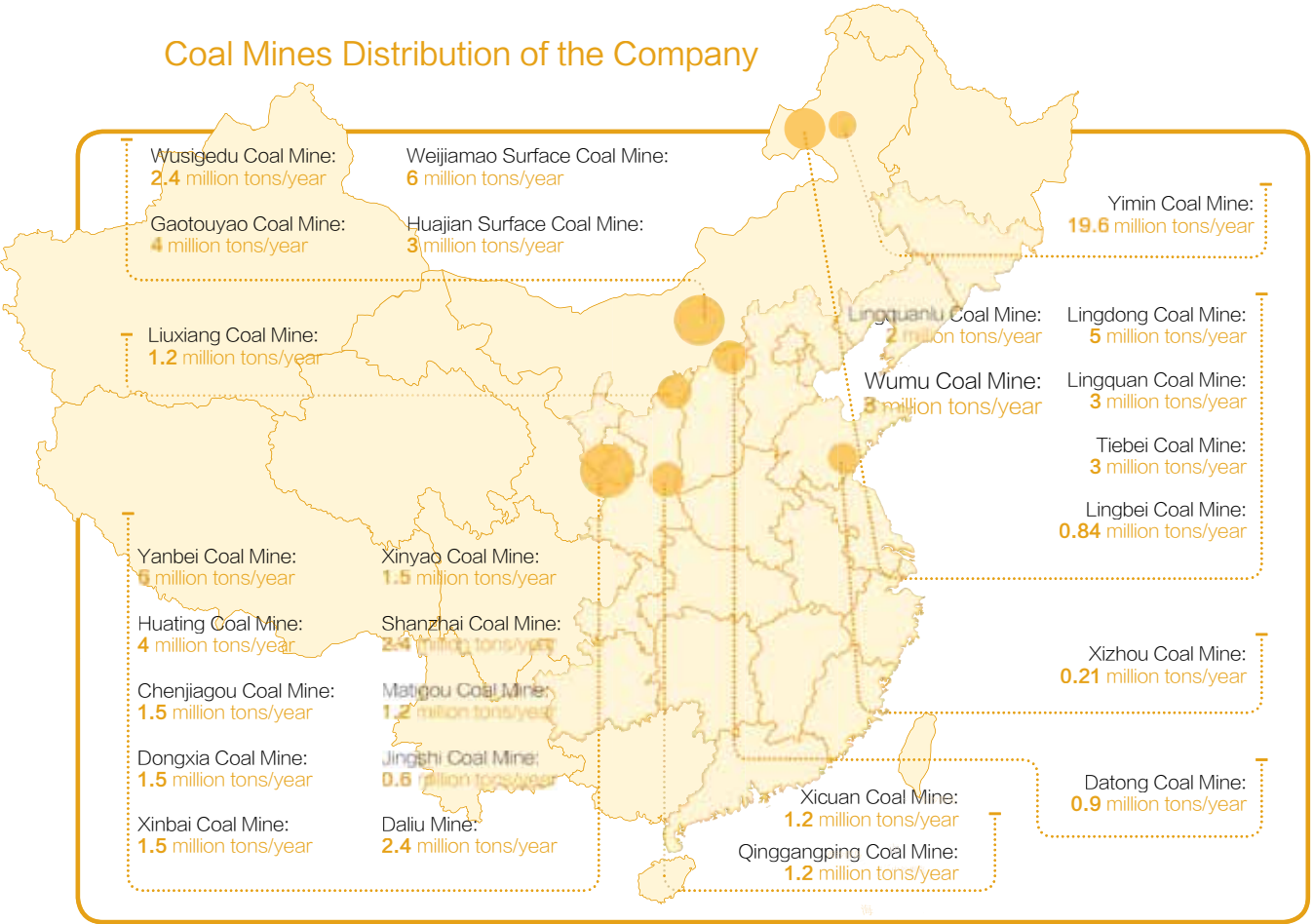
Actively Developing Coal Resources

The Company strengthened the research and analysis on the coal market. Centering on the electricity transmission and coal delivery channel construction, we actively explored high-quality coal resources, and focused on the large coal bases and the construction of coal bases such as those in the “3-west”, Longdong, Xinjiang, East Mongolia, East Yunnan. In 2012, Gaotouyao and Weijiamao open-pit coal mine were put into the pilot production; Liuxiang Coal Mine completed joint trial operation; Hetaoyu and Linglu Coal Mine projects were developed in an orderly manner; and Shaozhai and Chicheng Coal Mine projects have been approved. Twelve projects of the Company have been included in the 12th Five-year Plan of China’s coal industry and our total output reached 49.4 million tons / year. The Hulun Buir Company and the Huating Coal Industry Company were named “the Top 50 National Coal Enterprise”, and Shaizai Coal Mine was named the “Double Top Ten” of national coal industry, and Yimin Surfaced

Mine, Lingquan and Jingshigou Coal Mine have been rated as advanced coal mine of national coal industry.

The Company paid close attention to the changes in the market, strengthened the internal coordination, coordinated the overall local use and export ratio, and made great efforts to improve resource utilization and electricity supply security. In 2012, the Company added the coal production capacity of 10 million tons / year, and the total coal production capacity reached 78.17 million tons / year, up by 14.7% compared to the same period of previous year. Our coal production companies supplied 37,22 million tons of coal to Huaneng’s power plants, the self-supply rate of power coal reached 14%, and internal coordination rate reached 53.78%. The supply of coal within the Company increased 3.43 million tons. The industrial synergy has been further enhanced.

Coal Mines Distribution of the Company



Planning the Development of the Logistics Industry as a Whole

The Company was fully tapping the potential of existing coal transportation assets and has made overall plans to develop its transportation business, including ports, shipping and private railways. The Company has also strived to build a stable, reliable and efficient coal transportation security system. In 2012, shipping enterprises including Shidai, Ruining, Ruitong transported 40.23 million tons of coal for internal system, accounted for 52.2% of the coal shipped. The construction of Caofeidian, Haimen, Taicang Port, Luoyuan Bay Port were carried out in an orderly way.



On August 16th, 2012, the Company participated in the signing ceremony of “West Inner Mongolia and Central China Railway Coal-channel Co., LTD Sponsor Agreement”, and officially invested the construction of coal-channel railway from West Inner Mongolia to Central China. The channel was designed to have a transport capacity of 200 million tons. When the channel was completed, the Company will be in an advantaged position in terms of power coal transport and distribution and others. Consequently, the construction of the channel will open a new path for the transportation of fuels for the Company’s power plants in Central China.

Constantly Deepening Industry-finance Integration

Giving full play to the service and supporting role of the financial industry, the Company insisted on sound operations, focused on industry-finance integration, and has established a standard and effective financial holding operation system and risk prevention system. The Company also continued to strengthen and give play to the role of various financial platforms, increased its operating performance, expanded its business field, made innovation in products and services, and established a leading brand in Huaneng’s financial market so as to provide strong support for the Company’s capital supply and cost reduction of capital. In 2012, the capital settlement of the Finance Corporation reached 1840 billion yuan.

The capital settlement of the Finance Corporation:

1840 billion yuan



Adhering to integrity and responsible management, Guicheng Trust Corporation has established a comprehensive risk management system which took development strategy as the guide, risk management organizational structure as the support, risk management information system as the guarantee, risk management mechanism and procedure as the basis, and performed faithfully the duties and responsibilities on behalf of the trustees, so as to maximize the interests of the beneficiaries. By the end of 2012, the number of trust projects due reached 217, accounting for 97.7 billion yuan and the number of existing trust projects came to 306, accounting for 163 billion yuan. The due projects all realized the expected revenue, and Guicheng’s business philosophy of “Safety and Compliance” continued to be strengthened. As a result, the safe and steady brand of Huaneng Guicheng has gained more popularity among investors and partners.

Emphasizing the Supporting Roll of Science and Technology

Concentrating on the core business of electric power industry, the Company gave full play to the supporting role of science and technology, vigorously carried out energy-saving diagnosis, operation optimization, technical supervision and other work. We provided overall technical support for safe operation of power plants and the continuous improvement of technical and economic indicators, so as to maintain the Company's leading position in the industry. The Company also further promoted the optimization of project designs, supervision of equipment manufacture and other technical services, to ensure the quality of power generation equipment and to provide effective technical support for the production of generation units. In 2012, the contracts of science and technical service increased by 179, compared with the previous year.



Xi'an Thermal Power Research Institute carried out technical service



In 2012, Xi'an Thermal Power Research Institute translated technical advantages into supporting the core business and has undertaken 1860 tasks concerning technical service with the contracted value of 760 million yuan. The technology of the Company expanded from all major aspects of thermal power to nuclear power, wind power, hydropower and other emerging energy. The scope of services covered 31 provinces (cities, areas), and the Company developed more than 40 technical services including unit commissioning, performance test, technical diagnosis, equipment manufacture supervision, system configuration design, water treatment systems in 14 overseas countries. So far, we have received more than 30 praise letters from clients of domestic and foreign projects, and the Company's professional work and service quality have been highly appreciated.

Planning Regional Development as a Whole

The Company maintained pace with national energy development and made changes according to practical needs. The Company also optimized and re-adjusted its regional distribution, speeding up development in West China, consolidating in East China, stabilizing in the Central China and improving in Northeast China, so as to form new advantages in regional distribution. The Company made further improvements in the distribution of the domestic power supply, increasing its coverage, striving to improve its share in the power market, and constantly optimizing its regional distribution. By the end of 2012, the installed capacity of domestic and foreign wholly-owned and holding power plants has reached 135.08 GW, among which, the domestic installed capacity accounted for 133.01 GW, and overseas installed capacity accounted for 2.07 GW, increased by 7.74% compared with the same period of the previous year.

Strengthening International Operations

In accordance with the principle of taking the benefits as priority, the Company adhered to the policy of "Equal attention to development and acquisition", actively developed the use of overseas clean power and coal resources. We actively cultivated the internationalized operation entities and enhanced management and operation of overseas assets. The Company made great efforts to prevent the risk in international operation, to tap our potential and reduce cost, so as to take our international management to a new level.



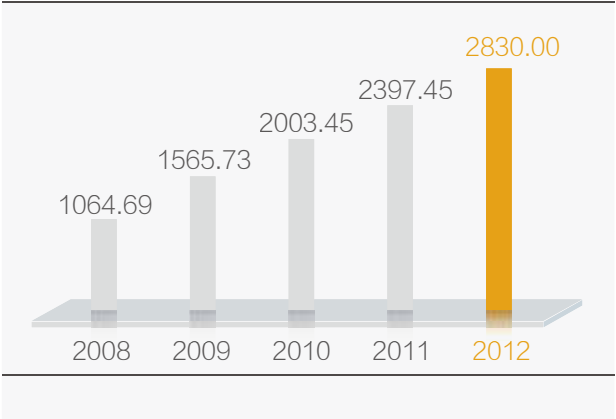
Rochsavage Power Plant in UK

In 2012, the Company further strengthened the management of international power companies after acquisition, and enhanced risk control, reduced cost and optimized assets. As a result, the operation performances of Huaneng Power International has seen further improvement. The InterGen Australia overcame enormous difficulties imposed by the global economic downturn and the European debt crisis, and completed the refinancing and debt restructuring of M power plant and C power plant. The production and operation of Tuas Power maintained

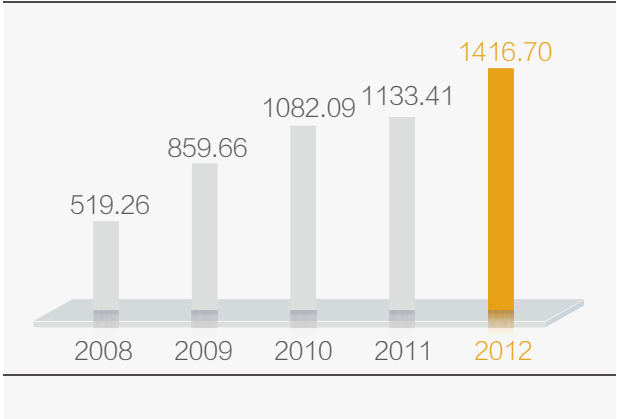
stable, and the construction of Tembusu Project Phase I has entered the testing and trial stage; Tuas Power's has increased its market share and competitiveness.

Optimal Development Performance

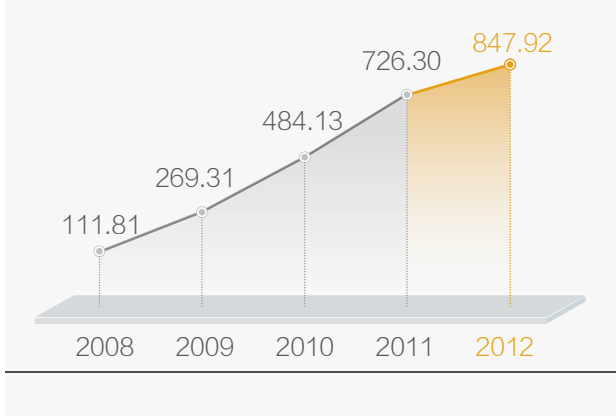
Low-carbon clean energy installed capacity (10MW)



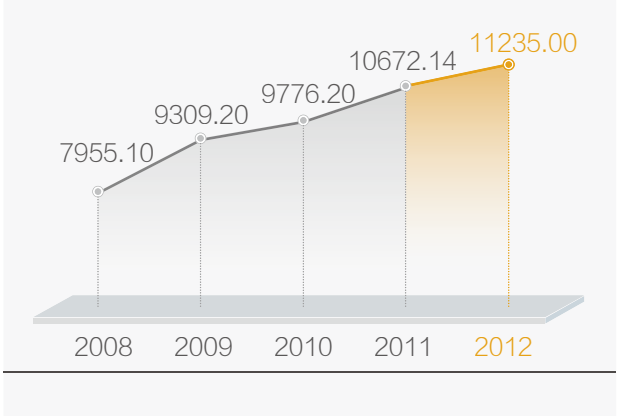
Hydropower installed capacity (10MW)



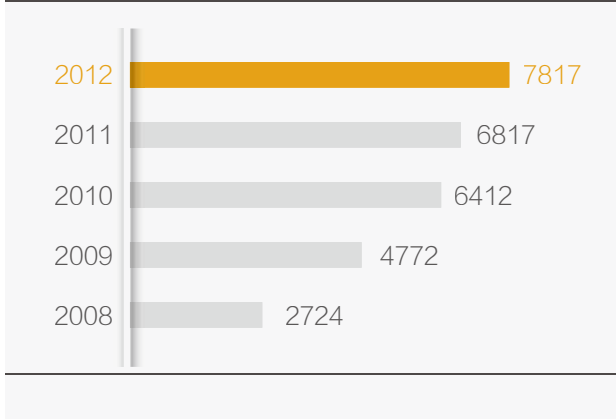
Wind power installed capacity (10MW)



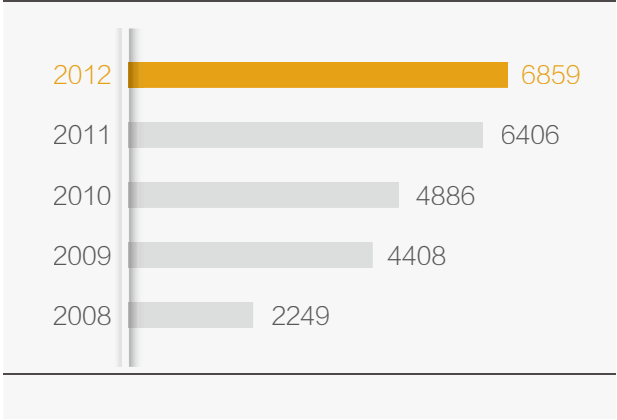
Coal-fire power installed capacity (10MW)



Coal production capacity (10 thousand tons/year)



Coal output (10 thousand tons)





04 | Green Development

Events

- ◆ | On January 31st *People's Daily* carried the headline of "Huaneng Group achieved a new breakthrough in energy-saving and emission reduction".
- ◆ | On February 13th The Company and the Duke Energy signed the CO₂ Capture Technology Project Cooperation Agreement with Duke Energy Company Gibson Plant.
- ◆ | On April 23rd The Company won the highest social award of the environmental protection in China—the 7th China Baogang Environment Prize
- ◆ | On December 12th Tianjin IGCC Power Plant Demonstration Project was put into operation and the conference marking the establishment of "863 Plan" Research and Development Demonstration Base on the basis of the IGCC GreenGen was held in Binhai New Area, Tianjin.

Concept of Green Development

Green development is indispensable to sustainable development. Green development requires maintaining the industrial policy of energy conservation and emission reduction, relies on strict management and technological progress to tap the potential of energy conservation, improves the high-efficiency and clean use of energy and resource, and leads to ecological and environmental protection.

Objectives of Green Development

- ◎ To achieve a coal consumption rate of 317.21g/kWh;
- ◎ To build 10 excellent energy-saving and environmentally friendly coal-fired power plants;
- ◎ To achieve the annual objectives defined in the Special Plan for Energy Conservation and Environmental Protection (2011-2015) and the Total Emissions Control Plan of Sulfur Dioxide and Nitrogen Oxides Reduction in the 12th Five-year Plan.

Measures of Green Development

- ◎ Improving management mechanism, strengthening environmental protection infrastructure, enhancing the management in environmental protection of operating units and the newly built projects;
- ◎ Implementing comprehensive benchmarking, carrying out energy-saving diagnosis, strengthening maintenance management, and improving the efficiency of energy conversion;
- ◎ Intensifying the transformation of environmental protection facilities, strengthening the management of pollutant emissions, and improving the level of clean production;
- ◎ Actively promoting circular economy, and protecting the ecological environment in the whole process of production, business operation and project development.

Strengthening the Management of Energy Conservation and Environmental Protection

Improving Management Mechanism

The Company established the leading group and expert panel of energy-saving and emission reduction, to further strengthen the management of energy conservation and emission reduction. Combining with the current situation of environmental protection and the actual situation of the Company, we issued and revised Management Method of Environmental Protection and other standards, to improve the environmental management mechanism. Also, we signed the Major Pollutants Target Assignment Responsibility Agreement in the 12th Five-year with 9 industrial and regional companies, and we issued the Creating Energy-saving and Environmentally Friendly Enterprise Planning (2011- 2015) to further define the indexes and measures in stages.

Strengthening the Basic Management

The Company issued guidelines on the design, maintenance and operation for desulfurization equipment, to further improve the technological management standards of desulfurization and denitration. In 2012, the Company carried out special science and technology projects of environmental protection, and completed the first stage of construction of real-time monitoring platform for more than 50 sets of thermal power generation unit. We also deepened the training of desulfurization and denitration technology, so as to further consolidate the foundation for energy conservation and emission reduction management.



Strengthening the Management of Construction Projects

The Company has established the assessment report and audit system of environmental protection and water conservation, and strengthened the training of relevant policies, regulations and important matters concerning project approval. In brief, we strictly implemented the requirements of environmental protection and water conservation in the entire process of project planning and construction.

In 2012, the Company carried out on-site inspections on environmental protection for 6 projects including Zuoquan Power Plant, to ensure good facilities construction, operation and management of environmental protection. Five thermal power projects including Xining Thermoelectric and the Mine 6 of Xinjiang Zhundong Dajing Coal Mine have passed the environmental audit. And the confirmation of emissions indicators and other supporting files concerning Changxin Power Plant and other 11 projects were sent to the State Environmental Protection Department. We also successfully coordinated the environmental audit of 5 projects including Huiliuhe Thermal Power Plant, and helped to complete the inspection for

hydropower development in Dadu River basin, which was held by Southwest Inspection Center of State Environmental Protection Department.

Creating an Excellent Enterprise of Energy Conservation and Environmental Protection

The Company carefully implemented the 12th Five-year Plan for Creating an Excellent Enterprise of Energy Conservation and Environmental Protection, further improved the assessment standards, and strengthened the statistical study energy on conservation and emission reduction, and the construction of monitoring, evaluation system for energy conservation and emission reduction. Seventeen power plants, including Haimen, Haibowan, Rizhao, Dongfang, Tongchuan, passed the examination of excellent energy-saving and environmentally friendly coal-fired power plant. And 8 power plants, including Yingkou Thermal Power Plant, Diandong Power Plant, Jiutai Power Plant, Hailar Thermal Power Plant, Baiyanghe Power Plant, have passed the examination of creating energy-saving and environmentally friendly coal-fired power plant.

Improving the Efficiency of Energy Conversion

Comprehensive Benchmarking Management

Carefully implementing the technical guidelines for energy-saving and power-saving, the Company identified some advanced units with excellent energy consumption indicators as benchmarking models. Meanwhile the Company managed the comprehensive benchmarking from several aspects, including the system configuration, small target control, operation management, fuel management, auxiliary system consumption and so on, to find out the disparity and the insufficiency, and made clear the direction for improvement, so as to make all the small targets and the auxiliary unit consumption rate reach the excellent standard. Using SIS on-line optimal operation system to carry out the analysis of energy-loss and operation optimization, we organized activities to achieve excellent performance in indicators and therefore heated up the indicator competition.

In 2012, the Company carried out in-depth energy-saving benchmarking of 1000MW and 600MW supercritical unit. Through extensive research and benchmarking, Yuhuan, Haimen, Jinling Power Plant and another 5 power plants further defined the approach to energy conservation and laid the foundation for promoting excellent performance in indicators.



In 2012, several major models maintained leading position in the industry in energy consumption indicators, including the 600MW ultra-supercritical unit, 600MW supercritical air-cooling unit, 350MW unit, 300MW condensing unit. The energy consumption indicators of some units have reached the best level of the same type domestically, including the Unit 2 and Unit 4 of Shidongkou II Power Plant, the Unit 5 of Weihai Power Plant, the Unit 4 of Rizhao Power Plant, the Unit 6 of Shang'an Power Plant, the Unit 1 of Dongfang Power Plant, the Unit 3 of Fuzhou Power Plant, the Unit 1 of Nantong Power Plant and others.

Carrying out Energy-saving Diagnosis

The Company carried out a series of management activities, including the heat consumption reduction of the turbine, improving the efficiency of the boiler, reducing auxiliary power consumption, conducting leakage management and other energy saving management, to organize the research on and to tackle the difficult and common issues. Carrying out the operation optimization test and adjustment of boiler combustion test, and regular performance test on the turbine and the boiler, we gathered data and experience for optimizing operation and changing the maintenance plan accurately.

In 2012, we carried out energy-saving diagnosis for 63 units from 27 power plants, including Shangdu Power Plant, Zuoquan Power Plant, Qinling Power Plant, and made a strong reversal of energy consumption rebound momentum in some power plants early this year. Among them, the energy consumption indicators have been greatly improved in Shangdu, Zuoquan, Shang'an, Fukang Power Plant.



Equipment energy-saving diagnosis



Carefully implementing the measures of energy-saving diagnosis, North United Power Corporation formulated the technical scheme and rectification plan from several aspects, including equipment management, technical innovation, arrangement of operation mode, optimization adjustment and others, and consequently achieved a significant improvement in energy consumption indicators. In 2012, North United Power Corporation has reduced the coal consumption by 3.2 g/kWh, and reduced the power plant electricity consumption rate by 0.43 percentage points.



After the Unit 1 of Shang'an Power Plant completed its comprehensive maintenance, its coal consumption decreased by 10 g, service power rate has dropped 0.5%, heat consumption of the turbine has reduced 364 kJ / kWh and the boiler efficiency increased by 1.83%.

The decreased rate
of coal consumption

10 g / kWh

The decreased rate
of heat consumption of the turbine

364 kJ / kWh

Strengthening Maintenance Management

According to the Main Technical Reference for Comprehensive Upgrading and Transformation of Coal-fired Power Plants, the Company determined the transformation projects, and screened the qualified units, and made good preparation for application. Strengthening the efficiency of maintenance and the quality management of energy conservation projects, we attached great importance to the process control and organization to increase the efficiency of turbine and boiler, and the transformation of the circulation path. We also carried out test performance before and after maintenance strictly to make sure that the turbine heat consumption rate and the efficiency of boiler have reached the expected standard.

In 2012, after completing the B-class maintenance, steam turbine heat consumption of the Unit 1 of Jiutai Power Plant reduced by 295.7 kJ / kWh. And after completing the comprehensive maintenance, the boiler efficiency of Unit 2 of Yueyang Power Plant was increased by 1.23%, and electricity consumption decreased by 15.3 g / kWh. Also, Huaiyin Power Plant modified the steam seal of low pressure cylinder during the B+ maintenance of Unit 6, and after the modification, the heat consumption of steam turbine decreased by 29.307 kJ / kWh, and gained a coal saving of over 1 g / kWh.



Optimizing the Design of New Models

The Company actively promoted the application of the research achievements of large units. Yichun Thermal Power Plant applied the compact design in single system, which reduced a total investment of 110 million yuan, saved 4.5 hectares of land, and reduced the service power by 1.02%. Jingmen Thermal Plant adopted the optimization designs of compact combined coal bunker and two machines in one tower, and saved a total investment of 63.05 million yuan. The projects of Laiwu and An'yuan applied the double-reheat technology and took the lead in the development direction of thermal power technology. Shangdu phase IV sent new kinds of coals to Jiutai Power Plant to conduct trial pulverization and trial heating so as to provide experience for the selection of coal mills and boilers. Through implementing typical design of internal combustion engines, the Company achieved great progress in the design of gas turbines. The designs of gas turbines projects in Jinling, Chongqing Liangjiang, Tianjin were better optimized. Adopted the combustion engine in the open air, and exhaust and inlet stream under the turbine, we reduced the construction area and the height of plant building. As the result, we greatly saved the investment in projects.





The Lancang River Hydropower Co., Ltd. attached great importance to the design optimization in the project development and construction. Nuozhadu Hydropower Project optimized the design in several aspects, including the general layout of construction, building structure, material selection and equipment selection and so on. In this way, we have completed 18 major design optimizations, such as dam material zoning, supporting the underground caves and so on. Also, Lancang River Hydropower saved the investment of about 1 billion yuan, and put the equipment into operation ahead of schedule for 2 years.

Carrying out Green Office



Strengthening the Management of Pollutant Emissions

Intensifying the Modification of Environmental Protection Facilities

The Company continued to strengthen the control of pollutants, such as the smoke and dust of thermal power plant, sulfur dioxide, nitrogen oxides and so on. At the same time, high efficiency dust collector, flue gas desulfurization, denitration facilities and low nitrogen burners units were equipped and we have strengthened the dust removal, desulfurization, denitrification retrofit, operation optimization adjustment and maintenance management for the active units.

In 2012, the company completed the modification of denitrification for 18 units, and completed desulfurization retrofit for 16 units, meanwhile the dust removal modification were finished for 11 units. By now, the capacity of units which equipped with desulfurization unit accounted for 97% in all coal-fired units, and that equipped with denitration unit accounted for more than 37%.



As the first power plant in Fujian Province completed the desulfurization bypass sealing, Fuzhou Power Plant was equipped with desulfurization denitration device and dismantled the bypass flue of desulphurization in 6 units. The desulfurization facilities were 100% put into operation, and the desulfurization efficiency rate was 95.81%. 62,841 tons of sulfur dioxide were removed per year. Meanwhile, the operation rate of denitrification equipment was 92.41%, and the comprehensive denitration efficiency rate went to 68%, 8994.17 tons of NOx were removed per year. 100% of the electrostatic precipitators were put into operation and the comprehensive dust control rate accounted for 99.69%. Also, no wastewater was discharged into the environment, and the comprehensive utilization rate of solid waste has come to 100%.



Strengthening the Monitoring of Pollutant Emission

The Company strengthened the operation, maintenance supervision and management of the environmental protection facilities, strengthened the special inspection and guidance for key enterprises in energy conservation and emission reduction, and carried out statistical monitoring of energy-saving and emissions reduction analysis reports. Also, we accepted energy-saving and emission reduction regulatory supervision and environmental inspection held by Ministry of Environmental Protection and State Electricity Regulatory Commission. After strengthening the rectification of the existing problems, the emissions of sulfur dioxide and nitrogen oxide decreased by about 22% and 14% respectively compared with that in 2010, and we continued to maintain the leading position in the industry. Huaneng Power International Inc., Yuhuan Power Plant, Huanglong Power Plant and other 5 enterprises were named the "National Advanced Company in Energy-saving and Emission Reduction" by four ministries of the state.



On November 28th, 2012, the selective non-catalytic reduction (SNCR) denitration technology, which was developed independently by the Company and applied to the circulating fluidized bed (CFB) boiler, was put into operation successfully in the 330MW CFB boiler of Baishan Coal Gangue Power Plant. The test results showed that, via optimization control, nitrogen oxides emission dropped from 151 mg / cubic meter to 27.55 mg / cubic meters, and the denitration efficiency was 81.8, with only 0.8 ppm ammonia escaped. Since the SNCR system was put into operation, it was stable, and the automatic control system was sensitive. Also the self-developed ejection gun and injection system, which was suitable to high temperature, high dust concentration, high velocity environment, operated reliably. Used in the first 330MW-class CFB boiler in the world, this technology has led the direction of CFB boiler as its low nitrogen oxide emissions met the latest environmental standards.

Developing Monitoring Pilot Tests of Mercury Pollution

The Company steadily carried out researches on the control of mercury emission of coal-fired power plants. We began the mercury pollution monitoring pilot tests in Beijing Cogeneration Power Plant, Yushe Power Plant and Fuzhou Power Plant, and submitted monitoring data to the environmental protection departments. We have completed the acceptance check and completed planned stages of tests successfully.

In 2012, the mercury monitoring equipment in Beijing Cogeneration Power Plant, Fuzhou Power Plant and Yushe Power Plant maintained the normal operation, and their flue gas mercury emissions were, far below the requirements in the latest "Thermal Power Plant Air Pollutant Emission Standards".

Strengthening the Management of Carbon Asset

The Company actively explored ways to strengthen the management of carbon asset, and held a meeting for the management of carbon asset in five cities and two provinces, and made a clear plan for carbon trading pilot work. In 2012, the Company completed the Project of Development and Research of CDM, and started the technological projects including "Carbon Inventory Strategy and Pilot Study". We also drafted the "Measures to Reduce Greenhouse Emissions", and gradually improved the management system of carbon asset.

In 2012, the Company continued to promote the development of the CDM project, and 73 CDM projects were successfully registered in the United Nations. Huaneng Carbon Asset Development Fund has signed CDM project investment agreements with 19 parties outside the system.



On September 5th, the CDM project of Yunnan Gongguoqiao Hydropower Project was successful registered in the United Nations CDM Executive Board, which marked that the 900MW CDM project of Gongguoqiao Hydropower Project was officially registered, and the project can reduce about 2.5 million tons of carbon dioxide emission per year.



Promoting Circular Economy

The Company adhered to the principle of "reduction, recycle, resource", and continued to promote the circular economy experiences in Yimin "coal electricity integration" development. In regions where conditions were permitted, the Company sped up the development of coal electricity integration, and built large-scale coal bases. Starting from various aspects, including design, con-

struction and management, we promoted the organic integration of electric power and coal production, and realized the efficient use of coal, water, land and other resources and recycling utilization of mine drainage, coal gangue, slag, power plant desulfurization by-products and waste heat. In 2012, the comprehensive utilization rate of ash has come to 77.08%.



Nantong Power Plant took the utilization of fly ash as the "first break though" of the comprehensive utilization of resources, and made a total investment of 14 million yuan to purchase the fly ash separator and a series of equipment. Through sorting and processing, the fly ash changed into helpful resources and formed an industrial chain of comprehensive utilization. For example, the crude ash can be used for building insulation layer, the first-grade fly ash was used in key construction project, the second-grade fly ash was put into the mixing station for residential, office building construction, and the third-grade fly ash became the raw materials of cement factories and brick factories. The fly ash product of Nantong Power Plant has been successfully used in some key projects including the Sutong Yangtze River Bridge and the Three Gorges Dam.

Promoting the Protection of Ecological Environment

Adhering to the policy of "Protection in the development, and development in the protection", and earnestly implementing the "three simultaneous" requirements in the environmental protection and water conservation, the Company took full consideration of the comprehensive requirements, including power generation, flood control, irrigation, shipping, sediment, soil and water conservation, aquaculture, tourism, regional development and etc. We controlled the scale of the development and the cascade of hydropower station. In the under building and newly built hydropower plants, the aggregate mixing system and sewage treatment system were installed, and the domestic waste was gathered and has undergone de-contamination treatment. We also invested heavily in planting the ecological protective forests along the rivers, worked to speed up the recovery of soil erosion and vegetation, built rare fish reproduction stations, wild animal rescue stations and botanical gardens of rare plants, so as to effectively protect the local ecological environment and biodiversity.

Nuozhadu Hydropower Station successfully treated area of soil erosion of nearly 900,000 square meters, and completed vegetation restoration of nearly 800,000 square meters. At the same time, more than 10,000 protected plants at the national level were planted in the botanical garden for rare species, more than 30,000 wild fish were released, and 44 wild animals were cured and kept temporarily in wild animal care center. Gongguoqiao Hydaopower Station invested more than 30 million yuan to build the fish reproduction station and planned to release more than 330,000 fishes annually. In 2012, the Lancang River Hydropower Co., Ltd. completed the removal of grade four of power plants in Jidu River, completed the comprehensive improvement of the river path, carried out conservation of aquatic resources, and established a new protection habitat for fishes.



Fish breeding station in Gongguoqiao Hydropower Station



On November 16, 2012, Longkaikou Hydropower Station carried out their last release of fishes of the year, releasing 4,627 fish of 10 species and weighing 312.9 kg, including Jinsha River Schizothorax and Sichuan Schizothorax. In 2012, Jinsha River Hydropower Station released 11,486 wild fish weighing 763.5 kg, to the upper reaches of Jinsha River, and successful completed the annual task of "Catching the fish and releasing them over the dam".



Green Development Performance

- The Company achieved coal consumption rate for power generation of 316.52 g/kWh, down by 2.16 g/kWh over the previous year, which is at the world's advanced level.
- The Company achieved station service power consumption rate of 4.84%, down by 0.24% over the previous year.
- No serious environmental pollution occurred in 2012.





05 | Healthy Development

Events

- ◆| On March 8th Inner Mongolia Huadian's private placement achieved the full subscription, successfully raised equity capital of 4.66 billion yuan.
- ◆| On November 1st The assets management business of Great Wall Securities reached 11.34 billion yuan.
- ◆| On November 11th The Company was awarded the honorary title of "Leading Enterprise of Internal Audit" by China Institute of Internal Audit.
- ◆| In 2012 The Company achieved excellent performance in realizing and increasing surpluses, and the profit from amalgamation set a new high record.

Concept of Healthy Development

Healthy development is the important foundation for sustainable development. To achieve healthy development, we should seek and stick to advanced management ideas, and persist in intensive and modern management and operate in compliance with all laws and regulations. We shall expand our business scale, and enhance profitability. We must realize value preservation and growth of state-owned assets and continue to build Huaneng into a highly efficient and profitable company.

Objectives of Healthy Development

- ◎ To achieve 660 billion kWh in power output;
- ◎ To achieve coal production of 66.7 million tons;
- ◎ To achieve sales revenue of RMB 304 billion yuan;
- ◎ To secure the approval of power projects above 10GW and coal projects above 11 million tons per year.

Measures of Healthy Development

- ◎ Promoting management improvement, deepening the reform of professional system, strengthening the budget, performance and risk management;
- ◎ Implementing the measures to turn losses into surpluses, actively expanding the electric market, and strengthening the cost control;
- ◎ Coordinating the management of the preliminary work and the construction of projects, steadily promoting the development and construction of projects;
- ◎ Strengthening capital operation, expanding the sources of funds, reducing the cost of financing, and ensuring the supply of capital.

Promoting Management Improvement

Strengthening Budget Management

We further improved the comprehensive budget management system with the financial budget as the core, and gave full play to its driving role in optimizing the allocation of resources and enhancing our capabilities to achieve sustainable development. In 2012, we comprehensively analyzed both the internal and external business situation, made the budget plan and established an online management system. Deepening the all-round benchmarking, we also kept the dynamic monitoring of business indicators, and strengthened dynamic management, analysis and early warning of the capital budget.

Strengthening Performance Appraisal

We continuously improved our performance management system with budgeting as its core, benchmarking as its focus, responsibility as its carrier, and linking performance and payment. We continued to carry out annual performance assessment work for the performance of safety, business, development and Party building as the main body of work.

In 2012, the Company further improved the setting of appraisal index and the rules of calculation, and developed a regular individual reward system. We improved the joint mechanism of wages and profits, and strengthened the management of position-related consumption and salary of company leaders, to fully mobilize all levels of responsible entities, and promote the completion of the annual business target.



◆ Strengthening Risk Management

The Company revised and improved our internal control systems and standards, made regulations of internal evaluation and audit management, and earnestly implemented the internal control and audit evaluation. We also strengthened the construction of legal management system, and fully implemented the three-year plan of legal work. Strengthening the internal audit, we enhanced the independence of internal audit, improved audit efficiency, and widening evaluation scope after the projects were completed. What's more, we ensured the implementation of audit findings and corrective actions, and gave full play to the role of auditing work in prevention, and supervision.

In 2012, the Company issued Annual Risk Management Report, Internal Control Manual of the Headquarters and decision-making management regulations. At the same time, we expanded the audit coverage, actively cooperated with the National Audit Office and the Board of Supervisors to carry out various types of audit work. By the end of 2012, we completed 1,210 audits and carried out 10 post-project evaluations to power generation investment.

◆ Promoting the Reform of Specialized System

The Company set up the Coal Company (Department of Coal Business), Material Company (Material Management Office) and Nuclear Power Department. Department of Coal Business was assigned specific functions, and the coal business of three companies was delegated to the Coal Company, and our specialized management of coal has been strengthened. With our e-commerce platform covering all the thermal power enterprises, we established the mechanism of material management system, actively pushed forward centralized procurement. At the same time, we carried out comprehensive tendering agency services generally, and pressed forward trial projects of specialized material management service in an orderly way. Also, we completed the reorganization of Fuel Corporation, and the intensive management of fuel was further improved to a new level.

■ Taking Measures to Make up Deficits and Increase Surpluses

◆ Formulating Plans and Measures

Formulating special plans for the work of making up deficits and increasing surpluses, the Company clearly defined objectives and the tasks of all levels of enterprises. We timely tracked the progress of work of all enterprises, and actively participated in various activities to help the enterprises analyze their existing problems, find out the causes, and work out solutions. Also, the Company established the briefing system of making up deficits and increasing surpluses, and organized seminars, so as to summarize and promote the experience of making up deficits and increasing surpluses. In 2012, the Company achieved fruitful results in making up deficits and increasing surpluses. Shandong Power Generation Corporation, Hainan Power Generation Corporation, Huaneng Power International Inc. and Shaanxi Power Generation Corporation surpassed the annual profit targets, and Shandong Power Generation Corporation and Huaneng Power International Inc. achieved an increase of profits for more than 2 billion yuan over the previous year.



North United Power Corporation held work conference on making up deficits and increasing surpluses.

◆ Developing Power Market

The Company strengthened the analysis of electric power market situation, to ensure that the availability hours stay ahead. We took the benefits of additional electricity output as the focus of the marketing work throughout the year, improved the tertiary marketing network, and optimized the marketing strategy. Giving full play to the role of the real-time supervision system, we also strengthened the dynamic tracking for electric quantity, availability hours, and unit status, and carried out availability hours benchmarking and monthly summaries. Deeply carried out benchmarking, all industrial and regional companies and grass-roots enterprises clarified the working direction, and paid close attention to the changes of the market,

and tried the best to realize more additional power production. Also, they increased incentives and formulated assessment methods to improve the marginal benefit of power generation.

In 2012, the Company realized an overall leading position in comprehensive availability hours, hydropower and coal availability hours, and achieved accumulated generating availability hours of 4757 hours, 185 hours more than that of the whole country. The availability hours of 1000MW thermal power units has come to 5,259 hours, 264 hours more than 600MW units. Also, the availability hours of the 600MW units reached 4,995 hours, 32 hours more than 300MW units.



In 2012, Huaneng Power International Inc. (HPI) further improved the marketing supervision mechanism of "Daily Analysis, Ten-day Benchmarking", and organized the "Daily Generation Sprint" activity and carried out work of power generation dispatch. By the end of 2012, HPI surpassed the annual power generation target by 8.58 billion kWh, and the availability hours of thermal power generation units reached 5,580 hours, up by 320 hours, which exceeded the local directly dispatched thermal power output by 153 hours. Also, the accumulated availability hours of 1000MW thermal power units has come to 6,244 hours, 622 hours more than 600MW units, and 657 hours more than 300MW units.



◆ Controlling the Cost of Fuel

The Company gave full play to the advantages that the centralized procurement platform provided, strengthened the market research, timely adjusted procurement strategy, and actively developed the coal market. We also increased coal imports, and implemented the key coal contracts. Comprehensively coordinating external procurement and internal supply, we took the coal price into control, and effectively controlled the purchasing price of standard coal. In 2012, the Company imported 38.45 million tons of coal, up by 40.4%, and the internal supply of coal accounted for 37.22 million tons, increased by 3.43 million tons.

The Company attached great importance to the fuel management, and continued to strengthen the refined management of fuel in the whole process. At the same time, we took good control of coal calorific value difference, and reduced fuel storage and transport loss. In 2012, the accumulative total calorific value difference is 87 kcal / kg, down by 4 kcal/kg over the previous year.



Changchun Thermal Power Plant revised Measures of Controlling Coal Loss in Coal Yard, and realized the coordinated management of coal yard. With average coal storage of over 150,000 tons, the Plant almost eliminated the self-ignition of the coal, and the coal loss during storage was far less than the Company's target. What's more, they strictly controlled the coal calorific value difference, and coal calorific value difference was reduced by 135 kJ/kg.

Coal storage yard of Linhe Thermal Power Plant



◆ Strengthening the Control of Costs

The Company compiled Financial Management Standardization Manual of Thermal Power Enterprises and Tax Management Standardization Manual of Electric Power Enterprises, and further promoted the lifecycle cost management with assets as its main line, strengthened the cost management of preliminary projects, so as to compress operating costs and unproductive expenditure. At the same time, we intensified the management of funds collection, further broaden the sources of funding, and optimized the financing mechanism and internal distribution of capital, to try our best to reduce the cost of capital. What's more, we rationally arranged for coal storage, cleared up inventory, accounts and foreign investment, so as to reduce capital occupancy. In 2012, the Company concluded the successful experiences in the cost management of infrastructure, fuel, hydro-power, wind power and others, and applied them in the whole Company.



The Finance Corporation carried out analyses for economic activities.

◆ Implementing Electricity Pricing Policies

The Company earnestly implemented the desulphurization and denitration electricity price policy, and ensured the effective implementation of China's policies. Strengthening the management of collecting the electricity and heat bills, we strived to improve the settlement of integrated electric price. In 2012, we achieved a 100.5% collection rate for all annual cumulative electricity bills. We also actively promoted the application and verification of pricing for new generating units. At the beginning of 2012, the electricity pricing of Yimin III was approved, and the pricing applications of some companies and projects, including Huaneng Power International Inc., Huaneng Renewables Corporation, Lancang River Hydropower Co., Ltd., the GreenGen Project, progressed smoothly.

■ Speeding up Development and Construction

◆ Coordinating Project Preparation Work

Adhering to the principles of "extensive investigations, selection of the best, good construction, and strict management" in the Company's project management, we strengthened the management of input-output, coordinated the relationship of feasibility studies, budgeting and infrastructure, and achieved "Three Compliance" and "Three Coordination". In 2012, the Company's approved power projects amounted to 14,155 GW, and completed 141.55% of annual target, including low-carbon and clean energy projects of 7,475 GW, accounting for 52.8% of total approved capacity. Over the year, the Company secured coal projects of 2.1 million tons. Besides, the preparatory work of Yarlung Zangbo River hydropower development has made important progress, and solar power projects, including Hami's, were approved.

The total capacity of approved power projects in 2012

14.155 GW

Completing annual target

141.55%

The capacity of newly-approved low-carbon and clean energy projects

7.475 GW

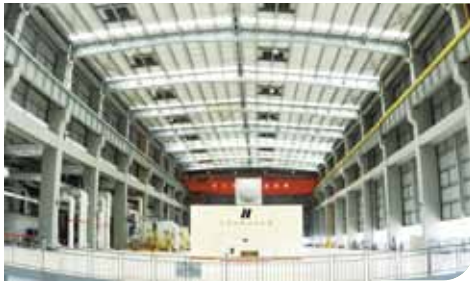
The proportion in total approved capacity

52.8%

◆ Strengthening the Management of Infrastructure Construction

Taking putting into operation in compliance with standard, completion acceptance and striving to achieve the Prize of National Excellent Power Project as the guidance, the Company emphasized the process quality control and process optimization. As a result, the project quality and the level of transferring of the whole unit have been constantly improved, and the comprehensive performance indicators continued to represent the leading position in industry.

In 2012, the Company's installed capacity of new power projects reached 10.5 GW, including 6.47 GW of coal-fired power, 2.79 GW of hydropower, 1.22 GW of wind power, 20 MW of photovoltaic power. Also, a number of projects were named the Prize of National Excellent Power Project and China Electric Power Quality Engineering Award. The coal production capacity of new projects increased 10 million tons/year, and the total production capacity of coal reached 78.17million tons/year, up by 14.7 over the previous year.



The Unit 4 of Haimen Power Plant was a demonstration project in the Company's Constructing the Best Infrastructure Program. Aiming at the goal of creating a world-class enterprise, Unit 4 of the project was completed innovatively on the basis of the "process excellence, fine management" of Units 1&2&3. On September 26th 2012, Unit 4 successfully passed the test run of 168 hours, and created "7 successes with only one try" in the whole starting process, the 7 successes referred to offering service power, water pressure of boiler, boiler acid cleaning, boiler ignition, turning the unit and integration to the grid for the first time and 168-hour trial run. They have created an excellent record with 2.86% service power and coal consumption of 287.4 g / kWh for power supply, built an infrastructure benchmarking unit, and realized constructing the best infrastructure.

List of Projects Named Excellent Power Project in 2012

Prize-winning Projects	Prize	Capacity
Project of Ruili River First-grade Hydropower Station	Prize of National Excellent Power Project	600MW
Project of Dongyinghekou Wind Power Plant	Prize of National Excellent Power Project	200MW
Phase II of Shidongkou II Power Plant	China Electric Power Quality Engineering Award	1320MW
Phase II of Pingliang Power Plant	China Electric Power Quality Engineering Award	1200MW
Phase III of Yimin Power Plant	China Electric Power Quality Engineering Award	1200MW
Project of Santanghu Wind Power Plant	China Electric Power Quality Engineering Award	49.5MW



Strengthening Capital Operation

The Company adhered to the financing strategy that took credit as its core business, bonds as the supplement business and diversified products as its additional business, and constantly expanded the sources of funds to ensure the effective supply of funds. Actively coordinating and communicating with relevant financial institutions, the Company has successfully controlled and reduced the cost of financing.

In 2012, the financing accounted for 9.864 billion yuan, exceeding the annual target. Inner Mongolia Huadian raised private placement of 4.656 billion yuan, and completed share acquisition of Mao Wei Coal Mine and of Dalate Power Plant Phase IV, and optimized the coal assets. We invested the share of companies in the Middle Reaches of the Jinsha River Company into the Lancang River Hydropower Co., Ltd., introduced external capital of 1.465 billion yuan, and enhanced the scale and management advantages of hydropower in Yunnan. Through a series of channels, including stock exchange, price bidding, stock right transfer, share repurchases and reconstructing projects of power plants and ports, the Company completed the financing of 3.743 billion yuan, and enhanced the ability to guarantee the funds for operating and constructing projects.



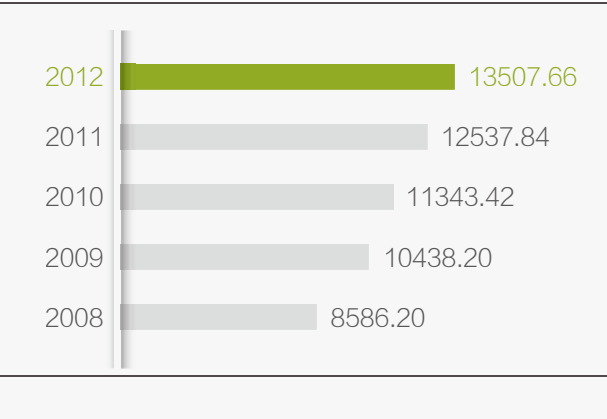
Promoting the Construction of Information System

Making overall plan for informatization, the Company steadily pressed ahead the construction of information system project. In 2012, the Company improved the level of informatization significantly. The integrated financial management system of online assets, which has covered nearly 80% of power plants of the Company, was launched in Huaneng Power International Inc. and Shandong Power Generation Corporation. The online business, based on business analysis, mobile office, human resources and other applications, has achieved initial success. And the group-level data center progressed steadily and the pilot program in Shandong Data Center worked out smoothly. Also, the construction plan of disaster preparation center has been approved, and the safety foundation for informatization was further solidified, and the centralized management capacity of informatization was further enhanced.

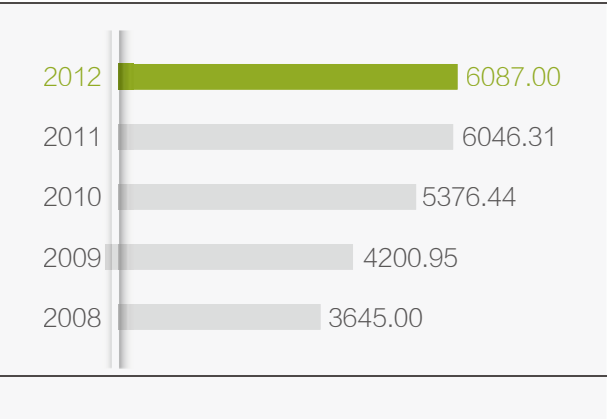


Healthy Development Performance

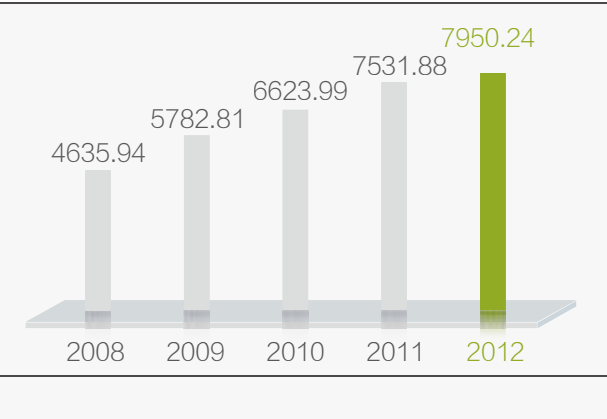
Installed capacity (10MW)



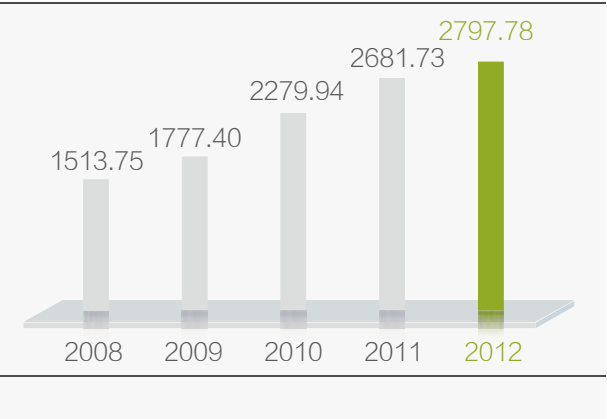
Power output (100 million kWh)



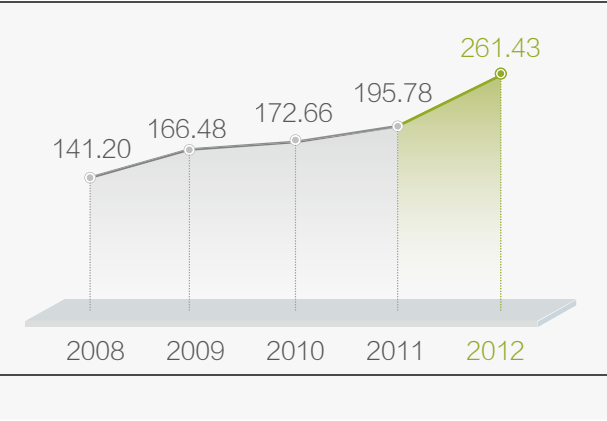
Total assets (RMB 100 million yuan)



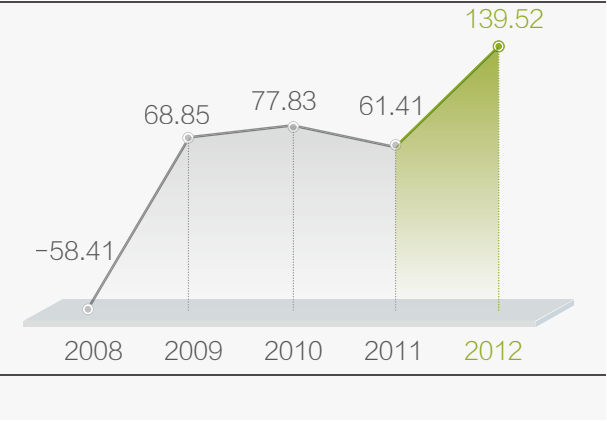
Total revenue (RMB 100 million yuan)



Tax (RMB 100 million yuan)



Total profit (RMB 100 million yuan)





06 Innovative Development

Events

- ◆ | On March 13th | The Company held an expert seminar of Thousand Talents Program, and listened to the work report of Thousand Talents Program. The Company also put forward requirements for recruiting talents and serving the experts' scientific researches.
- ◆ | On March 29th | The experiment of molten carbonate fuel battery achieved success, and this independently developed technology has reached the internationally advanced level.
- ◆ | On October 30th | China's first super 400 °C solar thermal power generation technology demonstration project, which was independently developed by the Company, was officially completed and put into operation.
- ◆ | On December 21st | The key state science and technology project — the High Temperature Gas-cooled Reactor (HTGR) Demonstration Project of Huaneng Shandong Shidao Bay Nuclear Power Plant, whose first layer of concrete pouring was completed.

Concept of Innovative Development

Innovative development is a powerful support for sustainable development. Innovative development must support the core business and meet the needs of production, target advanced technology and industrialization. The Company must improve the system and mechanism for technology innovation and strengthen the construction of research and development platforms and team building. The Company will promote the development and demonstration of the key science and technology projects. Consequently, the Company could promote the industrialization development of science and technology and acquire the first-class capacity of independent innovation.

Objectives of Innovative Development

- ◎ To further improve the system and mechanism for science and technology innovation;
- ◎ To achieve positive progress in building platforms for research and development;
- ◎ To press forward the construction of major demonstration projects smoothly.

Measures of Innovative Development

- ◎ Carrying out the strategy of science and technology innovation, further improving the system and mechanism for technology innovation;
- ◎ Strengthening the building of research and development platforms, and establishing scientific research, experiment and demonstration bases which cover the Company's core business;
- ◎ Paying great attention to both cultivation and recruiting of scientific and technological talents, and constantly improving the career development channel for the researchers;
- ◎ Focusing on the core business of power, actively implementing the national major scientific research projects, and steadily pushing forward the construction of demonstration projects;
- ◎ Attaching great importance to strengthening the management of technological industry, supporting the application and dissemination of technological achievement, and speeding up the development of science and technology industry.

Improving the System and Mechanism for Technology Innovation

Implementing the Technology Innovation Strategy

The Company carried out the national strategy of rejuvenating the country through science and education, and strived to build a world-class enterprise with key measures, including fully implementation of the technology innovation strategy and building an innovation-oriented enterprise. The Company also established and improved system and mechanism for technology innovation, and enhanced investment in research and development, to speed up the pace of technology innovation and industrialization. In consequence, we would build demonstration projects which can stand for advanced direction of power generation technology in the future and serve for the national energy development strategy, and continuously increase the capacity for independent innovation, and strive to promote the development of technology innovation.

Strengthening the Management of Science and Technology Innovation

The Company has strengthened its construction of tertiary innovation system, which was comprised of the "headquarters-regional companies/industrial companies-grassroots companies", and defined the responsibilities for the main subjects at all levels. We also set up the technical expert committee. Besides the existing Xi'an Thermal Power Research Institute, we successively established several technology innovation institutions, including Technical Innovation Center, Clean Energy Technology Research Institute, Huaneng Shanxi Low-carbon Technology Research and Development Center and Department of Environmental Protection and Science Technology. And we have improved the technology research and development and the technological industry layout, and intensified coordinated management of technology innovation. Moreover, we have earnestly formulated and improved systems and measures, such as Long-term Science and Technology Development Plan, Major Science and Technology Project Planning in the 12th Five-year, The Management Regulations for the Work of Science and Technology, Technology Innovation Strategy Implementation Plan of Create a World-class Enterprise. At the same time, we strengthened the top-level design and guidance, and established and improved the system and mechanism for technological project management and funding collection, so as to provide a powerful guarantee for making solid progress in technology innovation.



In March 2012, the Company held a working conference of science and technology in 2012. In the conference, we reviewed and summarized the Company's technology innovation achievements since the 11th Five-year Plan, and analyzed the situation that we are facing for the work of technology innovation. Also, combined with the demand of the Company's development strategy, we defined the basic ideas, the main targets and the key tasks of technology innovation in the current and the 12th Five-year period. It was the first working conference of science and technology for the whole Company these years.



Strengthening the Construction of Research and Development Platforms

According to the principles of overall planning and step by step implementation, the Company strengthened the construction of research and development platforms, and strived to build the scientific research, experiment and demonstration bases which covered all the Company's core business. The Company's technology innovation research and development system has been improving, which takes "two bases, three research and development organizations, six national research and development platforms, and a number of experimental laboratories" as the main body, and further enhanced the Company's science and technology innovation ability in the fields of thermal power, hydropower, renewable energy power generation and other fields of technology, so as to lay a solid foundation for speeding up the transformation and industrialization of technological achievements.

In 2012, the construction of five national research platforms had made steady headway, including the State Key Laboratory of Coal-based Clean Energy and the National Energy and Thermal Power Technology Research and Development Center. Also, the construction of Huaneng Talent Innovation Base had achieved the periodical results, and Xi'an Thermal Power Research Institute had made steady progress in the construction of experimental and industrial base. What's more, the constructions of the provincial and ministerial key laboratories have been carried out orderly, and the plan for key laboratory of Company level has been fully launched.



On October 12th, 2012, the roof-sealing ceremony for the Building B of Huaneng Talents Innovation Base was held in Beijing Future Science and Technology City. The experiment building has a total construction area of 21,000 square meters, which is the second experiment building in Huaneng Talents Innovation Base. Huaneng Talents Innovation Base is one of the major projects of the science and research system. Building A's roof has been sealed on April 6th.



Strengthening the Cultivation of Technological Talents

The Company adheres to the principles of respecting knowledge, respecting talents and respecting creativity, and attached great importance to the cultivation of technological and innovative talents. We have formulated and implemented China Huaneng Group Long-term Talent Team Construction Plan (2012--2020), actively introduced high-level technological talents. At the same time, we strengthened the construction of training platforms, continued to improve the career development channels for scientific researchers, and strived to foster science and technology leaders with both international perspective and advanced management concept. In brief, the Company would make great efforts to build a talent team with the qualification of high-level technical research and industrialized management, and create a top-level technological talent team with high quality.

By the end of 2012, the Company had established a technological talent team of strong innovative ability, with a total of 1500 members, including one academician, 7 overseas high-level technical talents of National Thousand Talents Program, 124 experts who had made outstanding contributions and enjoyed the government subsidy, and 3657 people who had the senior professional titles and above.



In February and April, 2012, the Company held two recruitment forums of Thousand Talents Program in the United States and UK. At present, the Company has successfully recruited 7 high-level overseas talents of Thousand Talents Program. Actively arranging the work of research and development for experts of Thousand Talents Program, the Company has signed and disbursed project contracts accounting for 11.5 million yuan. Their research fields were thermoelectric generation, methanation catalyst, and etc., in which they manifested their research and development ability and the ability to lead their teams.

Extended Reading:

Thousand Talents Program: "Thousand Talents Program" referred to the plan of introduction of high-level overseas talents into China. Around the national development strategic objectives, this program began in 2008. Focusing on key innovative projects, disciplines, laboratories and the central SOEs, state-owned commercial financial institutions, high-tech industrial parks, China has introduced about 2000 strategic scientists and leading talents, who can make breakthroughs in key technologies, develop high-tech industry, and lead the emerging disciplines, and start innovative businesses.

Promoting the Development and Demonstration of Key Science and Technology Projects

Focusing on the core business of electric power industry, the Company actively organized the implementation of key scientific research projects of national level. the Company also paid great attention to the research and development of key technology, and steadily pushed forward the construction of demonstration projects. During the 11th Five-year Plan period, the Company has made a series of important science and technology achievements in some fields, including the ultra-supercritical coal-fired power generation, coal gasification technology, post-combustion CO₂ capture in thermal power plant, circulating fluidized bed (CFB) boiler, coal-fired power plant supervisory information system (SIS), field bus control system, dam construction technology of hydropower station, the digital mine and the rock burst prevention and control technology in coal mine.

In 2012, the IGCC demonstration power plant in Tianjin successfully passed the test run, and the objectives of the first phase of the Company's GreenGen plan was realized smoothly. As a state key science and technology project, the Shidao Bay High-temperature Gas-cooled Reactor Demonstration Project was put into construction. At the same time, the first super 400 °C solar thermal power generation technology demonstration project was officially put into operation and we have started the research and development demonstration and application project of the key equipment for 700 °C ultra-supercritical coal-fired generation. Also, the development of 1260MW high efficiency supercritical power generation technology went well, and it has been included in the clean coal technology planning of 12th Five-year Plan by State Ministry of Science and Technology. The preparation work of the demonstration projects was pushed forward solidly, and it will further consolidate our advantaged position in relevant fields.

The master plan of Shidao Bay Nuclear Power Plant



Speeding up the Development of Science and Technology Industry

The Company attached great importance to strengthen the management of science and technology industry, and developed Implementation Measures on Accelerating and Promoting Technology Industry Development. Introducing policies and measures of supporting popularization and application of science and technology achievements, the Company established the system and environment conducive to the development of science and technology industry, and pushed the popularization and application of technologies and products with independent intellectual property rights. Consequently, we have made a good performance in some aspects, including development of some related products, design, integration, engineering contracting, debugging and technical advice, services and so on. We have obtained market influence in some products and technologies, including electric bag composite dust collector, low-NOx combustor, high efficiency and energy-saving fan, water treatment equipment and reagents in power plant, thermal power plant supervisory information system (SIS) and group (regional) company real-time monitoring system, simulation and training system, and field bus control system.

In 2012, the Company published Advanced Technology Application Directory in 2012, and gave priory to recommend 25 items of independently developed achievements with advanced technology and high popularization value. We also improving incentives policies and accelerated the transformation of related technologies into productivity. In the past year, we have popularized 96 sets of equipment with contracted value of 530 million yuan. The revenue from the core business of science and technology industry has reached 1.07 billion yuan, and the profit exceeded 165 million yuan.

2012

Xi'an Thermal Power Research Institute

38 patents were authorized, including 19 invention patents, and 18 software copyrights

2 China Electric Power Science and Technology Awards, 3 Science and Technology Awards of Shaanxi Province, 11 State Energy Science and Technology Progress Awards

37 projects signed and approved

Popularization and application of independent technology and developments, including denitration technology of flue gas, fire-resistant oil purification and regeneration technology, real-time information monitoring system technologies

FCS165 field bus control system demonstration project was completed and passed the acceptance.

2012

Clean Energy Technology Research Institute

Declaration of the 85 patents, 52 granted patents

Published 23 papers, application and promotion of achievements accounted for 30 sets

China's first super 400 ℃ solar thermal power generation device—the 1.5MWth line concentrator direct steam solar thermal power generation demonstration device

The dry pulverized coal pressure gasification furnace, with the independent intellectual property rights and the capacity of 2000 tons / day

The cold dry pulverized coal pressure gasification furnace with the capacity of 1000 tons / day

The mercury pollution removal system in coal-fired power plants

The number of awards for science and technology projects that have been conferred to Xi'an Thermal Power Research Institute

2012	2011	2010
16	12	10

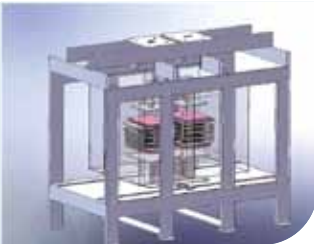
The number of national patents obtained by Xi'an Thermal Power Research Institute

2012	2011	2010
38	34	47



In April 2012, the experiment of molten carbonate fuel cell (MCFC), which was developed by Clean Energy Technology Research Institute, achieved great success. It had been proved that, the open circuit voltage of molten carbonate fuel cell would come to 1.28 volts, and the maximum discharge current density would reach 150mA/cm². After 120 hours of continuous operation testing, the performance of single cell was stable and every performance index appeared no attenuation.

Taking coal gas, natural gas, hydrogen, methane as the fuel, the cell turns chemical energy of the fuel into electrical energy, and achieves the advantages of clean and efficiency. The experiment of single cell succeeded, and it has laid a solid foundation for the development of a 5 kW fuel cell stack.



Deepening Technological Exchanges and Cooperation

The Company attached great importance to strengthen the international and domestic science and technology cooperation and exchanges, and created an open atmosphere for innovation. Giving full play to the important role of National Industrial Innovation Alliance, the Company actively participated in the building of all kinds of associations and standard committees. We also cooperated with higher education institutions and research institutions, and carried out academic researches and technical exchanges with them, so as to promote the combination of policy, production, study, research and application. In the end, we formed an open technological cooperation mechanism with complementary advantages, clear division of responsibilities, sharing both achievements and risks.



The international counterparts visited Huaneng's Pavilion at the Fourth International Energy Exposition

The Company continued to deepen the cooperation with globally well-known research institutions, and developed international technological cooperation by taking advantage of international technological cooperation platforms, including the Sino-US, the Sino-EU exchange platforms and others. Xi'an Thermal Power Research Institute and Clean Energy Technology Research Institute and other institutes have taken an active part in the clean energy technological cooperation between governments, such as the projects between China-Austria, China-Italy and China-US. We cooperated with international counterparts in the field of the energy conservation and emission reduction, clean coal power generation and CCS technology, so as to improve the Company's ability and influence in participating in the international technological researches.

Innovative Development Performance

The National Projects (since the 11th Five-year Plan)		Major Scientific and Technological Achievements	
The category of projects	Number	Achievements	Number
The "863 Plan" Major Special Project of the 11th Five-year Plan	1	Authorized patent	235
The "863 Plan" Major Project of the 11th Five-year Plan	3	Inventive patent	85
The "863 Plan" Project of the 11th Five-year Plan	4	The First-class National Science and Technology Progress Award	1
The Science and Technology Support Plan Project of the 11th Five-year Plan	2	The Second-class National Science and Technology Progress Award	3
The Science and Technology Support Plan Project of the 12th Five-year Plan	4	The First-class Provincial and Ministerial-level Science and Technology Progress Award	8
The "863 Plan" Major Project of the 12th Five-year Plan	1	The Second-class Provincial and Ministerial-level Science and Technology Progress Award	33
The "863 Plan" Project of the 12th Five-year Plan	3	The Third-class Provincial and Ministerial-level Science and Technology Progress Award	43
The "973 Plan" Project of the 12th Five-year Plan	2	The First-class Huaneng Science and Technology Progress Award	13
International Science and Technology Cooperation Project	2	The Second-class Huaneng Science and Technology Progress Award	37
National Energy Application Technology Research and Demonstration Project	8	The Third-class Huaneng Science and Technology Progress Award	85
National Major Technology and Equipment Development Project	1		
National Major Industrial Technology Development Project	1		
The Ocean Energy Demonstration Project supported by national special fund	1		
The Technology Development and Research Project of Science and Technology Research Institutes	5		
Major Science and Technology Project of National Energy (2012)	2		



07 | Harmonious Development

Events

- ◆ On May 17th As the largest poverty alleviation and welfare project in Xinjiang, Biedieli Hydropower Station was put into operation.
- ◆ On June 1st The Company and People's Government of the Tibet Autonomous Region signed the Agreement of Aiding Tibet with Electric Power in the 12th Five-year Plan.
- ◆ On November 30th Beijing Cogeneration Power Plant was conferred the "Outstanding Contribution Award of Guaranteeing Electric Power during the 18th CPC National Congress". Shangdu Power Plant and Yangliuqing Power Plant were awarded the "Advanced Unit Award for Guaranteeing Electric Power during 18th CPC National Congress".
- ◆ On December 18th Huaneng Power International Inc. was conferred the title of "National Advanced Unit in Corporate Culture" by China Association of Enterprises and China Entrepreneur Association.
- ◆ On December 31st The Company was awarded the title of "Advanced Unit for Poverty Alleviation of Central SOEs in 2001-2011" by the SASAC of the State Council.

Concept of Harmonious Development

Harmonious development is an important guarantee for sustainable development. To achieve harmonious development, the Company must adhere to the basic principles of mutually beneficial cooperation, actively fulfill our social responsibility, and strive to create a favorable internal and external business environment. We will also constantly improve the brand image, and share the fruits of our development with our stakeholders. We will continue to build up the Integrity of Huaneng, the Humanistic Huaneng, the Brand of Huaneng, the Responsible Huaneng and become a model corporate citizen.

Objectives of Harmonious Development

- To be responsible to our employees to achieve common growth;
- To be responsible to our clients and partners to achieve mutual benefits and win-win outcomes;
- To be responsible to the community to contribute to society and promote a harmonious society.

Measures of Harmonious Development

- Protecting the rights and interests of employees, promoting employees' development, caring for the employees, to develop harmonious labor relations;
- Guaranteeing the power supply, strengthening regional cooperation, promoting the construction of the industrial chain, and promoting the development of the industry, to build harmonious partnerships;
- Actively helping the less privileged, carrying out volunteer activities, participating in the work of aiding Xinjiang, Qinghai and Tibet, to build harmonious social relationships.

Promoting Employees' Development

The Rights and Interests of Employees

The Company strictly abided by Labor Laws of the People's Republic of China, and other applicable laws and regulations, signed labor contracts and collective contracts with employees according to the law, and achieved 100% of contract signing and honoring. We timely paid the wages, and paid the employees' pension, medical, unemployment and other social insurance in accordance with the law. Respecting and safeguarding the legitimate rights and interests of staff, the Company protected the information and privacy of employees, gave equal remuneration for equal work for men and women workers, and eliminated employment discrimination in any form. By the end of 2012, the Company had 136,510 staff.

The Company continued to strengthen the construction and organization of labor unions at all levels, and have realized 100% of labor unions and employee enrollment. Vigorously promoting the establishment of labor unions and workers congress system in industrial companies, regional companies and grass-roots enterprises, the Company gave full play to the role of democratic management and democratic consultation of workers congress, improved the effective channels for employees to participate in the democratic management of the enterprise, and promoted the publicity of plant affairs and leadership reception day system, so as to guarantee the employees' right of information, participation, expression and supervision.



In 2012, North United Power Corporation strengthened the standardization construction of the workers congress, and its 19 subsidiaries held the workers congress on a regular basis. Huaneng Shandong Power Corporation carried out activities of creating the star workers congress, established three star standards, including "Standard Star, Advanced Star, Excellent Star", to further improve the quality and efficiency of the workers congress. Consequently, the proposal implementation rate reached 100%.

The Company attached great importance to the work of employees' health and occupation health and safety, strengthened medical security and occupation health management system, intensified the supervision and management of occupation diseases and working environment, and actively carried out safety and health training and emergency drills, so as to ensure the health of the staff. The physical examination rate and health file coverage rate of the staff have both reached 100%.

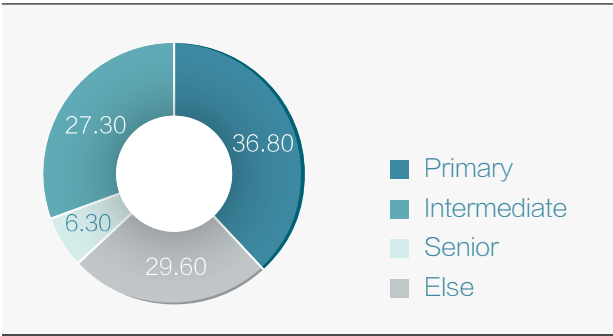


Developing Employees

Vigorously implementing talent strategy, the Company formulated and implemented plans of talent team construction, strengthened the construction of the "three high-level" talent team, and optimized the growing environment for talents, so as to promote the development of talents. The Company also intensified the recruiting of talents, and actively introduced overseas high-level talents, to provide a strong guarantee for the sound and rapid development of the Company. In 2012, the senior and intermediate level professionals accounted for 40.5% among the professional team in the Company.

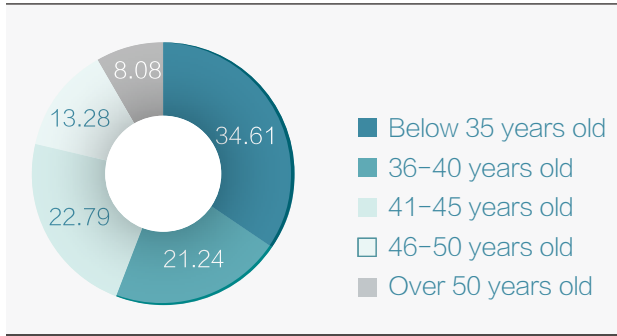
The Company attached great importance to the improvement of employees' abilities, improved the education and training system for employees based on job requirements, and optimized and integrated the resources of education and training. We also carried out classified training, actively organized technical training and skill contest activities, and strengthened the occupation skill appraisal and technician test. In 2012, 163,300 employees attended various types of training.

Chart of Professionals Structure Unit: %



Nanjing Power Plant actively created advantaged conditions for the employees' growth, and strived to build an effective platform for technical talents. In 2012, Nanjing Power Plant issued Implementation Details for Recruiting and Evaluation of the Technical Experts and Skilled Talents, and finished recruitment of technical experts and skilled talents. Among the 109 applicants, 29 employees were appointed as plant-level technical experts and skilled talents, and obtained allowance for two years. By public recruitment, they have greatly stimulated the enthusiasm of the staff, and it triggered a wave of learning technology and competing contribution among the staff.

Chart of Staff Age Structure Unit: %



In July 2012, the Company held the skill contest of relay protection. This is the first Group-level skill contest registered in the SASAC, and all units responded actively, nearly 100 qualification trials has been held, and more than one thousand professional staff participated in this relay protection contest. In the final, 16 players stood out and won the first prize, second prize and third prize. During September 18th to 21st, the Company organized talent teams to attend the Eighth National Electric Power Industry Vocational Skills Competition of Relay Protection, and won the first, second and third prize in group competitions, and the second, third, fourth, sixth, seventh, eighth prize in individual.

Employee Development

The Company carried out the competitive selection, formulated and issued Guidance of Promoting the Competitive System for Selection and Appointment, further defined the competitive selection procedures and standards. We also enhanced guidance and supervision to the work of competitive selection in all units, so as to ensure that above 1/3 new cadres in all units come out through competitive selection.

In 2012, on the basis of summing up work experience of cadres competition in recent years, the Company deepened the work of cadre competition, and carried out the competitive selection for 383 management positions in the Company. Among them, 2 positions of the department director level at the headquarters were competed and they were the highest posts appointed through competition of recent years in the Company, and 15 people from 9 units participated in the competition. In the competition of 16 section chiefs of the headquarters, 215 people from the headquarters and 28 secondary units and 79 grass-roots enterprises participated, and this is the competition for positions in headquarters units with the largest number and the widest range ever.



Open competition for posts of section chief level at the headquarters in 2012

Caring about Employees

The Company paid great attention to humanistic concerns, cared for the lives of staff, and cared about the staff through the way of material and non-material incentives. Actively conducting the employee satisfaction survey, the Company increased input to improve the low-score aspects. Consequently, the employee satisfaction rate was continuously improved, and the employee turnover rate was significantly lower than the average level of the industry. During the New Year and Spring Festival in 2012, leaders of the Company went down to the grassroots, visited and expressed their regards to 5,781 needy employees. With the annual funds of aiding workers reaching 13.71 million yuan, we have helped workers to solve practical difficulties. Also, we appropriated 6.42 million yuan of medical assistance fund to 428 seriously ill employees, and effectively alleviated their economic difficulties.

We provided employees with venues for recreations and sports, and encouraged them to engage in various mass cultural and sport associations. We actively organized sport competitions, knowledge lectures, photography training, art shows, essay competitions and other cultural and sport activities to enrich their cultural lives.

The number of needy employees visited in 2012:

5781

The fund to support the employees:

13.71 million yuan



◆ The Growth of the Youth

The Company attached great importance to building the organization and system of Communist Youth League, and strengthened the ideological guidance. Given consideration to hot topics that most young workers were concerned about, the Company compiled an educational reader titled *The Mission of Youth*, and vigorously carried out various forms of activities, including “One Union, One Brand” and “May Fourth” series activities, which suited for the young staff’s characteristics. We actively built platforms and created conditions for young people to develop themselves, and strived to give full play to the roles of young employees in the work. In 2012, the Company further strengthened the construction of Communist Youth League at all levels, and the League coverage rate in secondary companies has reached 100%. Four people won the title of National Outstanding Youth in Their Career, and 16 youth groups and 24 young individuals were praised by the Youth League Union of Central SOEs.



The youth development training of Shidao Bay Company

■ Building Harmonious Partner Relationship

◆ Power Supply

The Company actively prepared against the heavy rainfall, violent typhoon and other extreme weather and natural disasters, effectively ensured stable power supply to prevent flooding, and to meet peak demands for electricity in summer and during the 18th CPC National Congress. Strengthening the reliability management of equipment, the Company employed all available means to guarantee a safe and steady supply of thermal coal and went all out to supply power and heat. All power plants did not stop operation due to coal shortage, so that we ensured power and heat supplies to the people, and remained to be a reliable energy supplier to local power grids.



In guaranteeing the power supply during the 18th CPC National Congress, Beijing Cogeneration Power Plant strengthened organization and leadership, made mobilization and arrangement ahead of time, defined tasks, improved emergency responses, and earnestly implemented the measures to guarantee safe and stable operation of the equipment. While the 18th CPC National Congress was in session, the power plant maintained stable operation, and made an important contribution to electricity supply. Therefore Beijing Cogeneration Power Plant was awarded the Outstanding Contribution Prize of Power Guarantee during 18th CPC National Congress by the State Electricity Regulatory Commission.

◆ Regional Cooperation

The Company deeply promoted cooperation with local governments and enterprises, optimized industrial and regional distribution, intensified efforts in the development of clean and renewable energy, implemented the localization procurement and management policy, and actively boosted local economic development and employment. In 2011, the Company signed cooperation agreements on energy strategy with the local governments in Shaanxi, Hubei, Hunan, Zhejiang and other places and promoted local economic development.

◆ Building the Industrial Chain

The Company always followed operational standards, honored contracts, made payments and settlements timely, and achieved a 100% contract fulfillment rate. We also strictly examined qualifications in materials procurement and project construction, conformed to bidding procedures, advocated fair competition, and resolutely resisted all types of commercial bribery. Additionally, we strengthened our communications and cooperation with coal suppliers, equipment manufacturers, and financial institutions to expand cooperation fields, to jointly cope with market risks and achieve mutual benefits. In 2012, the Company signed cooperation agreements with Zhejiang Energy Group, Wuhan Iron & Steel Group, Harbin Electric Group and other units to strengthen cooperation in new energy industry, coal chemistry, technical and management innovation and other fields.



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 Work Seminar	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 Multi-national 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		

■ Supporting Public Welfare

◆ Alleviating Poverty and Aiding the Poor

The Company actively participated in social welfare efforts such as disaster reliefs, helping the less privileged and vulnerable groups, making donations, and has encouraged staff to participate in community development, public environmental welfare and student aid projects and other activities, so as to create a good atmosphere for the construction of a harmonious society and fully demonstrate the good corporate image in returning benefits to society.



On September 12th, Lancang River Hydropower Co., Ltd. donated 3.18 million yuan to earthquake stricken area in Yiliang, Yunnan. Among this donation, 3 million was donated by Lancang River Hydropower Co., Ltd., and 0.18 million yuan by the employees. After the earthquake happened on September 7th, the Company ensured the safe and stable operation of the units, and guaranteed the power supply. At the same time, promoting the traditional virtues of “one in trouble, assistance comes from all quarters”, the Company actively supported the disaster rescue and relief activities, helped the affected people to tide over the difficulties, and contributed to help people in the disaster stricken areas rebuild their homes.



◆ Volunteer Activities

The Company actively organized employees to participate in volunteer activities, and continued to improve the rules and regulations concerning volunteer activities. Also, building volunteer teams and volunteer service brand, the Company created the special webpage of “Three-color Sail”, and issued Love of Three-color Sail Volunteer Activity Updates, to create a good atmosphere for volunteer activities. In 2012, we set up 6 volunteer teams in Beijing, and assisted 300 poor students. We also organized volunteers to carry out the student assistance activities three times in Huailai.

Support and Aids to Xinjiang, Tibet, and Qinghai

The Company earnestly implemented the responsibilities of central SOEs. We perceived our support and aids in bordering regions as part of national development strategy, promoting the development of areas where ethnic minorities reside, and ensuring national security. According to the basic principle of combining alleviating poverty with industrial development, technology and education, we gave full play to the advantages of our industry, technology and talents, earnestly implemented the work in aiding Xinjiang, Tibet and Qinghai. We significantly helped the local regions to strengthen their social public welfare construction as well as accelerated the development of energy resources, so as to make our contributions to promote the development of the poverty-stricken minority areas and improve people's livelihood welfare.

Huaneng has invested more than 52.7 million yuan in assistance to Akqi County in Kirgiz Autonomous Prefecture of Kizilsu, Xinjiang since 2005. The Company will continue to invest 37 million yuan during the 12th Five-year Plan to implement nine major projects, including improving local medical conditions and teaching facilities, building earthquake-resistant housing projects, training minority talents and so on. By the end of 2012, Huaneng has been invested 15.9 million yuan, and the residential demonstration project of Huaneng Biedieli New Village Harmony Building and other projects that benefit people's livelihood have been built and put into use.

The work of supporting Jianzha County in Qinghai Province has been actively pressed ahead. In 2012, the No.2 National Secondary School in Jiazha County has been built with the help of Huaneng. Some medical equipment purchased for County People's Hospital, including CT machines and others, have been put into use and provided convenience for local people.



In May 2012, as the largest poverty alleviation project in Xinjiang, Huaneng Biedieli Hydropower Station has been officially put into operation, with the installed capacity of 248 MW. Being expected to create profits and taxes of more than 42 million yuan every year for the county, Biedieli Hydropower Station provided strong impetus for local mineral development, water development, agricultural transformation, eco-development and other industries. Since 2005, the Company has invested more than 52.7 million yuan in aiding Akqi County in Kirgiz Autonomous Prefecture of Kizilsu, Xinjiang, and greatly promoted the local economic development and the improvement of people's livelihood.

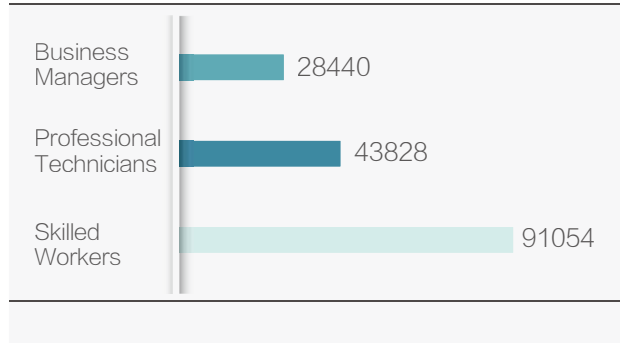


In 2012, Huaneng Diandong Energy Corporation conducted Hope Project activities to help and support local schools—Duluhe Primary School and Pukeying Primary School, including repairing buildings for schools, installing lights, donating uniforms and assigning college student to work as teachers. 20 workers and 20 excellent students who are from poor family formed 20 “1+1” study pairs, and every worker aids a student 400 yuan per year to help them finish their studies.

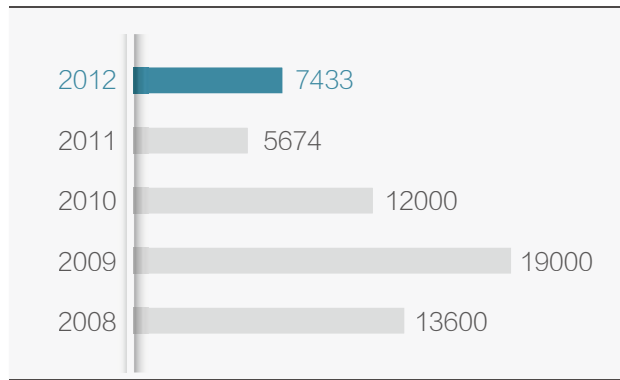


Harmonious Development Performance

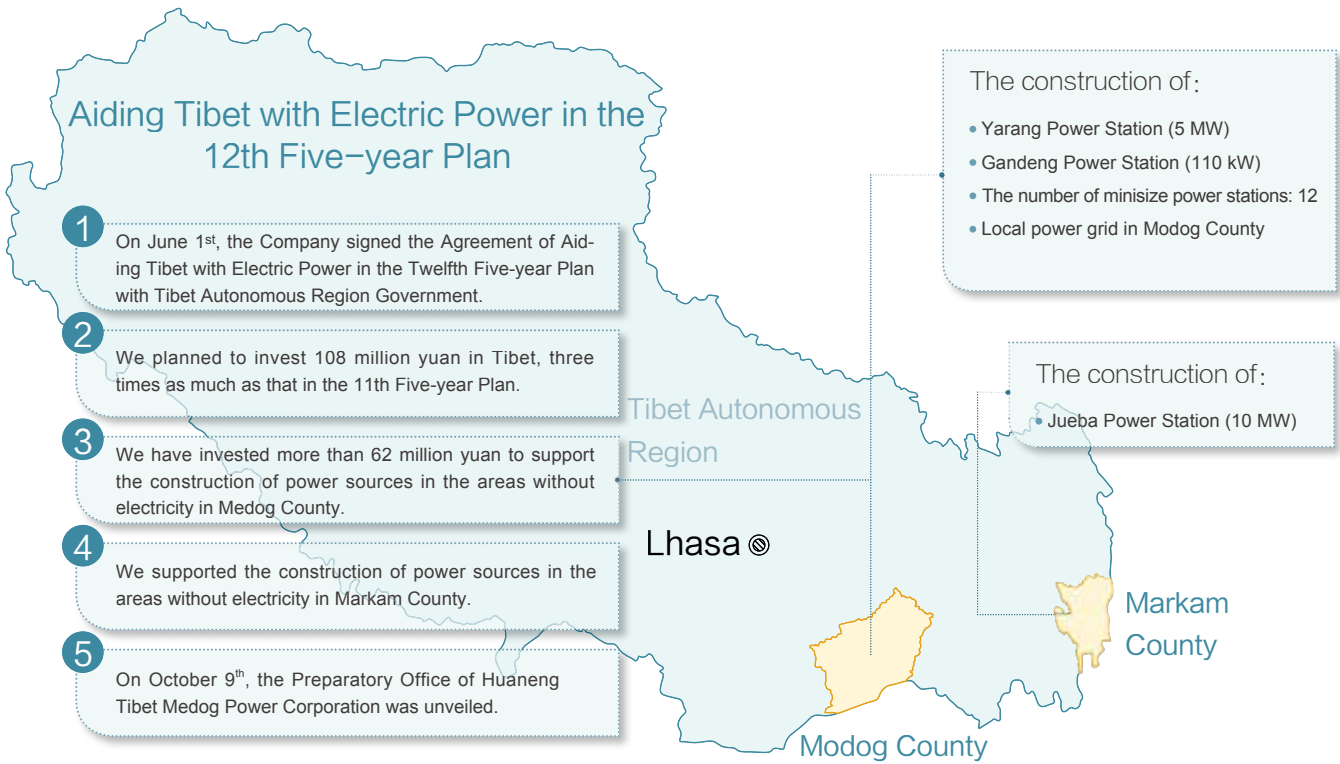
Employee Training in 2012 (number of participants)



Total Donations (RMB 10 thousand yuan)



Honors	Number
National Labor Award	3
National Labor Medal	3
National Worker Pioneer	6
National Technical Expert	5
Industrial Technical Expert	21
Safety Production and Well-being Enterprise	1
Outstanding Contribution Award of Guaranteeing Electric Power in 18th CPC National Congress	1
Advanced Unit Award of Guaranteeing Electric Power in 18th CPC National Congress	2
Top 10 Model Enterprise in Construction of Corporate Culture in 2012	1
National Demonstration Base of Corporate Culture	1
National Civilized Unit	12
Award for National Excellent Organization of Fitness Campaign in 2012	1
Outstanding Unit in the All People's Stay Fitness Campaign in 2012	1
Sustainability Report was ranked as the Five-star Report by Chinese Academy of Social Sciences	1



Prospect



Safe Development

Objectives

- To prevent serious accidents;
- To prevent incidents that may negatively impact the image of our Company.

Measures

- To improve regulations and systems, to strengthen the education and training, and to further promote the standardization of safety production, so as to lay out a solid foundation for safe production;
- To pay great attention to equipment management, to strengthen emergency management and safety management of outsourcing projects, and to improve the safety production management of wind power;
- To strengthen the safety management of coal, to promote the three special actions and the construction of Six Systems for underground mine emergency refuting.



Optimal Development

Objectives

- To increase coal production capacity by 8.2 million tons/year;
- To increase the installed capacity of clean energy by 6410 MW.

Measures

- To optimize the readjustment of the structure, and to give priority to low-carbon and clean energy;
- To promote industrial coordination, to focus on consolidating the basic position of the coal industry, to make better and stronger financing platforms and technological industry.



Green Development

Objectives

- To achieve a coal consumption rate of 315.5 g/kWh and service power rate of 4.7%;
- To carry out energy-saving and environmentally friendly activities in all enterprises;
- To achieve the annual objectives defined in the Special Plan for Energy Conservation and Environmental Protection (2011-2015) and the Total Emission Control Plan of Sulfur Dioxide and Nitrogen Oxides in the 12th Five-year Plan.

Measures

- To steadily promote the creation of an excellent energy-saving and environmentally friendly enterprise;
- To promote the comprehensive upgrading of coal-fired power plants, to improve the energy consumption index level of main models, and to strengthen the energy consumption supervision of other model types;
- To strengthen the control of pollutant emission;
- To improve carbon assets management, and to realize unified management of carbon assets.



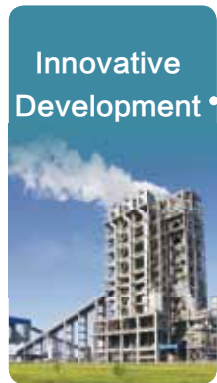
Healthy Development

Objectives

- To achieve 640.3 billion kWh of power generating capacity;
- To achieve coal production of 72 million tons;
- To achieve sales revenue of 295 billion yuan;
- To obtain approval for power projects of 12000 MW, and coal projects of 10 million tons per year.

Measures

- To stress making up deficits and increasing surpluses, to constantly improve the level of EVA and the rate of return on equity;
- To pay great attention to market development, and to maximize the power output of the profitable units;
- To strictly control the purchase price of coal, to strengthen closed-loop management of fuel, and to reduce the cost of power generation;
- To pay great attention to the cost management, capital operation and the internationalized management.



Innovative Development

Objectives

- To further improve the management system of technology innovation;
- To further strengthen the research and development capabilities which will play a support and leading role in building the Company into a world-class enterprise;
- To press forward the science and technology industry smoothly.

Measures

- To improve the management system of science and technology innovation, to promote the development of science and technology innovation;
- To optimize the allocation of resources, and to research and develop the cutting-edge technology;
- To carry out demonstration projects, to further promote the popularization of science and technology achievements;
- To strengthen the construction of science and technology innovation talent team.



Harmonious Development

Objectives

- To achieve common growth with our employees;
- To achieve mutual benefits and win-win outcomes with our clients and partners;
- To achieve harmonious progress with our society.

Measures

- To improve the quality of our staff, to improve the mechanism of talent cultivation, evaluation, selection and incentive;
- To strengthen cooperation with regional and various partners, to actively extend cooperation field and improve cooperation quality;
- To earnestly participate in poverty alleviation activities and provide aids and support to Xinjiang, Tibet and Qinghai, and to actively participate in public welfare and strive to contribute to the society.

Indicator Index 1: GRI Index (G3.1)

Note: The level of disclosure (● Covered in the Report ● Partially Covered in the Report ○ Not Covered in the Report ⊗ Not Available)

GRI Indicators		Disclosure in the report	Degree of Disclosure
1	Strategy and Analysis		
1.1	Statement from the top decision-maker of the organization on the relevance of sustainability to the organization and its strategy	P1-2	●
1.2	Description of key impacts, risks and opportunities	P17-18	●
2	Organization Profile		
2.1	Organization name	P14	●
2.2	Major brands, products and/or services	P14	●
2.3	Operational structure of the organization (including main departments, the operating company, subsidiaries and joint ventures)	P15-16	●
2.4	Location of Headquarters back flap	Back flap	●
2.5	The number of countries where the organization operates, names of countries where organization has main businesses,names of countries which are particularly relevant to the sustainable development described in report	P14/P35	●
2.6	Nature of ownership and legal form	P14	●
2.7	Markets served by the organization (including regional markets, trades served, types of beneficiaries)	P14	●
2.8	Scales of the organization inside front cover	P14	●
2.9	Significant changes in size, structure or ownership of the organization during the reporting period	P14	●
2.10	Awards received in the reporting period	P26/P50/P58/P66	●
3	Report Parameters		
3.1	Reporting period(financial year or solar year)	Inside front cover	●
3.2	Date of the previous report (if any)	Inside front cover	●
3.3	Reporting cycle(such as annual, biennial)	Inside front cover	●
3.4	Contact point for inquiring report and report content	Back flap	●
3.5	Process of defining report content	Inside front cover	●
3.6	Boundary of the report (such as the state, the department, subsidiaries, leased facilities, joint ventures, and suppliers)	Inside front cover	●
3.7	Limits to the cope or boundary of the report	Inside front cover	●
3.8	Basis for the report on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations	Inside front cover	●
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estim ations applied to the compilation of the indicators and other information in the report	Inside front cover	●
3.10	Explanation of the effect of and reas , base year/year period changes, business nature, design procedure	Inside front cover	●
3.11	Significant changes from the previous report in the scope, boundary, or measurement methods applied in the report	Inside front cover	●
3.12	Table identifying the location of the Standard Disclosure in the report	P69-76	●
3.13	The organization listed in the assurance report accompanying the sustainability report provides policy and current practice for seeking external assurance. If not listed, explain the scope and basis of any external assurance provided, and also explain the relationship between the reporting organization and the assurance provider(s)	P76	●
4	Governance, Commitments and Engagement		
4.1	Governance structure of the organization	P16	●
4.2	Indicate whether Chairman of the Board is also an executive officer		○
4.3	For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members		⊗
4.4	Mechanism for shareholders and employees to provide recommendations or direction for the highest governance body	P16	●

4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives (including retirement arrangement), and the organization's performance (including social and environmental)	P46	●
4.6	Procedures for avoiding conflicts of interests within the highest governance body	P16	●
4.7	Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity	P11	●
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation	Title page/P22/P30/P38/P46/P54/P60	●
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, code of conduct and principles	P11/P16/P19	●
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance	P16/P46	●
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization	P16/P19	●
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses	Inside front cover	●
4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organizations	P64	●
4.14	List of stakeholder groups engaged by the organization	P20	●
4.15	Basis for identification and selection of stakeholders with whom to engage	P20	●
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	P20	●
4.17	Key topics and concerns that have been raised by stakeholders during their engagement, and how the organization has responded to those key topics and concerns, including through its reporting	P20	●
5	Economic Performance		
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments	P36/P52/P66	●
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	P41-42	●
EC3	Coverage of the organization's defined benefit plan obligations	P60-63	●
EC4	Significant financial assistance received from government		○
EC5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	P60-63	●
EC6	Policy, practices and proportion of spending on locally-based suppliers at significant locations of operation	P24/P63	●
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation	P63	●
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind or probono engagement	P64-66	●
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts	P64-66	●
6	Environment		
EN1	Materials used by weight or volume	P44	●
EN2	Percentage of materials used that are recycled input materials		○
EN3	Direct energy consumption by primary energy source	P44	●
EN4	Indirect energy consumption by primary energy source	P44	●
EN5	Energy saved due to conservation and efficiency improvements	P39-44	●
EN6	Initiatives to provide energy-efficient or recyclable energy based products and services, and reductions in energy requirements as a result of these initiatives	P39-44	●
EN7	Initiatives to reduce indirect consumption and reductions achieved	P39-44	●
EN8	Total water withdrawal by source	P44	●
EN9	Water sources significantly affected by withdrawal of water	P43-44	●
EN10	Percentage and total volume of water recycled and reused	P41	●
EN11	Location and size of land owned, leased, managed in or adjacent to, protected areas and areas of high biodiversity value outside protected areas	P43	●

EN12	Description of significant activities, products and service on biodiversity in these areas	P43	◐
EN13	Habitats protected or restored	P43	●
EN14	Strategies, current actions and future plans for managing impacts on biodiversity	P43–44	●
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	P43–44	●
EN16	Total direct and indirect GHG emissions by weight	P41–42	●
EN17	Other relevant indirect GHG emissions by weight	P41–42	●
EN18	Initiatives to reduce GHG emissions and reductions achieved	P41–42	●
EN19	Emissions of ozone-depleting substances by weight		○
EN20	NOx, SOx and other significant air emissions by type and weight	P41–42	●
EN21	Total water discharge by quality and destination		○
EN22	Total weight of waste by type and disposal method	P41–43	●
EN23	Total number and volume of significant spills	P27	◐
EN24	Weight of transported, imported, exported or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII, and percentage of transported waste shipped internationally		⊗
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff	P43	◐
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	P38–44	●
EN27	Percentage of products sold and their packaging materials that are reclaimed by category		⊗
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulation		No such incidents
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce		○
EN30	Total environmental protection expenditures and investments by type	P43	●
7	Labor practices and decent work		
LA1	Total workforce by employment type, employment contract, and region, broken down by gender	P60	●
LA2	Total number and rate of new employee hires and employee turnover by age group, gender, and region.	P60–63	◐
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations	P60–63	●
LA4	Percentage of employees covered by collective bargaining agreements	P61	●
LA5	Minimum notice periods regarding significant operational changes, including whether it is specified in collective agreements	P60–63	●
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs		○
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work related fatalities by region and by gender.	P28/P61	●
LA8	Education, training, counseling, prevention and risk-control programs in place to assist workforce members, their families or community members regarding serious diseases	P61–62	●
LA9	Health and safety topics covered in formal agreements with trade unions	P61	◐
LA10	Average hours of training per year per employee by gender, and by employee category	P61	◐
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them with managing career endings	P62	◐
LA12	Percentage of employees receiving regular performance and career development reviews, by gender	P61–62	◐
LA13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	P60	◐
LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	P60	●
LA15	Return to work and retention rates after parental leave, by gender	P60	◐

8	Human Rights		
HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening		○
HR2	Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken		○
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	P61	●
HR4	Total number of incidents of discrimination and corrective actions taken		No such incidents
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights		No such compliance
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor		○
HR7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	P63	◐
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations		○
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken		No such compliance
HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments		○
HR11	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms		○
9	Society		
SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	P43	◐
SO2	Percentage and total number of business units analyzed for risks related to corruption	P19	●
SO3	Percentage of employees trained in the organization's anti-corruption policies and procedures	P19/P63	◐
SO4	Actions taken in response to incidents of corruption	P19/P63	●
SO5	Public policy positions and participation in public policy development and lobbying	P20/P63–64	●
SO6	Total value of financial and in-kind contributions to political parties, politicians and related institutions, by country		No such contributions
SO7	Total number of legal actions for anti-competitive behavior, anti-trust and monopoly practices, and their outcomes		No such legal actions
SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations		No such compliance
SO9	Operations with significant potential or actual negative impacts on local communities		○
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities	P25–27/P37–44/ P63–66	●
10	Product Responsibility		
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures		○
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes		○
PR3	Type of product and service information required by procedures, and percentage of significant products and service subject to such information requirements		○
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information, and labeling, by type of outcomes		No such incidents
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	P63–66	◐
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship		○
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes		No such incidents
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data		No such incidents
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services		No such incidents

Indicator Index 2:

Social Responsibility Indicator System for Power Generation Industry

Indicator Numbers and Description	Report Section(s)
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P1.2 Scope of reporting organization	Inside front cover
P1.3 Reporting cycle	Inside front cover
P1.4 Reported data description	Inside front cover
P1.5 Reference standards	Inside front cover
P1.6 Guarantee on report reliability	Inside front cover
P1.7 The contact person for inquiries and questions about the report and its content, and his or her contact details	P72
P1.8 How to obtain the report and extended reading	Inside front cover
(P2) From the CEO	
P2.1 Statement of the relation between the organization and social responsibility	P1-2
P2.2 Summary of social responsibility performance and areas for improvement in the reporting year	Not disclosed
(P3) Responsibility Model	
P3.1 CSR Model	Inside front cover
(P4) Company profile	
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P4.2 Main Products and services of the organization	P14
P4.3 Geographic coverage and structure of business operations	P14-16
P4.4 Size of business	P14
P4.5 Corporate governance structure	P16
P4.6 Structure of board of directors	Not applicable
(P5) Key Performance Indicator matrix	
P5.1 Social responsibility performance comparison schedule	Not disclosed
P5.2 Key performance data sheet	P4
P5.3 List of recognitions received during the reporting period	P26/P50/P66
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G1.2 Core issues on social responsibility	P21-28/P29-35/P37-44/P45-51/P53-58/P59-66
G1.3 Planning on CSR	Not disclosed
(G2) Responsibility management	
G2.1 Social responsibility leadership	P11-12
G2.2 Social responsibility management organization system	P11-12
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G3.2 Encourage subsidiaries to implement social responsibility	P11-12/P19
G3.3 Encouraging partners to implement social responsibility	P11-12/P24
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G4.2 Performance evaluation on corporate social responsibility according to indicator system	Not disclosed
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G6.3 Participation in development of standards on social responsibility at home and abroad	P11-12/P19
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M2.4 Number of patents	P57-58
M2.5 New awards for significant innovation	P57-58
M2.6 Negative information on responsibility to customers	No such incidents
(M3) Responsibility to partners	
M3.1 Evaluation and investigation on social responsibilities of supply chain	P24
M3.2 Strategic sharing mechanism and system	P63-64
M3.3 Ethical sourcing system and (or) policy	P20/P24
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M3.5 Concept of integrity and supporting policy	P20/P63
M3.6 Concept of fair competition and supporting policy	P20/P63
M3.7 Training on integrity and fair competition	Not disclosed
M3.8 Credit ratings	Not disclosed
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S1.7 Information on tax evasion	No such incidents
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S4.4 Proportion of local employees to total manpower	Not disclosed
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S4.8 Corporate charitable fund or foundation	Not disclosed
S4.9 Amount of donations	P4/P66
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S4.13 Negative information on community responsibility	No such incidents
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E1.9 Research and development and application of environment-friendly technology and equipment	P41-43/P53-58
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E2.5 Policy, technology and measures supporting circular economy	P43
E2.6 Rate or amount of utilizing energy and resources	P44
ELE2.7 Coal consumption for power supply	P44
ELE2.8 General auxiliary power rate	P44
ELE2.9 Water consumption per unit power generation (ton, 100 GW)	No such incidents
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(A4) Reader feedback: Reader feedback questionnaire and channel	P78/Back flap

Indicator Index 3 :

Implementation of the United Nations Global Compact

The United Nations Global Compact requires companies within their influence area 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. 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, as the first Chinese power industry joined the United Naitons Global Compact in November 2007, has been actively carrying out the ten principles of the Global Compact by promoting safe, optimal, green, healthy, international and harmonious development.

	Ten Principles	Location in the Report	Implementation
Human Right	Respect and support the protection of internationally proclaimed human rights	P60–62	Abide by laws and regulations at home and abroad, support international conventions on human rights approved by the State, safeguard and respect human rights, and guarantee employees’legal rights and interests.
	Not complicit in human rights abuses	P60–62	
Labor	Uphold the freedom of association and the effective recognition of the right to collective bargaining	P60	Adhere to fair and just employment policy, strictly follow national laws and regulations on labor relationship management and labor contracts so as to strengthen the management of employees’labor contracts. Establish workers’ congress system and the system of making the company’s affairs public, so as to ensure 100% employee membership in trade unions at all levels, and strengthen democratic participation of employees.
	Eliminate all forms of forced and compulsory labor	P60	
	Effective abolition of child labor	P60	
	Elimination of discrimination in respect of employment and occupation	P60	
Environment	Take a precautionary approach to environmental challenges	P37–44	Accelerate the transformation of the development mode, optimize the industrial structure, speed up eliminating backward production capacity, develop clean energy, and vigorously develop wind energy, hydropower and nuclear power, and actively cope with global climate change. By means of scientific and technological innovation, we actively develop clean power generation technology, and create energy-saving, environmental-friendly coal-fired power plants to reduce the impact on the environment.
	Undertake initiatives to promote greater environmental responsibility	P41–44	
	Encourage the development and promotion of environmental-friendly technologies	P38–43/ P56–58	
Anti-corruption	Work against corruption in all its forms, including extortion and bribery	P19/P63	Strengthen the construction of anticorruption system, carry forward the probity culture,strictly implement the responsibility system of improving the Party’s work style and building clean governance, thoroughly carry out special activities on combating commercial bribery, and standardization of our operations and transactions.

Rating the Report

on China Huaneng Group Sustainability Report 2012

Upon the request of China Huaneng Group, CSR Research Center of Economics Division of the Chinese Academy of Social Sciences invited experts from the Chinese Expert Committee on CSR Report Rating to form China Huaneng Group Sustainability Report 2012 Rating Team. The rating team rated the China Huaneng Sustainability Report 2012 (“Report”) as follows.

1. Rating Criteria

Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 2.0) and Rating Standards for Corporate Social Responsibility Report for Chinese Enterprises (2013) published jointly by the aforesaid Center, China Enterprise Confederation, China Petroleum and Chemical Industry Association, China Light Industry Federation, the Sino-German Corporate Social Responsibility Project, China WTO Tribune and China Committee of Corporate Citizenship.

2. Rating Results

Completeness (★★★★☆)

The Report focuses on development and discloses information on corporate responsibility practices from seven perspectives, including management, safe development, optimal development, green development, healthy development, innovative development, harmonious development, etc. With 82% of Key Performance indicators for electric power industry being disclosed, the Report has good completeness.

Materiality (★★★★★)

The Report covers crucial topics concerning power industry including guaranteeing power supply, safe production, developing green electricity, saving resources and energy, developing circular economy, reducing the discharge of waste gas, waste water and waste residues, etc. Providing all the material issues with sufficient and detailed information, the Report has excellent materiality.

Balance (★★★★☆)

This report discloses negative information on common equipment breakout, work-related injuries and casualties, Class One accidents, unexpected suspension etc. and includes a section of Alarm Bells and Reflection. The company reflects on the cause of incidents and preventive measures. Therefore the Report bears considerable balance.

Comparability (★★★★☆)

This Report discloses data on 35 key performance indicators of consecutive years. The Report discloses data in various fields for comparisons with other companies in the power industry and therefore has good comparability.

Readability (★★★★★)

This Report is clearly structured with appropriate length of content; the language is illustrates the performance using user friendly charts, tables and pictures. This Report has a clear structure, concise language, content of appropriate length, user friendly charts, tables and pictures. Beautiful and simple design also provides easy indexing. Terminology is also provided. The abovementioned qualities make this Report very readable.

Creativity (★★★★★)

This Report, in terms of its content, puts forward enhancing management through strategies, improving management through responsibility and integrating responsibility management into the corporate management strategy. In terms of organization, each chapter begins with events of the year, reflecting the CSR practices of Huaneng, which is very reader friendly. Therefore the Report bears excellent creativity.

Overall rating (★★★★★)

Through evaluation in the above six criteria, the rating team agreed to rate China Huaneng Sustainability Report 2012 as extraordinary by giving a five-star rating to it.

3. Suggested improvements

1. Disclose more key indicators of the industry to improve the completeness of the Report.

4. Rating team

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Terminology

◎ Ultra Supercritical Power Generation Technology

Ultra supercritical power generation technology improves thermal efficiency in a boiler and reduces electricity and coal costs by increasing boiler steam pressure (25-31 MPa) and temperature (580°C-610°C). Currently, this is the world's most advanced environmentally-friendly technology for power generation.

train 10,000 rural workers for employment transfer and support 100,000 people to participate in the national new rural cooperative medical service.

◎ High Temperature Gas-cooled Reactor (HTGR)

The High Temperature Gas-cooled Reactor is a kind of nuclear reactor that takes helium gas as a cooling agent, with a high exit temperature. The high temperature gas-cooled reactor uses coated particle fuel and graphite as a moderator. The exit temperature of the reactor center is from 850°C to 1,000°C, and even higher. The fuel is usually highly-concentrated uranium dioxide, and sometimes is low-concentration uranium dioxide. The high temperature gas-cooled reactor has such advantages as high thermal efficiency (40-41%), high burn-up fraction (up to 20 MW day/ton uranium, and high conversion ratio (0.7-0.8).

◎ GreenGen

GreenGen refers to the research, development, demonstration and promotion of a coal-based energy system that focuses on hydrogen production through gasification, combined cycle power generation with hydrogen turbines, and fuel cell-based power generation, while capturing and storing CO2 , so as to raise the efficiency of coal-fired power generation and achieve near-zero emissions of pollutants and CO2 .

◎ Integrated Gasification Combined Cycle (IGCC)

IGCC is the abbreviation of the Integrated Gasification Combined Cycle, which is a clean coal power generation technology integrating the coal gasification and gas - steam combined cycle. Compared with the direct coal-fired power generation technology, IGCC has high generating efficiency, low pollutant emission and other characteristics. Also, this technology has a cost advantage for carbon dioxide capture, and it is recognized as one of the most promising clean coal power generation technology in the future.

◎ The Clean Development Mechanism (CDM)

The Clean Development Mechanism (CDM) is one of the three flexible mechanisms under the framework of the Kyoto Protocol. It allows developed countries to cooperate with developing countries in projects that reduce emissions and generate Certified Emission Reduc-

tions (CERs), by providing financial and technical support to help developed countries fulfill their greenhouse gas emission commitments.

◎ Economic Value Added (EVA)

Economic Value Added is a comprehensive tool or index used to measure if an enterprise creates value or if the enterprise realizes real profit of production and management. It is based on retained profits after tax by deducting the opportunity cost of equity and debt capital from its operating profit.

◎ Safety Evaluation

It refers to a method to comprehensively apply safety system engineering, in which we measure and predict the safety of the system, identify the dangers and insecure elements, and make qualitative and quantitative analysis of them so as to confirm the possible causes of danger and their severity, make correct evaluations about the safety of the system, and correspondingly provide concrete countermeasures to eliminate unsafe elements and dangers. Through implementing these countermeasures in a comprehensive, systematic, purposeful and planned way, we may standardize and normalize safety management, improve the standards of safe production, and prevent the occurrence of accidents in advance.

◎ Equivalent Availability Factor

Within a given period of time, equivalent availability factor is the ratio of full load hours of the units whose output is deducted to the given time.

◎ “Three Synchronizations” in Environmental Protection

Article 26 of the Environmental Protection Law in China stipulates that “installations for the prevention and control of pollution at a construction project must be designed, built and commissioned together with the principal part of the project. No permission shall be given for a construction project to be commissioned or used until its installation for the prevention and control of pollution are examined and considered to be up to the standard by the competent department of environmental protection administration that examined and approved the environment impact statement.” This stipulation is known as the “Three Synchronizations” system in the Environmental Protection Law in China.

◎ “100-1000-10000” Campaign

The “100-1,000-10,000” Campaign refers to the project to construct 100 schools, build 100 rural clinics, renovate 100 natural villages, and establish 100 rural culture rooms; to train 1,000 rural teachers, provide financial aid for 1,000 junior and senior high school graduates to enter vocational technical schools, and 1,000 poverty-stricken students in middle schools and primary schools to complete their education; to resolve the problem of drinking water of 10,000 people, to train 10,000 rural workers for employment transfer and support 100,000 people to participate in the national new rural cooperative medical service.

Feedback Questionnaire

Dear Readers,

This report is a Sustainability Report (2012) 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.

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Readers Feedback Questionnaire on this Sustainability Report

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

Open Question

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

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

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

Thank you for your support and cooperation.

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