中国核能电力股份有限公司
China National Nuclear Power Co., Ltd.

Appealing Nuclear Power  Beautiful China

China National Nuclear Power Co., Ltd.

# 2014 Social Responsibility Report

# About the Report

**Reporting period**

The report covers activities from 1 January, 2014 to 31 December, 2014, and additional information beyond the stated reporting period.

**References to China National Nuclear Power Co., Ltd.**

Unless otherwise stated all references to "we", "our", "CNNP", or "the Company" refer to "China National Nuclear Power Co., Ltd."

**Publication cycle**

The first report of China National Nuclear Power Co., Ltd. was released in 2012.This is our third company report, the report is released on an annual basis.

**Scope**

G4 Material Disclosure: G4-17 & G4-22 & G4-23

The report covers all relevant information of CNNP and its shareholding, joint venture and participating subsidiaries.

**Data source**

All data in the report are from official documents and statistics reports of the Company.

**Report Compilation Principles**

This Report is aligned with the Guiding Opinions of SASAC on Central Enterprises' CSR Performance, with reference to the Guide for Central Enterprises' CSR Report Compilation released by the Chinese Academy of Social Sciences (CASS-CSR3.0), and the Sustainability Reporting Guidelines of Global Reporting Initiative (G4), etc.

**Reliability assurance**

The Company warrants that the Report,contains no false records, misleading discriptions or substantial omissions, and we will bear individual and joint liabilities for the authenticity, accuracy and integrity of any content contained herein.

**Availability**

The Report is available in both Chinese and English, including paper and electronic versions. Electronic version can be downloaded from the official website of CNNP (http://www.cnnp.com.CN). If you need the paper edition, please send an E-mail to cnnp@cnnp.com.CN or call 010-6855-5988.

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# General Manager’s Address

Nuclear power is a safe, clean and highly efficient source of energy, having key advantages in easing haze pollution and reducing carbon emissions. In 2014, National Energy Administration released the Energy Work Guidance, explicitly proposing the requirement of developing nuclear power in a safe and efficient way. Nuclear power industry of China accurately grasps and closely follows the energy development trends, and actively explores the safe and efficient development of nuclear power, implementing national major policies in business practice. CNNP keeps in mind the mission of "to supply safe and highly efficient nuclear power to society, and to create a clean, low-carbon public environment", accelerates construction of a modern nuclear power industry system and continuously strengthens the core competitiveness, to promote the sustainable development of the Company and the society.

**Safety is always a central requirement to CNNP's social responsibility.** We adhere to the principle of “safety first and quality foremost” throughout nuclear power planning, construction, operation and decommissioning, and apply it to all relevant industries; persist in safe transformation of operating and under-construction nuclear power units with the most advanced technologies, and constantly improve safety performance of existing nuclear power units. We comprehensively enhance nuclear power safety management, and nuclear accident emergency management and response, having achieved a record of a "zero-accident operation" for more than 100 reactor years.

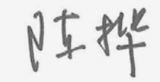
**Our major responsibility is to stabilize energy supply.** By deepening scientific and technological innovation, optimizing overhaul management, enhancing synergetic development of industry chain, continuously improving nuclear power generation efficiency, and constantly increasing the proportion of nuclear power in energy supply, we will strive to build a system of stable, safe, clean and economic energy supply, and to contribute to economic and social development. In 2014, Our annual generating capacity reached 52.766 billion kWh, representing a year-on-year increase of 2.86 percent, indicating our steady improvement of nuclear power supply capability; home-developed third-generation nuclear power technologies “Hualong One” initiated in Fuqing on a trial basis; Fuqing 1 and Fangjiashan 1 units were put into production smoothly; R15 overhaul of Qinshan Plant 1 spent 18.12 days, hitting a record in refueling overhaul duration of operating nuclear power units at home; average load factor of 9 operating units exceeds 90%, leading at home.

**We pay attention to the harmony and mutualism with natural environment.** We adopt safer, more environmentally friendly and more highly efficient production and operation means, reduce or prevent generation and emission of pollutants from the aspects of nuclear power siting design, construction, operation and so on, conduct strict management of radioactive matters, insist on Green Construction and green operation, and protect surrounding biodiversity of plants. In 2014, on-grid clean energy contributed by CNNP was equivalent to reduction of standard coal consumption by approximately 17.47 million tons, or emission reduction of greenhouse gases by 56.57 million tons.

**We sincerely carry out communications with the general public.** Through the transparent communication mechanism established, and by expanding channels for stakeholders’ participation, and innovating ways of spreading nuclear power information, we aim to make the public understand nuclear power more rationally. In 2014, CNNP was assessed to be outstanding in publicity by World Association of Nuclear Operators (WANO), becoming an industry benchmark at home and abroad. CNNP’s publicity video Nuclear Power version of Little Apple was displayed on CCTV channel, with the network hits of over ten million, which displays enterprise image to the public and becomes a publicity model of nuclear power industry.

**We keep people-oriented values and dedication to communities.** We insist on growing with staff together, pay close attention to staff's physical and mental health, and provide staff with wide career development space. We adhere to the policy of friendship and partnership with neighbors, combine enterprise development and community development, promote the economic development of the place where plants locate, and share development opportunities. We actively participate in social welfare undertakings, and repay the society and the public for their long-term trust and support.

Looking to the future, we will set sail again, work together with the public and all walks of life with all our heart and develop appealing nuclear power, to help create a better future of beautiful China!



Chen Hua, General Manager of
China National Nuclear Power Co., Ltd.

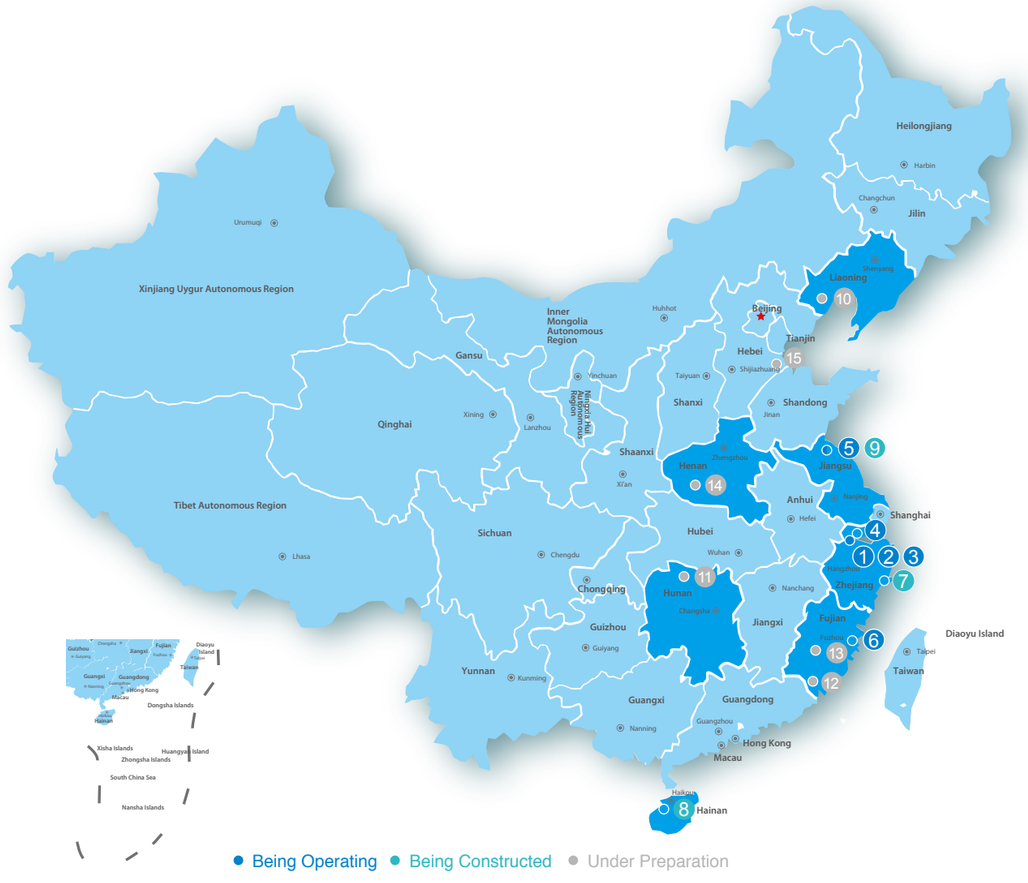
# Introduction to CNNP

## Company Profile

China National Nuclear Power Co., Ltd. (CNNP) received joint investment from the China National Corporation (CNNC), the China Three Gorges Corporation, the China Ocean Shipping (Group) Company (COSCO) and China Aerospace Investment Holdings, Ltd, with China National Nuclear Corporation as holding shareholder. It is headquartered in Beijing.

At the end of 2014, CNNP owned 14 holding subsidiaries, 1 joint venture and 1 equity participation companies, including 11 operating nuclear power units with an installed capacity of 8,690 MWe, representing a year-on-year increase of 2,190 MWe, and 10 under-construction nuclear power units with an installed capacity of 10,370 MWe. The company's business scope covers the development, investment, construction, operations and management of nuclear power projects, technical research in safe nuclear power plant operations, and related technical and consultancy services. Through sustained investment and steady operation, CNNP achieved the income of approximately 18.8 billion Yuan for major operations of nuclear power in 2014, total profit of approximately 6.16 billion Yuan, and total assets of over 220 billion Yuan, and had a total of 9,594 staff.

### Distribution of CNNP-owned Nuclear Power Units

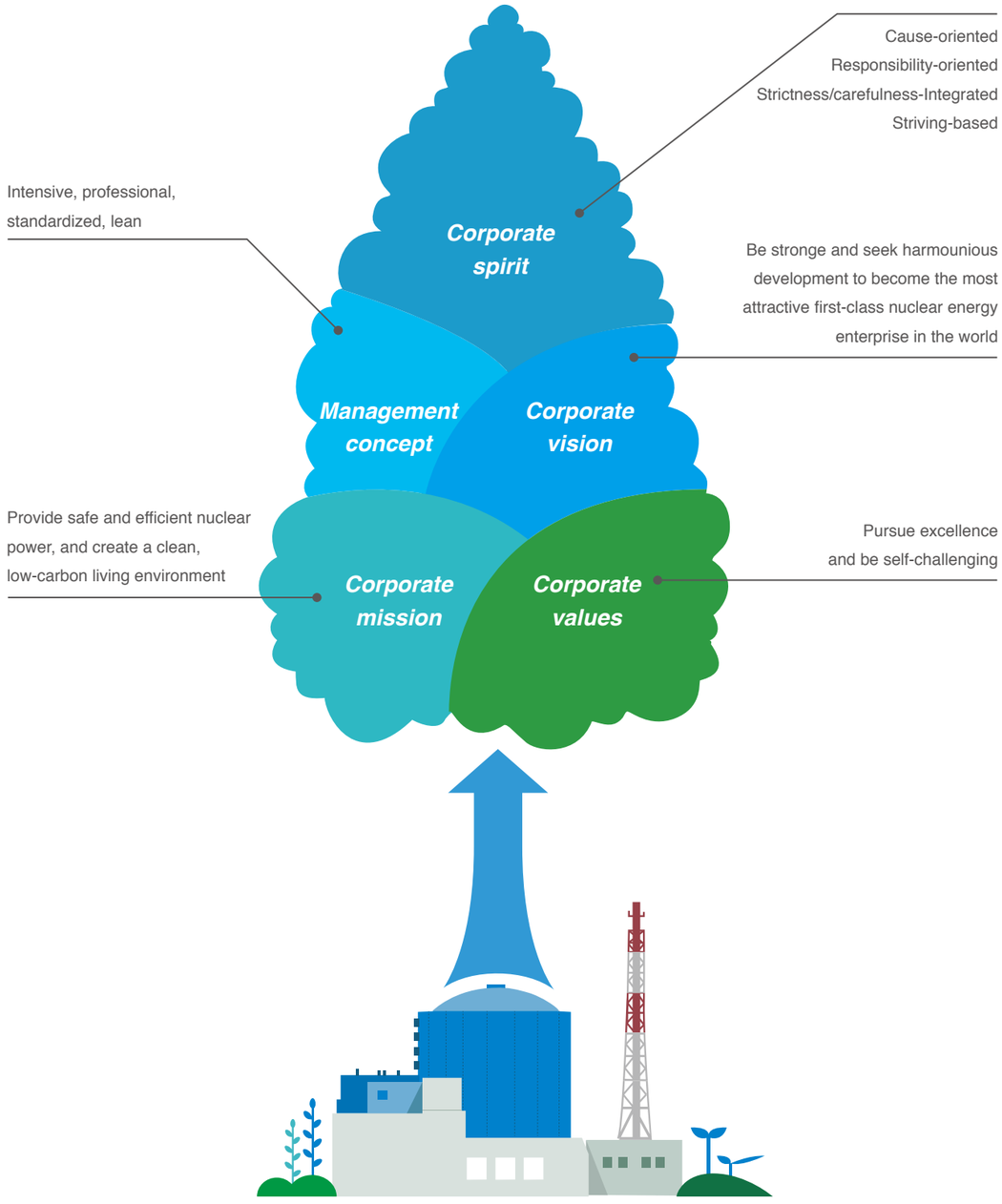



- In 2014, CNNP's load factor was leading at home among the WANO indicators. CNNP was assessed to be outstanding in overhaul management and publicity, becoming the industry benchmark.
- In January 2015, Qinshan Nuclear Power Base was comprehensively completed, becoming China's nuclear power base with the greatest installed capacity, the highest equipment localization rate, and the best investment ratio of nuclear power units.
- National independent third-generation nuclear power technologies "Hualong One" was first used for Fuqing Nuclear Power Project, which lays a key foundation for CNNP's "going global".

| | | | |
|---|---|---|---|
| 1 | Qinshan Nuclear Power Plant in Zhejiang Province | Type of reactor: PWR CNP300<br>Rated power: 1X310MWe | China's first Nuclear Power Station independently designed , built, operated and managed, hailed as "national glory", with safe and stable operation for 23 years |
| 2 | Qinshan Nuclear Power Plant No. 2 in Zhejiang Province | Type of reactor: PWR CNP600<br>Rated power: 2X650MWe<br>2X660MWe | China's first large commercial Nuclear Power Station independently designed, built, operated and managed |
| 3 | Qinshan Nuclear Power Plant No. 3 in Zhejiang Province | Type of reactor: HWR CANDU700<br>Rated power: 2X728MWe | China's first HWR Nuclear Power Station reaching international standards in nuclear power engineering management |
| 4 | Qinshan Nuclear Power Expansion Project in Zhejiang Province (Fangjiashan Nuclear Power Project) | Type of reactor: PWR CNP1000<br>Rated power: 2X1089MWe | First 1,000 MWe nuclear power unit in Zhejiang Province |
| 5 | Tianwan Nuclear Power Plant in Jiangsu Province | Type of reactor: PWR VVER1000<br>Rated power: 2X1060MWe | China's first Nuclear Power Station with full digital instrument control system |
| 6 | Fuqing Nuclear Power Plant in Fujian Province | Type of reactor: PWR CNP1000<br>Rated power: 4X1090MWe<br>2X1150MWe | Continuous construction of six 1,000 MWe units |
| 7 | Sanmen Nuclear Power Project in Zhejiang Province | Type of reactor: PWR AP1000<br>Rated power: 2X1250MWe | The world's first nuclear power unit of third-generation AP1000 |
| 8 | Changjiang Nuclear Power Project in Hainan Province | Type of reactor: PWR CNP600<br>Rated power: 2X650MWe | Energy Construction No. 1 Project in Hainan Province |
| 9 | Tianwan Nuclear Power Expansion Project in Jiangsu Province | Type of reactor: PWR VVER1000<br>Rated power: 2X1126MWe | China's first newly built nuclear power project reviewed and approved after the nuclear accident at Fukushima in 2011 |

| | | | |
|---|---|---|---|
| 10 | Xudapu Nuclear Power Project in Liaoning Province | 11 | Taohuajiang Nuclear Power Project in Hunan Province |
| 12 | Zhangzhou Nuclear Power Project in Fujian Province | 13 | Sanming Nuclear Power Project in Fujian Province |
| 14 | Nanyang Nuclear Power Project in Henan Province | 15 | Haixing Nuclear Power Project in Hebei Province |


## Corporate Philosophy



# Corporate Strategy

Accelerating construction of a clean, efficient, safe and sustainable modern energy system is inseparable from nuclear power development, and safe development of nuclear power is one of the main ways to optimize China's energy structure. Although the crisis triggered by the nuclear accident at Fukushima affected the world's nuclear power development to a certain extent, many countries and regions including China still regard nuclear power as an important direction of energy structure adjustment. According to the Energy Development Strategy Action Plan (2014-2020) issued in 2014, China, by 2020, will achieve the nuclear power installed capacity of 58,000 MWe, and under-construction capacity of above 30,000 MWe.

Firmly grasping the opportunity of transforming economic development modes and vigorously developing clean energy, CNNP formulates the development strategy to promote sustained and sound development.

### Strategic objectives

In 2020, our market competitiveness, sustainable profitability and approach to risk-minimization will be enhanced significantly, and higher value will be created for shareholders, employees and society. We will also establish ourself as a fast learning, innovative, energetic and excellence-pursuing, first-class, global nuclear energy enterprise.

### Strategic positioning

We will firmly integrate corporate social responsibility and we will develop into an influential nuclear energy construction and operation enterprise that uses advanced management, is sustainable, and has international influence and competitiveness. We will continue to provide society with clean and efficient energy.

### Strategy composition

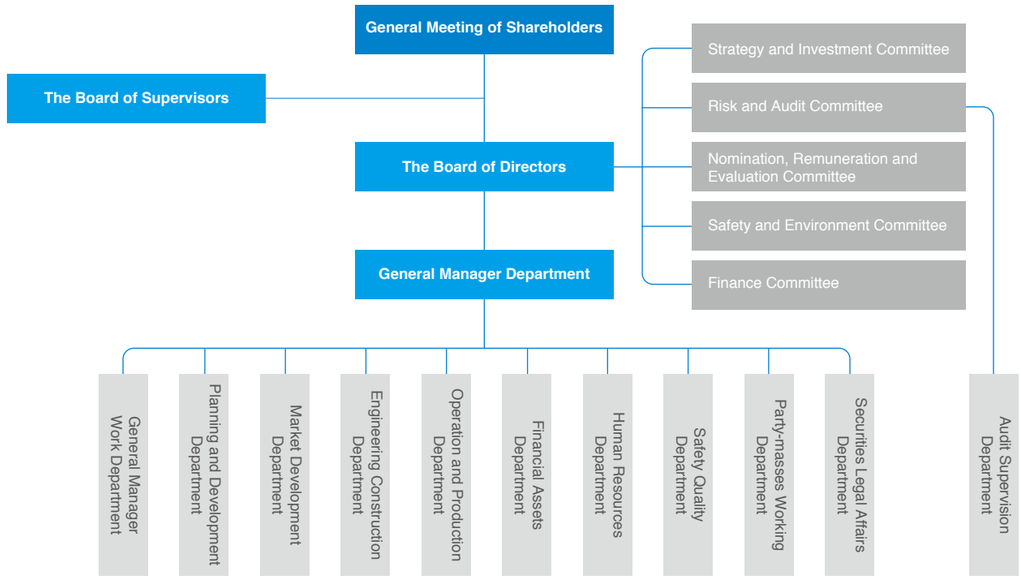
**Scale strategy:** Achieve scale development, constantly integrate resources, fully utilize resources and complement each other's advantages, and strive to reduce operation costs.
**Standardization strategy:** Continuously make each field more professional, standardized, informationized and leaner, to enhance overall management and build up core competitiveness.
**Internationalization strategy:** Develop overseas markets, participate in international cooperation, establish a positive and enterprising corporate culture, and build a nuclear power brand with international influence.



# Corporate Governance

## Governance Structure

In accordance with the Company Law, the Securities Law, the Code of Corporate Governance for Listed Companies in China and all other relevant laws, regulations and normative documents, CNNP formulated Articles of Association and corresponding rules that defined rights and liabilities and decision-making procedures, and established the general meeting of shareholders, the Board of Directors, the Board of Supervisors. Five specialized committees, namely, Strategy and Investment Committee, Risk and Audit Committee, Nomination, Remuneration and Evaluation Committee, Safety and Environment Committee, and Finance Committee, were set up under the Board of Directors. Since establishments, General meeting of shareholders, the Board of Directors, and the Board of Supervisors have independently and effectively operated and performed corresponding duties and obligations in accordance with relevant laws, regulations, Articles of Association and relevant rules for implementation, and the governance system is standardized and effective.




## Risk Management and Internal Control Management

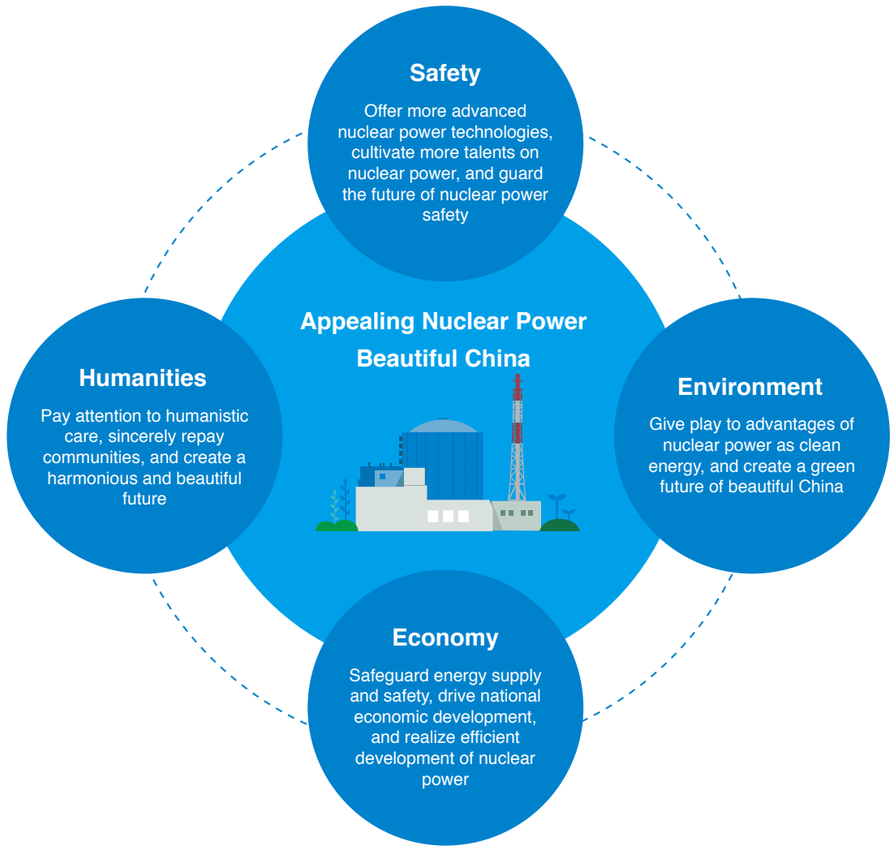
Upholding a prudent attitude and a high sense of responsibility, CNNP constantly improves the risk management and internal control management. To build the investment and financing platform and the operation and management platform for nuclear power industry, CNNP actively incorporates risk management into strategy development, business planning and daily operation and management, establishes a comprehensive risk management system, promotes continuous, optimized and closed-loop management in internal control featured by "design—construction—operation—evaluation—improvement", fosters and establishes good risk control culture, enhances concentrated management of funds and capital operation efficiency, so as to realize resource intensification, technical specialization, operation standardization and lean management. In 2014, CNNP identified 10 major risks (safety risk and operational risk) of 6 categories through analysis of internal and external environmental factors, and took specific measures to reduce the degree of likelihood and impact, and risk level.

# Social Responsibility Management

We constantly improve the social responsibility system, enhance communication with stakeholders, gradually incorporate corporate social responsibilities into corporate strategies and daily operations and management, and constantly improve capability to assume responsibilities, thus gaining public recognition and support.

## Concept of Social Responsibility

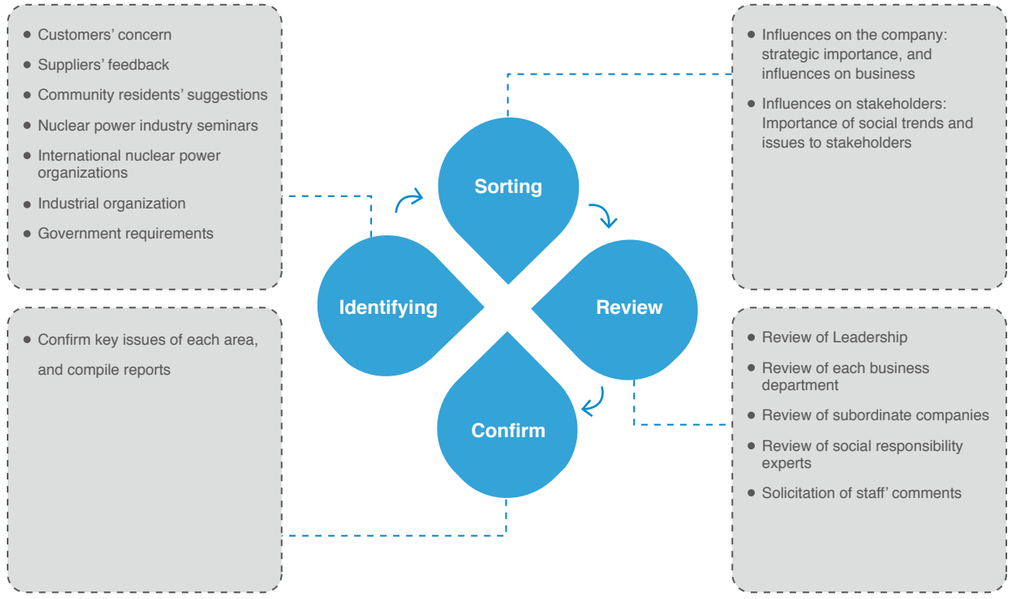
Responsibility is the cornerstone of all nuclear power enterprises. We are committed to becoming the most appealing international nuclear enterprise, supplying safe and highly efficient nuclear power to the society, creating a clean, low-carbon environment for the public, and working together with partners for a better future of beautiful China.




## Identifying Material Issues

According to actual conditions of nuclear power operation, possible economic, social and environmental impacts of nuclear power plants in stages of siting, design, construction and operation, as well as industry features, requirements and suggestions of stakeholders and social responsibility experts, we identify material issues on performing the social responsibility to enhance the effectiveness and values of social responsibility fulfillment.

G4 Material Disclosure: G4-18



## Material Issues

G4 Material Disclosure: G4-19 & G4-20 & G4-21

| Material Issues | Corresponding GRI G4 Aspects | Aspect Boundaries (Internal) | Aspect Boundaries (External) | Page Numbers |
|---|---|---|---|---|
| **Safety** | | | | |
| Safety management, safety supervision and safety improvement | Security practices | CNNP and its holding, joint venture and equity participation companies | Not material | P23/P32 |
| Safety design | Customer health and safety | CNNP and its holding, joint venture and equity participation companies | Government, community residents, regulators | P29 |
| Project quality and safety | Supplier assessment for impacts on society | CNNP and its holding, joint venture and equity participation companies | Suppliers, community residents | P30 |
| Safe operation | Customer health and safety | CNNP and its holding, joint venture and equity participation companies | Government, community residents, regulators | P31/P32/P33/ P34/P35 |
| **Environmental** | | | | |
| Ecological protection before site construction | Biodiversity | Under-construction nuclear power projects of CNNP | Government, community residents | P40/P41 |
| Testing and disposal of radioactive matters | Effluents and waste | Operating Nuclear Power Stations of CNNP | Government, community residents, regulators | P43/P44/P45 |
| Environmental Impact Assessment | Biodiversity | CNNP and its holding, joint venture and equity participation companies | Government, community residents | P40 |
| Environmentally friendly and energy-saving design | Energy | CNNP and its holding, joint venture and equity participation companies | Government, community residents | P39 |
| **Economic** | | | | |
| Safeguard stable power supply | Indirect economic impact | Operating Nuclear Power Stations of CNNP | Community residents | P49 |

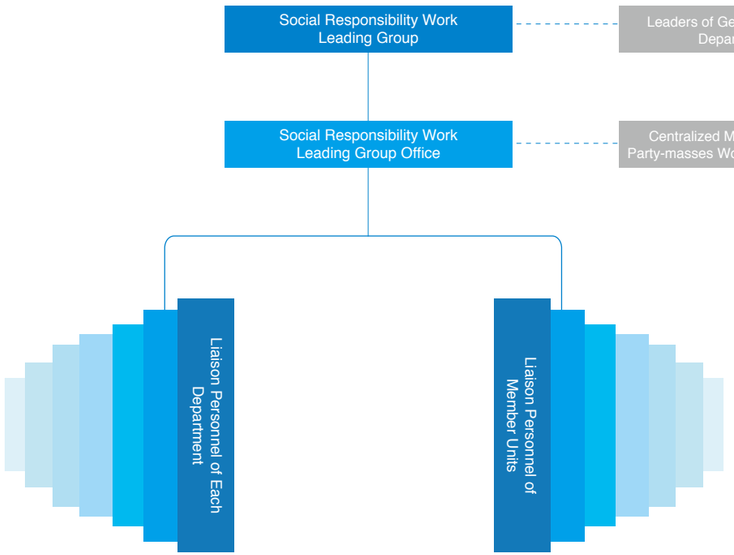
G4 Material Disclosure: G4-19 & G4-20 & G4-21

| Material Issues | Corresponding GRI G4 Aspects | Aspect Boundaries (Internal) | Aspect Boundaries (External) | Page Numbers |
|---|---|---|---|---|
| **Economic** | | | | |
| R&D and application of advanced nuclear power technologies | Indirect economic impacts | CNNP and its holding, joint venture and equity participation companies | Not material | P52/P53 |
| Equipment domesticization | Procurement practices | CNNP and its holding, joint venture and equity participation companies | Suppliers | P51 |
| Supplier management | Supplier assessment for impacts on society | CNNP and its holding, joint venture and equity participation companies | Suppliers | P52 |
| International cooperation | Indirect economic impacts | CNNP and its holding, joint venture and equity participation companies | Peers, industry association | P56 |
| **Employee** | | | | |
| Company and industry talents cultivation | Training and education | CNNP and its holding, joint venture and equity participation companies | Not material | P63 |
| Safeguard rights and interests of employee | Employment | CNNP and its holding, joint venture and equity participation companies | Not material | P61 |
| **Social** | | | | |
| Communication with stakeholders and science popularization publicity | Local communities | CNNP and its holding, joint venture and equity participation companies | Government, community residents, regulators | P16/P17/P18/P19 |
| Local infrastructure construction | Local communities | CNNP's under-construction nuclear power projects | Government, community residents | P66 |
| Social welfare | Public policy | CNNP and its holding, joint venture and equity participation companies | Government, community residents | P67 |

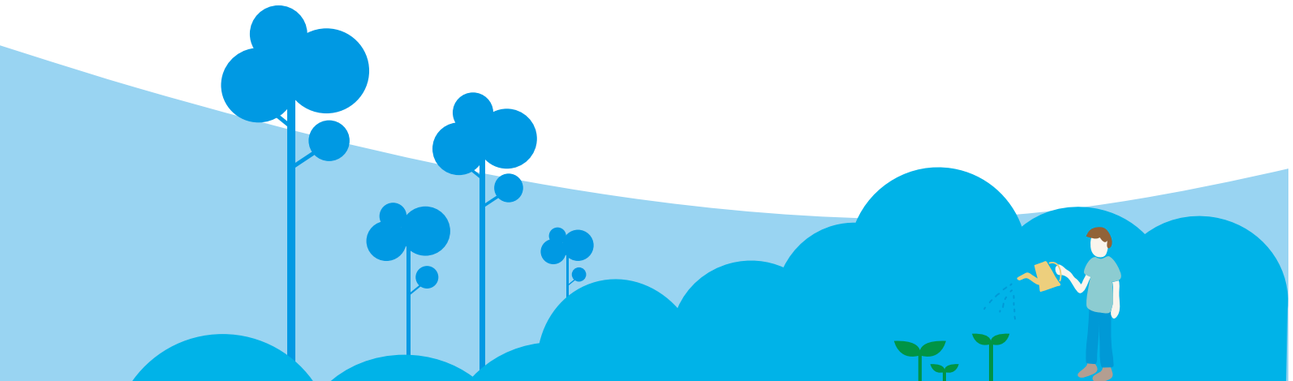
# Promoting Social Responsibility

## Establishing the Social Responsibility System

We established Social Responsibility Work Leading Group under the unified leadership of the General Manager Department. The Party-masses Working Department is in charge of the specific social responsibility work. A social responsibility organization system featured by complete organization, clear rights and responsibilities, interaction between superiors and subordinates, and highly efficient functioning is gradually formed. We promote member units to build the social responsibility work offices, allocate full-time/part-time social responsibility work personnel, and realize the comprehensive coverage of social responsibility organization in CNNP headquarters and key subordinate companies, so as to form a systematic social responsibility management and work network system. We regularly organize and convene social responsibility work conferences, to sum up and assess the proceeding situation of social responsibility work.

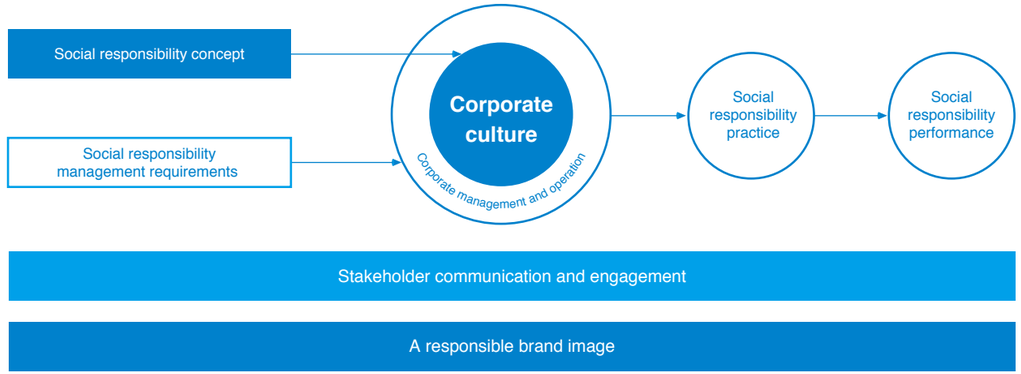



CNNP's Social Responsibility System



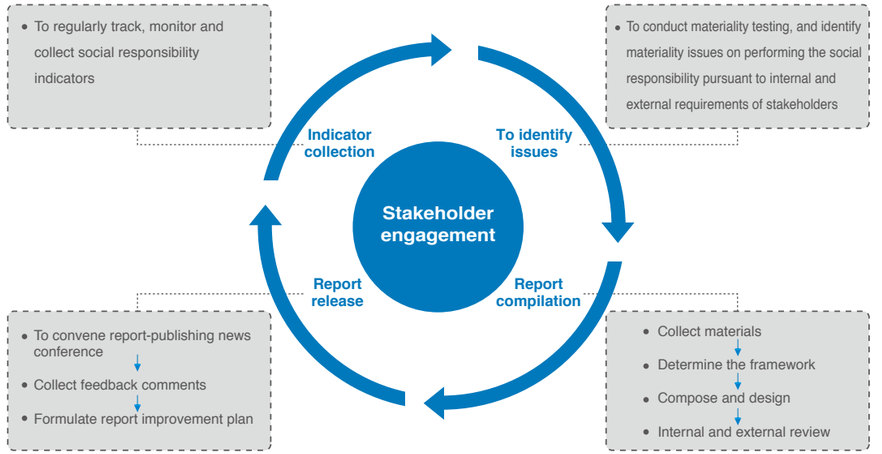
## Exploring the Social Responsibility Development Path

The integration of social responsibility into our corporate culture ensures the pursuit of sustainable value becoming a creed of both our corporate operations and our staff code of conduct. We have been exploring inner logic of social responsibility management model, linking concept and management requirements of social responsibility to all relevant management chains in order to enhance and bolster our responsible brand image.




## Social Responsibility Information Disclosure Management

We have further revised the Social Responsibility Report System of CNNP, defined the specific indicators of social responsibility information disclosure, incorporated indicator collection into daily work of member units, and realized interaction between headquarters and member units. We conduct full life cycle management over social responsibility report compilation, give full play to the role of the report in the social responsibility performance monitoring during the process of compiling and using social responsibility report, improve social responsibility management level, and strive to gain more support and understanding from the society of the Company's corporate operation and management.




Process of compiling the 2014 Social Responsibility Report of CNNP

# Transparency Management

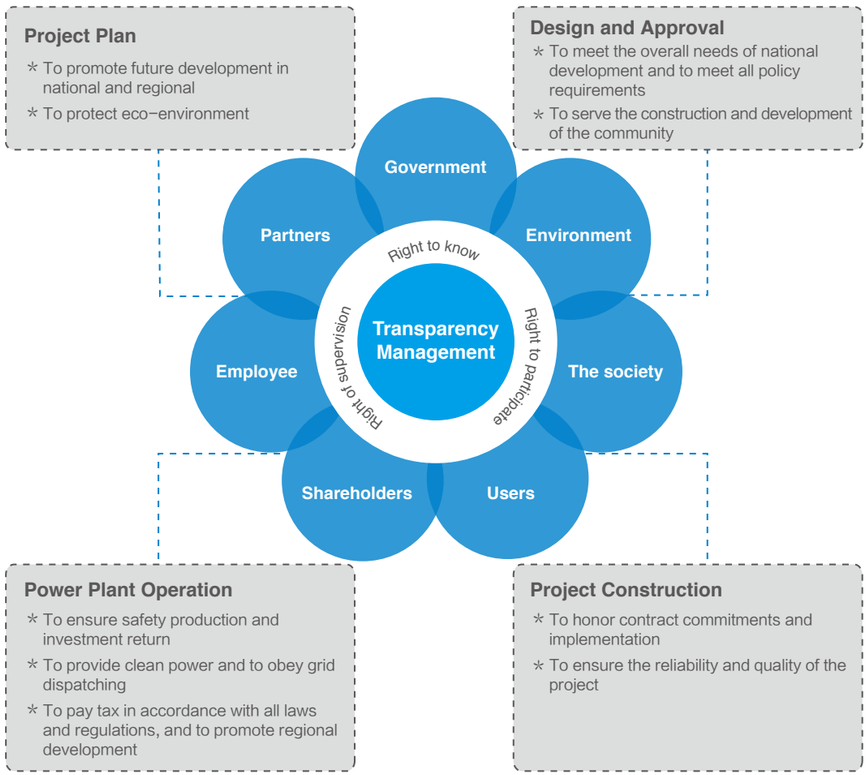
We actively communicate with stakeholders, establish a public and transparent communication mechanism, and actively carry out nuclear power science popularization and communication with the general public, to create a good social environment for nuclear power development.

"Communications managers and personnel, through direct and ongoing interactions with corporate leaders and plant management teams, develop strategic internal and external communications for management decisions, for external public affairs and to reinforce nuclear safety."

——WANO

In October 2014, WANO organized nearly 20 experts from all over the world to conduct a 12-day comprehensive assessment of CNNP, rating CNNP as an industry benchmark in publicity, and spread CNNP's experience to the world.

G4 Material Disclosure: G4-24 & G4-25 & G4-26 & G4-27




* Core demands of stakeholders

G4 Material Disclosure: G4-25 & G4-26 & G4-27

## Enhancing Public Understanding of Nuclear Power

Through micro-film, animation, cartoon and other new media, we make nuclear power knowledge easily understandable by the public, so as to help the public understand nuclear power more rationally. In 2014, CNNP organized 10 thematic publicity activities, promoted 10 micro-videos for publicity, and established the "Appealing Light" science popularization brand.

### Appealing Light Summer Camp

12 member companies of CNNP jointly held the Second "Appealing Light" Cup Chinese Nuclear Power Science Popularization Knowledge Contest and Summer Camp for middle school students, with an aim to make youngsters understand the principles of nuclear power generation and learn nuclear safety knowledge. Over 100,000 competitors participated in this activity.

### Dad Taught Me Nuclear Emergency Response Knowledge

Planning and making the animated version of the nuclear emergency response education film—Dad Taught Me Nuclear Emergency Response Knowledge, and publishing the supporting nuclear emergency comic strips for science popularization.

### Science Popularization Cartoons

Making China's first nuclear power science popularization cartoon Nuclear Power Stories, with a plenty of network language and humorous tone to make readers "smile".


### Micro Film

Nuclear Power "Little Apple" with over ten million network hits, was rated as "2014 China enterprises Top 10 cases of New Media Spreading" at the Second China Enterprises New Media Annual Conference.

G4 Material Disclosure: G4-25 & G4-26 & G4-27

## Inviting the Public to Experience the Charm of Nuclear Power

Through "micro-tourism", public forums, public open days and other activities, we invite stakeholders to personally feel the charm of nuclear power, and make the public willing to understand and approach nuclear power.

### Inspection of Nuclear Power Stations

In October, China Nuclear Huadian Hebei Nuclear Power Co., Ltd. organized personnel from land, planning and safety supervision departments of Binzhou Development and Reform Commission to inspect the Qinshan Nuclear Power Base, and have an informal discussion with Haiyan County Nuclear Support Office, which deepened these personnel's understanding of nuclear power and laid a foundation for follow-up construction of Haixing Nuclear Power Project.

### CNNP North Nuclear Power Communication Alliance

Jointly sponsored by CNNP Liaoning Nuclear Power Co., Ltd. and China Nuclear Huadian Hebei Nuclear Power Co., Ltd. and participated by relevant project preparation offices of CNNP in north, CNNP North Nuclear Power Communication Alliance is committed to enhancing regional exchanges and interaction, and developing new communication channels and models.

### Qinshan Nuclear Power Publicity and Education Center

On September 28, construction of Qinshan Nuclear Power Publicity and Education Center formally commenced in Haiyan Nuclear Power City. The Center will display the science popularization knowledge and development process of nuclear power, as well as the importance of safely and efficiently developing nuclear power in China's economic development, through acoustics, optics and other modern media technologies, as well as personal experience and interactions.

On October 11, CNNP held the open day event, inviting relevant leaders and media representatives to visit the master-control room of Qinshan Nuclear Power Station and the nuclear power fuel plants, and to intuitively feel the nuclear power safety management processes.



G4 Material Disclosure: G4-25 & G4-26 & G4-27

**Cases** "Appealing Light" lights up youthful dreams

In 2014, 12 member companies of CNNP jointly held the Second "Appealing Light" Cup Chinese Nuclear Power Science Popularization Knowledge Contest and Summer Camp for middle school students, attracting over 100,000 students from 34 provinces, municipalities and autonomous regions of China. During the event, students were also invited to participate in the science popularization lectures on nuclear power and visit the nuclear power science popularization exhibitions and Nuclear Power Stations, so as to gain nuclear power knowledge.

On July 14, during the 5-day summer camp, over 30 outstanding middle school students from 11 provinces and autonomous regions enjoyed an informative nuclear power technology and culture tour, feeling the vitality of appealing nuclear power and beautiful Jiangsu. By visiting the Nuclear Power Station exhibition hall, conducting field measurement of environmental dose, digesting the principles of nuclear power generation, and learning nuclear safe knowledge, those students eliminated the original mentality of "being afraid of nuclear power", and improved scientific literacy, which drives more people to form a rational nuclear power awareness.

Visiting a simulation room of Nuclear Power Station

Measuring the site dose of Nuclear Power Station

## Conscientiously accepting the public supervision

Through the comprehensive nuclear power information exchange platform, we timely release the information on operation indicators, environmental monitoring, three-wastes (waste water, waste gas and waste residues) control, and radiation protection, and conscientiously accept the public supervision. We regularly carry out satisfaction surveys, telephone surveys, visits and other activities, collect suggestions of stakeholders, and timely make feedbacks to enhance external stakeholders' understanding and support.

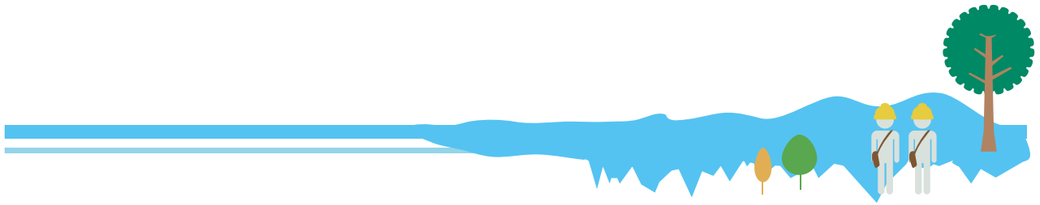
# 1 Dedicated to Safety
## for Better Development Quality

We regard safety as the lifeline of our cause and our corporate, and the foundation of staff happiness. We adhere to the “safety first and quality foremost” principle, pursue world-class safety performance, carry out whole-process safety management, and work together with all stakeholders to build a safe nuclear power industry.

For about 100 reactor years
The operating units have accumulated safety operations

90.0%
The average load factors of operating units has reached

65.3% The proportion of operating units achieving the WANO index advanced value



## Stakeholders' Expectations

- To ensure safe nuclear power operation
- To prevent nuclear radiation
- To safeguard staff's career health

## Our Actions

- Forming outstanding nuclear safety culture
- Constructing safety management system
- Adopting whole-process safety control
- Experience feedback
- Peer assessment

## Our Achievements

- No nuclear accident of level 1 and above
- Five "first" in Tianwan Nuclear Power emergency drilling
- Inviting the WANO to implement the headquarters-leveled peer assessment, and becoming the first nuclear power company in Chinese Mainland that accepted WANO's peer assessment

2014

## Our Promises

- Strengthen building of nuclear safety culture
- Improve safety and reliability of units
- Eradicate major human factor quality accidents
- Enhance all-staff safe quality education and training

2015

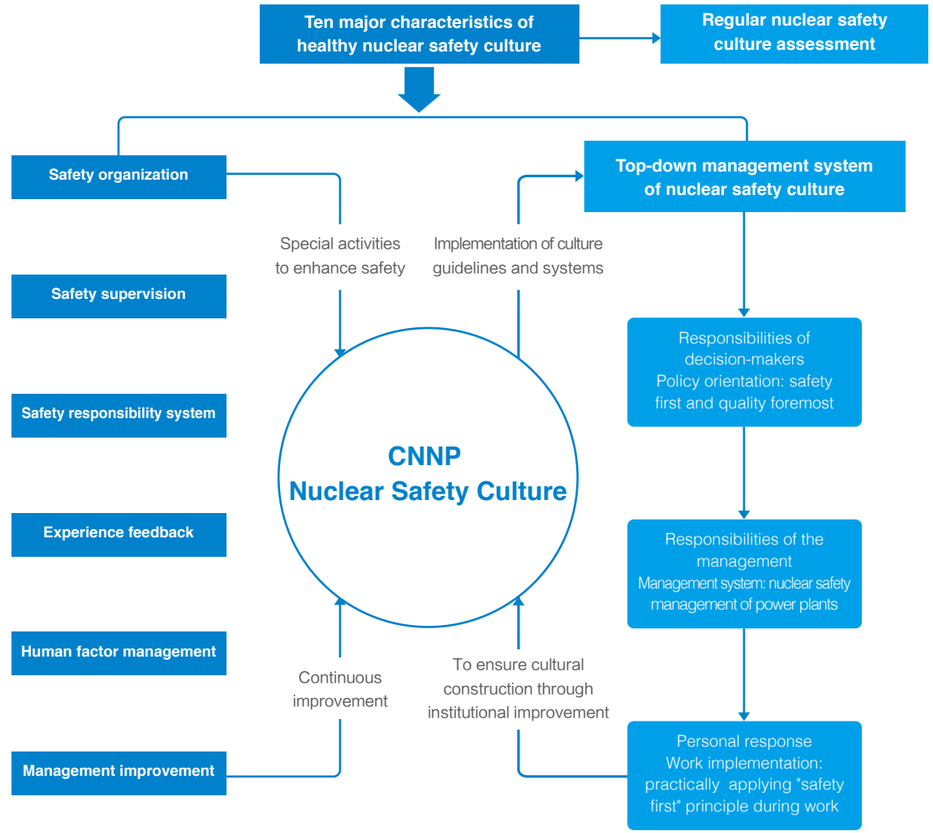


# Excellent Nuclear Safety Culture

Excellent nuclear safety culture atmosphere and humanistic environment could vigorously safeguard the safe operation of nuclear power stations. Upholding the healthy nuclear safety culture advocated by WANO, we regularly carry out nuclear safety activities, to deepen staff's attention to nuclear safety, incorporate nuclear safety culture into staff's awareness and life, and create the safety culture atmosphere of "zero tolerance" .

## Safety Management System

We constantly optimize the Safety Management System, enhance experience feedback and peer assessment, improve the safety supervision mechanism, and continuously improve the safe quality management level, to prevent any possible safety accidents.




CNNP Safety Management System


Major human-caused quality accidents and above (%)

Safety quality information reporting rate (%)

Rate of special operation personnel employed with certificates (%)

Safety risk performance of Qinshan Nuclear Power Plant and Tianwan Nuclear Power Plant in 2014

## Safety Culture Activities

Paying attention to the construction of nuclear safety culture, CNNP constantly enhances nuclear safety level. According to actual conditions and on the basis of implementing the overall policies and principles, member companies of CNNP design a series of safety culture activities more suited to themselves, to enhance staff's enthusiasm of learning professional knowledge and skills and make nuclear safety culture incorporate into daily operation and management.

### Cases Human error-proof clock

To stimulate and warn staff to correctly use human factor-proof tools and strictly implement the operation code of conduct, CNNP Nuclear Power Operation and Management Division 5 established the "human error reset clock" for real-time timekeeping of period without human error. In case of any minor human error, clock will be immediately reset to zero.

CNNP Nuclear Power Operation and Management Division 5 constantly creates new records of no human error. In 2013 and 2014, the number of days without human error events reached 100 for two times, and the number of days without human error reached 192. Human error-proof clock is promoted in other operation offices of CNNP, which stimulates competition among staff and enhances their confidence and pride, as well as safety awareness.


| Member Companies | Safety Culture Activities in 2014 |
|---|---|
| CNNP Nuclear Power Operation and Management Co., Ltd. | ● Organized and carried out collection event of ballad on safety production themed by "keeping rules and regulations in mind, carrying out safety production from ourselves", and collected 170 ballads which were closely associated with production, production site and reality, by which, safety culture was incorporated into staff's life<br>● Carried out the safety production month event themed by "enhancing red-line awareness, promoting safe development", combined the activities (including Review of Special Collapse Accident Prevention Campaign, Occupational Disease Prevention Knowledge Contest, and Corporate Safety Concept Collection Campaign) with the work of standardization compliance and troubleshooting, and gradually incorporated safety culture into company management |
| Tianwan Nuclear Power Co., Ltd. | ● Carried out publicities of the "healthy nuclear safety culture characteristics" released by WANO recently, organized activities of benchmarking and self-assessment training through compilation of Safety Culture Manual and showing of safety warning films, created a good safety culture atmosphere, made staff behave daily according to "healthy nuclear safety culture characteristics", and enhanced staff's responsibility awareness<br>● Invited the WANO Moscow Centre and China Nuclear Energy Association to conduct the joint peer assessment, comprehensively evaluate the performance of CNNP in aspects of safety culture construction in recent stages and seek for the improvement space<br>● Organized and carried out activities including human error prevention training, human error prevention observation guidance, special promotion campaign of overhaul for human error prevention, to enhance human error prevention awareness of on-site operation personnel and deeply promote the application of human error prevention tools in power plants |
| Sanmen Nuclear Power Co., Ltd. | ● Held the "nuclear safety culture and personnel performance tools" knowledge contest, to enhance staff's understanding of nuclear safety culture<br>● Organized and carried out 2014 Campaign of Soliciting Messages and Articles on Outstanding Nuclear Safety Culture , to deepen staff's understanding of nuclear safety culture<br>● Assisted the China Nuclear Power Joint Management Committee in peer assessment of nuclear safety culture, analyzed 1,058 questionnaires, had 63 on-site interviews, and obtained 559 data points through site assessment, providing a basis for optimizing nuclear safety culture building path<br>● Invited experts to publicize nuclear safety culture through delivering speeches, to make staff further understand nuclear safety during interaction with experts |
| Hainan Nuclear Power Co., Ltd. | ● Established a nuclear safety culture website, published the special issue of Healthy Nuclear Safety Culture Characteristics, convened the quarterly meeting of safety production leading group and carried out safe education and training, to improve staff safety awareness and accomplishment |

## Experience Feedback

CNNP pays attention to playing the role of experience feedback in enhancing safety management, analyzes and corrects deviations, equipment failures and human errors which occur in nuclear power operations and management, to prevent repeated occurrence of similar events. In 2014, we further improved the experience feedback system, upgraded the experience feedback management procedures, regularly held experience feedback meetings, and deeply promoted standard analysis of root causes of events. We enhanced communication and exchanges with member units, to make up for shortcomings of each other, which steadily improved our safe operation level and practice capability. In 2014, all nuclear power plants of CNNP submitted 59,145 status reports, and the experience feedback management system was implemented well as a whole.

## Peer Evaluations

We regard peer assessment as an important way of benchmarking international advanced experience, enhancing internal learning and improving ourselves. In 2014, CNNP organized and carried out 10 peer assessment activities at home and abroad, and coordinated 11 site visits.

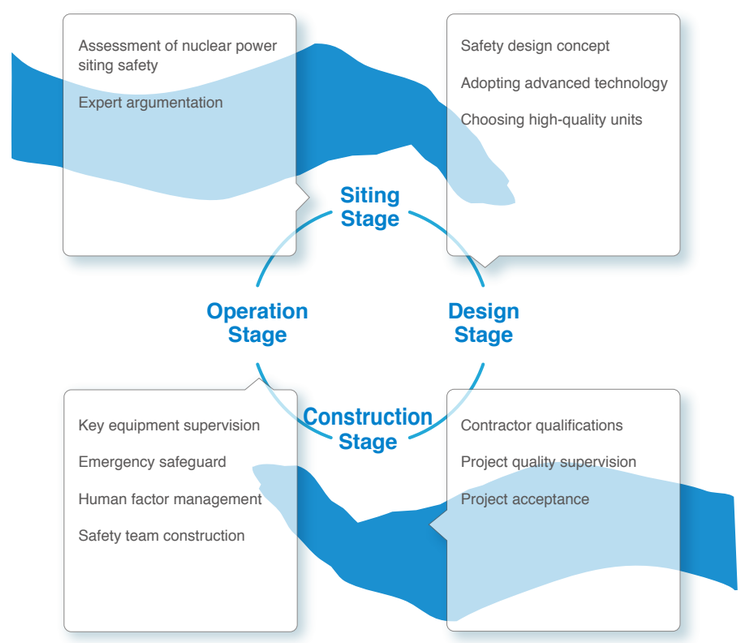
CNNP invited the WANO to implement the headquarters-leveled corporate peer review (CPR), becoming the first nuclear power company in Chinese Mainland that accepted WANO's peer assessment. CNNP was assessed to be outstanding in "overhaul management" and "publicity". Through this assessment, CNNP realized how to benchmark international advanced management and enhance safety and reliability of units, and set improvement targets.

**CNNP was assessed to be outstanding in "overhaul management" and "publicity" by WANO.**



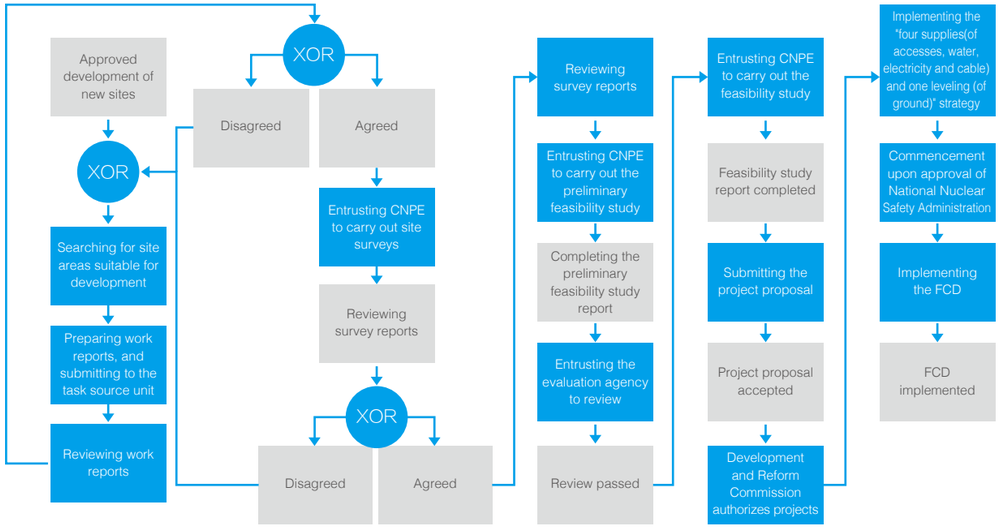
# Whole-process Safety Control

Safety and quality are complementary, and are core elements for smooth operation of nuclear power stations. We pay attention to whole-process control of safety and quality of nuclear power stations, follow the "safety first and quality foremost" principle throughout nuclear power planning, siting , design, construction and operation, conduct safety and quality management in each aspect, firmly grasp the lifeline (safety and quality ) for nuclear power development, and safeguard nuclear safety through actions.




## Siting

Site safety and reliability are the prerequisite and guarantee for high-quality and safe operation of nuclear power stations. We choose the site in strict accordance with the National Safety Regulation for Nuclear Power Plant Siting, and in full consideration of geological, climatic and hydrological and other natural conditions of the site, as well as population density, distribution and characteristics, and humanistic conditions. After obtaining the Nuclear Power Plant Siting Review Comments of the National Nuclear Safety Administration, we carried out feasibility demonstration and safety assessment of nuclear power plant siting, had it reviewed by nuclear safety expert review and gained their approval. In 2014, we chose sites for Haixing Nuclear Power Project in Hebei Province, Zhangzhou Nuclear Power Project in Fujian Province, and Jinqimen Nuclear Power Project in Zhejiang Province in strict accordance with the standardized siting process for nuclear power stations.




Process of siting for nuclear power stations of CNNP

Notes: CNPE: China National Nuclear Power Engineering Company Limited FCD: First Concrete Date

After screening and determining the candidate sites, we enhance safety impact inspection and supervision of candidate sites, to prevent human factors from affecting site safety. We regularly collect site information, carry out on-site inspections, and timely learn about changes of site suitability. We conduct "nuclear power plant impact assessment" of local new projects, to avoid the disruptive impact of new projects on site safety.

### Cases Fujian Sanming Nuclear Power Co., Ltd. conducts safety inspections to ensure site safety

Sanming Nuclear Power Project is an under-preparation project of CNNP, located at Shangfang Village, Gaotang Town, Sanming City. In 2014, Fujian Sanming Nuclear Power Co., Ltd. conducted 11 routine checks of surrounding site areas, to ensure the non-residential areas and limited development areas inside site range (limited development areas refer to the areas with a radius of 5 km with reactor as the center) keep good natural environment, undergo no ground-breaking, artificial development or construction activities, and own good conditions of water supply and drainage and transport. So, site safety of the project was effectively safeguarded.

## Design

Adhering to the safety design concept of multiplicity, single failure, diversity and independence, we have reached international or domestic leading level in technology, management and safety of nuclear power stations through introduction and independent R&D to ensure design quality.

We adopt high performance nuclear power units, own PWR, HWR and other nuclear power units with mature technologies, and first grasp the core key technologies of third-generation nuclear power AP1000 in the world. Sanmen Nuclear Power Unit 1 becomes the world's first unit with AP1000 technology.

| Issues | New Technology, New Knowledge | Technical Level Comparison |
|---|---|---|
| Technology | ● Fully digital instrument control system | Industry leading |
| | ● AP1000 unit | Industry leading |
| | ● Real-time data system for power plant | Leading at home |
| Management | ● Comprehensive management system of overhaul | Industry leading |
| | ● Equipment reliability management (3D master device simulation overhaul and plant roam system, etc.) | Industry leading |
| Safety | ● Status report system | Leading at home |
| | ● Career health management system | Leading at home |
| | ● Emergency duty schedule system | Industry leading |
| | ● Three-wastes management system | Leading at home |
| | ● Physical protection system | Leading at home |

# Construction

Good construction quality is necessary to ensure safe operation of nuclear power station, which can not stably operate without high quality. We firmly follow the "quality first" principle, strictly review and choose contractors, and enhance project quality supervision, to ensure construction quality of nuclear power station.

In 2014, we deepened the project quality management, organized and carried out "quality month" activities of different themes in each operating and under-construction nuclear power plants . Each nuclear power plants organized and carried out form-rich and content-rich activities including defect elimination contest, professional skills competitions, job training, advanced enterprise benchmarking, quality culture manual compilation, and quality knowledge contest. They also actively organized various quality trainings on "great quality" concept, compilation and implementation of quality plan, and outstanding performance process management, to constantly improve the management level and quality culture level of nuclear power plants.

Hainan Nuclear Power Co., Ltd. won two titles of "2014 National Excellent Quality Management Team" jointly issued by China Association for Quality, All China Federation of Trade Unions, All-China Women's Federation and China Association for Science and Technology. It is the first time that QC team of under-construction nuclear power project of CNNP obtained the national honors.

| Safety and Quality Performance of Under-construction Nuclear Power Projects of CNNP in 2014 | |
|---|---|
| Ratio of special operation personnel employed with certificates | 100% |
| Major quality accidents of equipment due to human factors | 0 |
| Major explosion accidents of high pressure-bearing equipment and above | 0 |
| Event of dangerous materials (explosives) lost or stolen | 0 |
| Major fire accidents and above | 0 |
| Major traffic accidents and above | 0 |



# Operation

We safeguard safe operation of nuclear power stations by paying close attention to each aspect of nuclear power operation, and enhancing safety management around personnel quality, operating environment and equipment status, etc.

## Human Factor Management

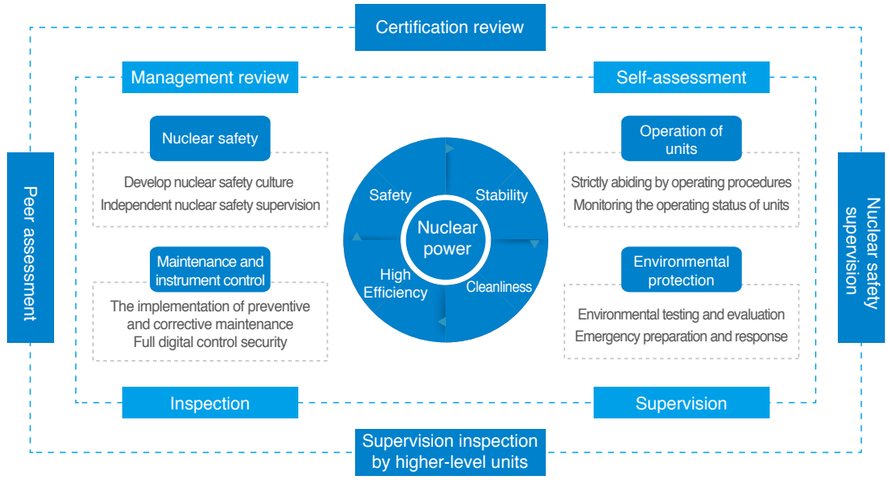
CNNP pays attention to human error prevention management, strengthens human error prevention mainly through human error prevention skills contest and enhancement of staff awareness and skills, and trains staff to be prudent so as to prevent impacts of human error on safety.

In 2014, CNNP held the Second Human Error Prevention Skills Contest consisting of field operation simulation contest and knowledge contest, to test staff's theoretical and practical capability. Contests not only could help staff enhance field operation capability, but are also conductive to deepening staff's attention to safety.


Human error prevention tools are widely used in the nuclear power sectors to prevent and mitigate the human error risks, posing demands for workers of nuclear power stations in work mentality, process and means, etc.

## Safety Supervision and Tour Inspection

To enhance independent supervision capability of member units, CNNP formulated the Annual Plan of Tour Inspections by Chief Security Officer and the Tour Inspection Rules for Chief Security Officer, which further regulates the tour inspections by Chief Security Officer. In 2014, CNNP launched six comprehensive tour inspections by Chief Security Officer throughout the year.




Nuclear safety supervision system of CNNP

### Cases

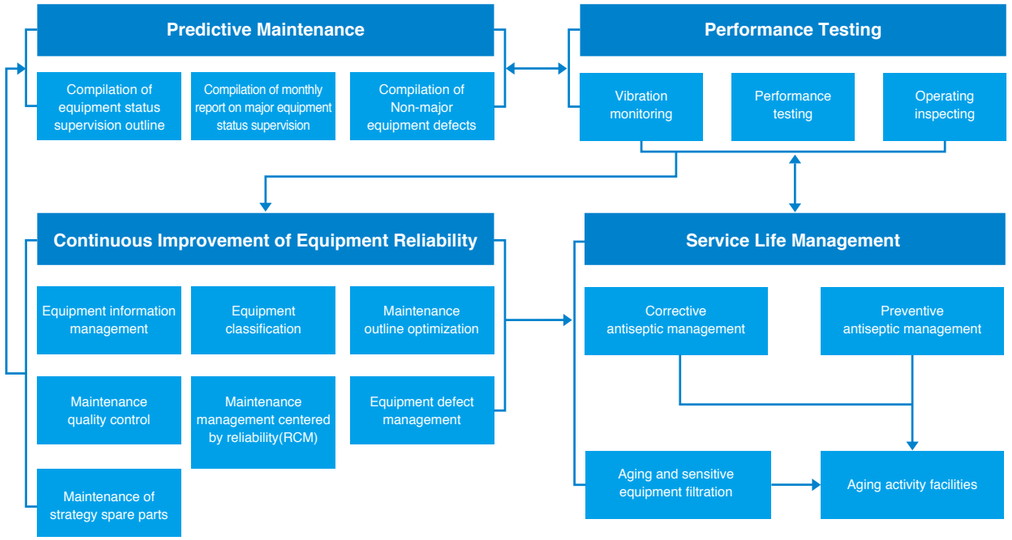
**CNNP Nuclear Power Operation and Management Co., Ltd. put "industrial safety management" database platform into operation**

On the basis of daily supervision and tour inspection, management tour inspection, observation and guidance, CNNP Nuclear Power Operation and Management Co., Ltd. launched the "industrial safety management" database platform, which was independently designed and developed in May 2014. Through this platform, CNNP Nuclear Power Operation and Management Co., Ltd. can release industrial safety supervision reports on a daily basis, record industrial safety conditions on site in a real-time way, and generate statements automatically, which enhanced the efficiency of generating various industrial safety statements, and timeliness of site management. Through the platform, CNNP can conduct collection, statistics and analysis of industrial safety management data, learn about safety information in a real-time way and enhance the capability to address risks.



## Equipment Management

We established a sound equipment management process and a standardized and automatic equipment monitoring mechanism, actively carry out maintenance researches around equipment reliability, and strengthen equipment aging management and anticorrosion management. We conduct the equipment status supervision and management, and keep eyes on status of operating units. We track equipment defects and abnormities through status reports, and timely solve equipment problems, to ensure safe operation of units.




CNNP Equipment Management Process

## Emergency Safeguard

We always insist on the national emergency working policy for nuclear accidents and improving the overall emergency level of CNNP by enhancing emergency capability of the staff, perfecting the emergency mechanism, and strengthening nuclear emergency management and reserve supply, etc.

We strictly abide by national Emergency Response Management Regulations on Nuclear Accidents in Nuclear Power Plants, establish a quick response mechanism covering leadership, management and execution layer, comprehensively build emergency bases, set up emergency rescue teams, improve emergency response plans, and enhance multilevel and normalized emergency exercises, to ensure the quick response mechanism to be consummate and effective. We take emergency training as an important means of improving the emergency capability of the staff. We organize and carry out training activities on various themes such as nuclear emergency professional training, emergency response plan training, emergency response training and so on, to enhance the emergency executive capability and level of the staff.


On May 19, National Nuclear Safety Administration and China National Nuclear Corporation held the inauguration ceremony of "China National Nuclear Corporation Nuclear Power Plant Nuclear Accident on-site Emergency Rescue Team" in Qinshan Nuclear Power Base.

### Cases Fuqing Nuclear Power Plant Emergency Mobile Power Supply

Mobile emergency power supply can provide temporary power in taking emergency measures to remit the consequence of the accident, and offer time for restoring the alternating current power supply inside and outside the plant in case that the nuclear power plant loses all the alternating current power supplies. In order to guarantee the surplus heat of long-term discharge reactor cores and spent fuel pools, guarantee the integrity of the third sealing barrier and improve the safety of nuclear power operation in case of the whole plant's blackout, Fuqing Nuclear Power Plant, pursuant to the experience feedback of the accident in Fukushima, Japan, conducted the plan design and innovative improvement of the emergency mobile power supply, the research achievement of which was successfully applied to Fuqing Nuclear Power Plant, and won second prize for progress in science and technology in 2014 China power construction through the science and technology appraisal of China Electric Power Construction Association and China National Nuclear Corporation.

### Cases Tianwan Nuclear Power Plant Emergency Exercise Created Five "First"

In October 2014, Tianwan Nuclear Power Plant held the 2014 on-site comprehensive emergency exercise, creating five "first", that is, first using the exercise scenarios, first carrying out 1.5-day emergency exercise, first deploying the nuclear emergency rescue force of CNNC in practice, first comprehensively verifying the nuclear emergency relevant improvement items of Fukushima nuclear accident, and first having a multi-participation of central government agencies, supervisory authorities, nuclear emergency response offices, CNNC, partners, and peers in nuclear power industry for a more comprehensive inspection of the emergency work of Tianwan Nuclear Power Plant.

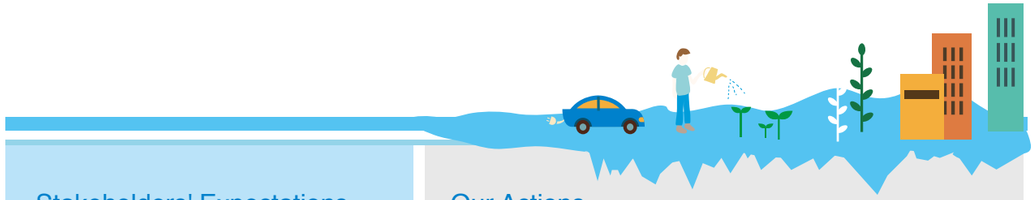

# 2 Supporting the Environment with More Greenness

The cause of nuclear power is to make the sky bluer, the water cleaner, the air fresher, which is also a green dream for people to create a beautiful China. As the first enterprise in Chinese Mainland establishing a nuclear power plant, we shoulder the important mission of exploring and developing nuclear power clean energy, strive to exert the irreplaceable role of nuclear power in reducing greenhouse gas emissions and protecting the environment, and make contributions to building a green and beautiful China.

**0.304** ton of standard coal equivalent per ten thousand yuan
Comprehensive energy consumption per ten thousand yuan output value

**0** Environmental pollution accidents

**56.57** million tons
Compared with thermal power with same generating capacity, carbon dioxide emission reduction by the nuclear power



## Stakeholders' Expectations

- Providing safer and more reliable clean energy
- Protecting eco-environment
- Protecting the biodiversity around the nuclear power station

## Our Actions

- Enhancing the environmental awareness of the staff
- Conducting environmental impact assessment for nuclear power project in siting stage
- Conducting green construction
- Enhancing radioactive matters management
- Conducting environmental monitoring

## Our Achievements

- Clean on-grid energy reaching 52.766 billion kWh, equivalent to a saving of 17.47 million tons of standard coal consumption, or a reduction of approximately 56.57 million tons of greenhouse gases emission
- No environmental pollution event
- Passed the certification of three systems, that is, Quality Management System (ISO9001), Environmental Management System (ISO14001) and Career Health & Safety Management System (OHSAS18001)

2014

## Our Promises

- Make comprehensive energy consumption per ten thousand Yuan industrial added value no more than 0.326 ton of standard coal
- Ensure no environmental pollution event
- Steadily improve the clean generating capacity

2015



# Environmental Management System

We adopt the whole-process management model to enhance the environmental management level and carry out environmental protection specifically. In 2014, we revised and improved rules and regulations such as the Identification and Appraisal of Environmental Factors, the Safety Management Manual of Quality, Environmental & Career Health, the Environment and Career Health Safety Performance Surveillance and Measurement and so on, which ensured the whole-process environmental control on track. Tianwan Nuclear Power Plant passed the certification of three systems, that is, Quality Management System (ISO9001), Environmental Management System (ISO14001) and Career Health & Safety Management System (OHSAS18001) and enhanced the efficiency of environmental management.

| Member Companies | Activities to enhance the environmental awareness of the staff in 2014 |
|---|---|
| CNNP Nuclear Power Operation and Management Co., Ltd. | ● Carrying out environmental training with the participation of 200 person-time<br>● Carrying out environmental knowledge contest activities |
| Fujian Fuqing Nuclear Power Co., Ltd. | ● Carrying out basic authorization training of Environmental Protection and enhancing the publicity and implementation of relevant management procedures for environmental protection<br>● Carrying out environmental protection publicity activities<br>● 80 person-time participation in environmental protection training, and 200 person-time participation in environmental protection welfare |
| Hainan Nuclear Power Co., Ltd. | ● Carrying out publicity activities to publicize concept of energy saving and low carbon through intranet, multimedia display system, publicity posts in plants and so on<br>● Carrying out publicity work and actions on electricity saving in plants, in accordance with the arrangement of national energy saving publicity weeks, the fact of the severe lack of electricity in Hainan province and the deployment of electricity saving in Changjiang County |

# Environmental Impact Assessment

In the siting stage, the Company, in strict accordance with the requirements of national laws and regulations, carry out the environmental impact assessment, entrust environment assessment report compilation units with approved qualification of the Ministry of Environmental Protection to compile the Environmental Impact Assessment Report, and report it to the Ministry of Environmental Protection and National Nuclear Safety Administration. The report would be examined by the Nuclear Safety Experts Committee organized by the National Nuclear Safety Administration and an official written reply would be given by the Ministry of Environmental Protection.

The information such as names and contact information of the companies being assessed, possible impact on the environment from the construction project and plans and measures of environmental protection would be made public.

In the site approval stage of Zhangzhou Nuclear Power Plant (Phase I), a public comment survey is carried out to engage the public to the environmental impact assessment and ensure transparency and credibility of the assessment, the public support rate reached 99 percent.

# Green Construction

In the construction process of nuclear power project, we actively follow the principle of "giving priority to prevention and integrating prevention and treatment", improve the pollution prevention and treatment facilities, reduce impacts of the constructing project to surroundings and enhance the protection to the animals and plants on the site to realize the green building.

## Reducing Noise and Fugitive Dust Emission

Strictly in accordance with the national relevant standards, we enhance the impact management on noise and fugitive dust of the under-construction projects, regularly carry out environmental monitoring, identifying, evaluating, and controlling each environmental impact factor to effectively control the source of pollution noise and fugitive dust on the site. In 2014, there was no event of complaint by environmental protection departments or the villagers around.

In noise control, pursuant to the project requirements, geology conditions, project size, construction machinery and other factors, we choose reasonable explosion method, use advanced construction equipment with slight noise, and reasonably arrange the construction process. In the construction process, we strictly manage the equipment with loud noise and avoid using equipment with loud noise at the same time. As for the noise operating which possibly affects the acoustic environmental sensitive spot, we try not to construct at night or take measures such as forbidding use of heavy machinery at night to reduce noise pollution.

In fugitive dust control, the construction region of CNNP adopts the stone or concrete hardening ground, and equips watering cart for the plant roads to dedust the fugitive dust on the plant roads and in the dust areas. The production line of the stone processing factory is set with the automatic dedusting system, and the internal factory uses the ventilating system, air cleaner and special labor protection articles to control the dust. Fences are used to separate the excavation operating region to reduce the dust.

## Duly Disposing Project Wastes

For all the possible wastes on the under-construction nuclear power project site, CNNP has formulated a management system for standard management of all the links of the waste collection, transportation, storage, and disposal to realize the classified disposal of wastes and easy recycle and utilization of wastes.

Through source control, utilization of construction wastes and other measures, CNNP reduces the total amount of wastes, sets the concentrated storage areas for wastes, timely clears up and disposes construction wastes to optimize the construction wastes management. As for household garbage, we try adopting the enclosed garbage containers in designated sites for garbage collecting and packaging by classification, and entrust contractors to timely transport and dispose those garbage.

## Saving Water Resources

One of the important ways to save water resources is the effective management and reasonable utilization of water. CNNP pays attention to the efficient utilization and management of water to enhance the maintenance of water supply system.

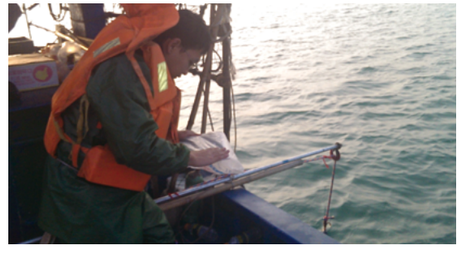
CNNP advocates the concept of "saving water resources" and adopts the sprinkler design using the reclaimed water from the sewage treatment station in the factory as irrigation water in order to fully utilize water resources. We inspect the pipeline position before the construction in case they are ruptured by accident when excavating and thus avoid any possible water leakage.

## Biodiversity Protection

We pay attention to eco-environment and biodiversity protection around the power plant. In the construction process of the project, we conduct background surveys on the eco-environment and monitoring surveys on the temperature of base water of the plant site, carry out remote temperature sensing monitoring of sea water and actual temperature measuring of the sea surface water, marine ecological survey and biodiversity survey to monitor the environmental changes of the surrounding sea areas. Surveys show that operating units of CNNP have not created obvious adverse impacts on the eco-environment and fishing resources of the surrounding sea areas.

**Cases** Changjiang Nuclear Power Project in Hainan Province carries out biodiversity protection monitoring

Hainan Nuclear Power Co., Ltd. pays attention to adopting protection measures for living things of the site's sea areas, enhances temperature monitoring of the base water in offshore areas before operating, and measures the living environment of the coral reef organisms and local specialties such as the Danzhou Pinctada maxima, western decapterus maruadsi and golden sardines, etc., and the Company records the environmental base data to accumulate relevant data supports for further operation of the nuclear power plant. At the same time, we also actively cooperate with local Environmental Protection Department to carry out environmental protection work so as to ensure further operation of the nuclear power plant pose the minimum impact on local marine ecology through designs of optimizing the retaining dam and such.



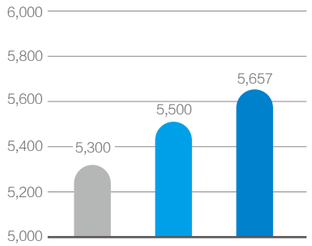
Changjiang Nuclear Power Project in Hainan Province carries out temperature monitoring of the base water in offshore areas before operating.

# Clean Running

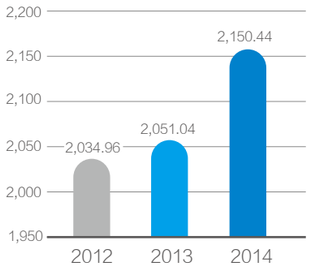
## Addressing Climate Changes

Nuclear power is a clean energy, whose electricity generating process does not emit carbon dioxide, nitrogen oxides, sulfur dioxide and other gases. Facing the environmental pressures, China has vigorously promoted the energy structure transformation, encouraged development of nuclear power to replace some coal power so as to reduce pollutants emission and improve environmental quality. As the first established nuclear power station corporation in Chinese Mainland, we are committed to promote the development of nuclear power clean energy and increase generating capacity to contribute to the reduction of the total amount of national greenhouse gas emission.

In 2014, CNNP's on-grid clean energy was 52.766 billion kWh, which is equivalent to saving approximately 17.47 million tons of standard coal consumption compared to the same scaled coal power station. Correspondingly, the clean power reduces approximately 56.57 million tons of greenhouse gases emission, equivalent to planting 157,000 hectares of forests.



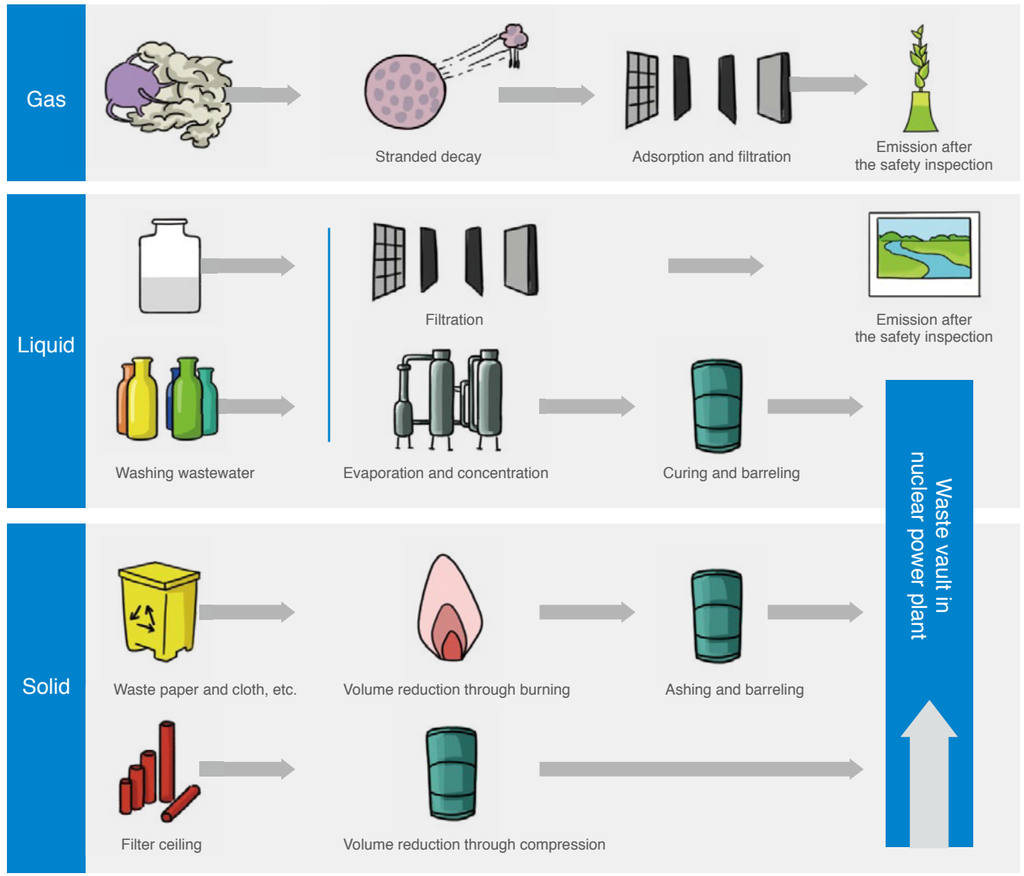

The corresponding carbon dioxide emissio reduction of the clean power(10 thousand tons)




Comprehensive energy consumption (10 thousand tons of standard coal)

## Radioactive Substances Management

We strictly carry out Regulations on the Safety Management of Radioactive Waste, and insist on the radioactive substance management's principles of "reduction, harmlessness, proper disposal and permanent safety". On the basis of actual situation and strict compliance with state laws and regulations, each member company formulated a more detailed approach to radioactive waste management and conducted researches on radioactive substances management. In 2014, no nuclear pollution event happened in CNNP.




Handling procedures of radioactive substances in nuclear power plant

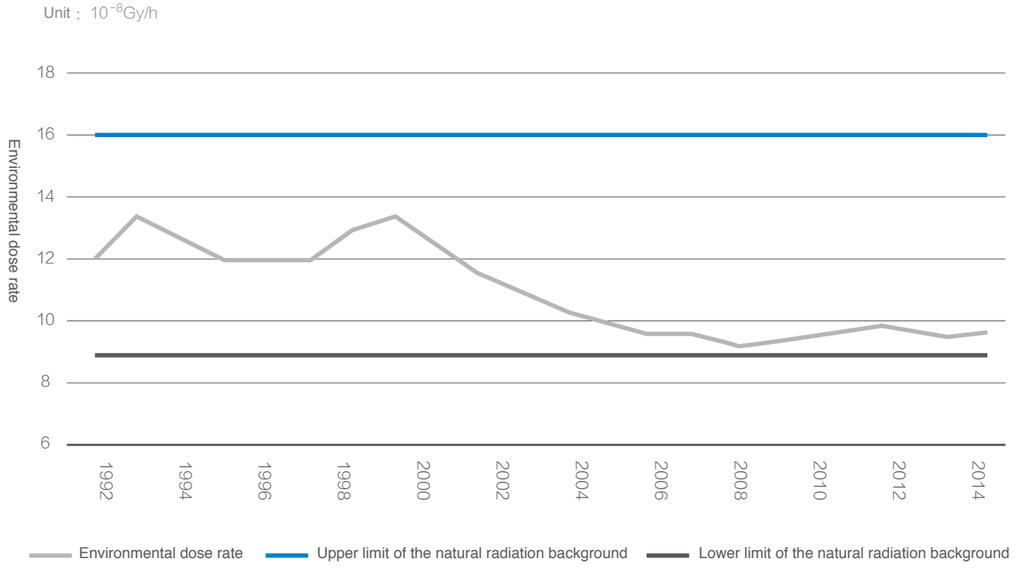
# Environmental Impact Monitoring

We need to keep improving the systems of environmental monitoring and environmental inspection records. Pursuant to the National Regulations on Environmental Radiation Protection of Nuclear Power Plant, air, terrestrial environment and the medium of marine environment around 10 km to the nuclear power plant have been monitored and analyzed, the key data of which have been timely released to the public for receiving supervision from the society and the public. According to the long-time tracking and monitoring from environmental monitoring agency, environmental radiation level of surrounding areas remained the same as that when all the running nuclear power plants were not built in 2014, which did not bring a bad impact on the environment.

**Cases** The Real-Time Monitoring of Environmental Monitoring Buildings in Tianwan Nuclear Power Plant

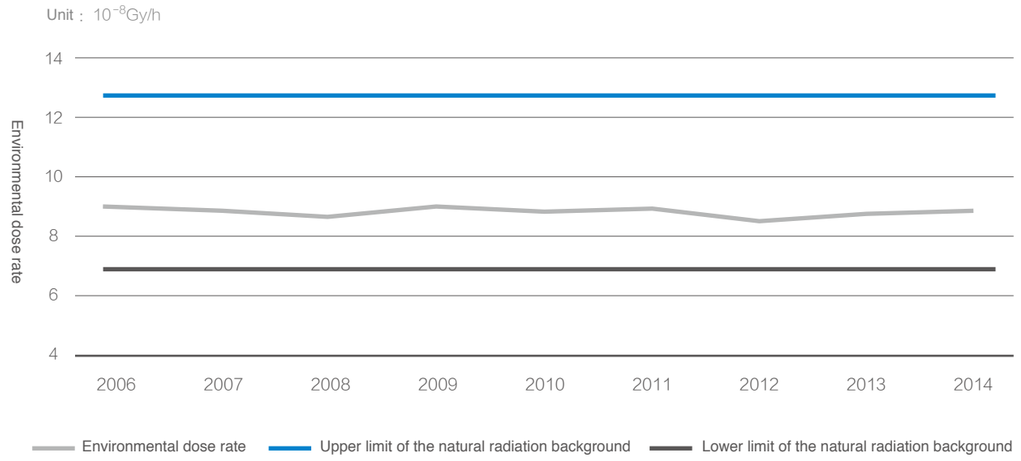
Tianwan Nuclear Power Plant pays attention to environmental monitoring, and constructs independent environmental monitoring buildings and laboratories outside the plant to monitor, analyze and evaluate the environment around 50km to the power plant. 10 fixed environmental monitoring stations for the monitoring of radiation level of γ were set to track and monitor the horizontal changes of environmental radiation, report the monitoring results to the public, and open the feedback channels to improve the information transparency.

Since the construction of the nuclear power plant, we have continually carried out the environmental monitoring of radiation. The monitoring result shows that the radionuclide content in various kinds of media around the nuclear power base is in the fluctuation range of natural radiation background, and the operation of units has no detectable impact on the environment.




Monitoring results of the environmental γ dose rate in the key monitoring sites of Qinshan Nuclear Power Plant from 1992 to 2014



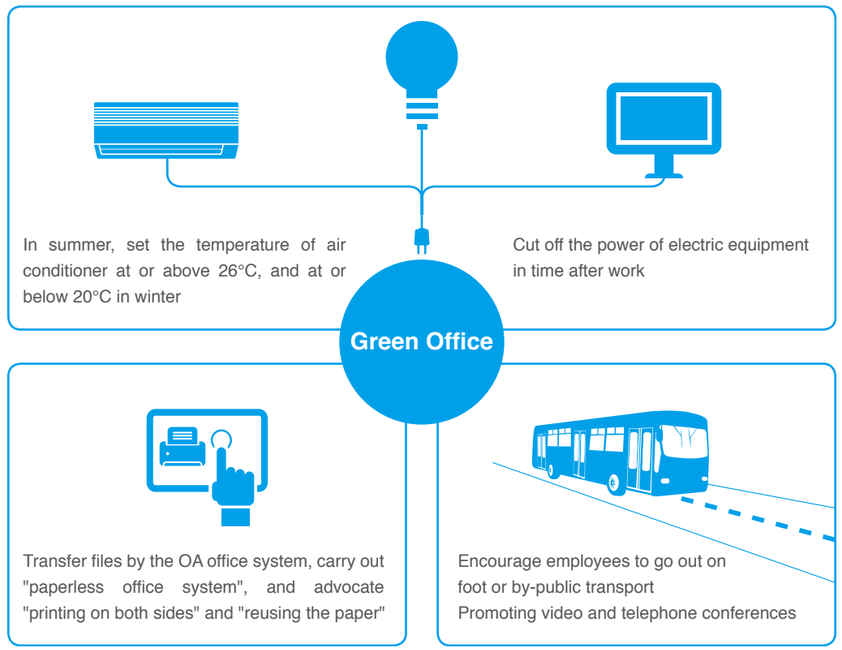



Monitoring results of the environmental γ dose rate in the key monitoring sites of Tianwan Nuclear Power Plant from 2006 to 2014

Note: γ represents the main radiation element probably produced in the operation of nuclear power, which is a natural radiation in the environment.

# Green Office

We advocate green office and formulate relevant rules and regulations. Energy conservation and emission reduction are brought into daily management by means of setting consumption limits of water and electricity. We formulate relevant regulations, such as Management Rules of Comprehensive Office Buildings, and the Management Specification of Air Conditioning Systems in Office Buildings, etc. We set up sortable garbage bins and recycling bins for used batteries in order to recycle all kinds of waste. Meanwhile, we strengthen saving of electricity in the office area, and reduction of unnecessary usage of air conditioning and lighting.



# 3 Powering Economy

## for Mutual Prosperity and Win-Win Results

As a safe, clean and highly efficient source of energy, the nuclear power actively contributes to the development of the nuclear power industry chain and the boom of regional economy, besides offer of electric power support for social and economic development. By deepening scientific and technological innovation, and optimizing industry chain management, CNNP contributes to synergetic development of the nuclear power industry and constantly increases the proportion of nuclear power in the national energy supply to provide energy power for China's economic development and create long-term economic values for society.

52.766 billion kWh
Generating capacity

About 18.8 billion Yuan
Main business income

About 6.16 billion Yuan
Total profit

## Stakeholders' Expectations

- Continuously stable power supply
- Win-win industry chain
- Realizing the independence and domestication of nuclear power technologies to promote the industry progress
- Promoting the economic prosperity of the operating region

## Our Actions

- Providing stable power supply
- Improving the localization rate of equipment
- Enhancing independent R&D and innovation of technologies
- Developing inland nuclear power
- Driving the development of correlative industries
- Promoting localized procurement
- Contributing to regional economic growth

## Our Achievements

- The whole year saw a generating capacity of 52.766 billion kWh
- CNNP's load factors maintained the leading level among the WANO indicators at home, and CNNP was assessed to be outstanding in overhaul management by WANO
- Drove the development of China Nuclear Power City in Haiyan County, which brought about a total output of 20 billion Yuan through affiliated enterprises of nuclear power
- Invested 249 million Yuan into technical R&D, obtaining 25 awards of science and technology
- Independently developed third-generation nuclear technology "Hualong One" was adopted for the Fuqing Nuclear Power Plant
- Cumulatively funded over 40 million Yuan to support social undertakings of Haiyan County where relevant supporting industries, business and services have vigorously developed

2014

## Our Promises

- Continuously enhance the equipment reliability management, maintain units' stable operation and avoid unplanned shutdown in stock units
- Ensure nuclear power projects' going into operation on schedule and new projects' startup and being approved
- Do well in the technology research on the emission and capacity reduction of radioactivity of inland nuclear power, and complete the concluding and acceptance of national scientific research programs

2015

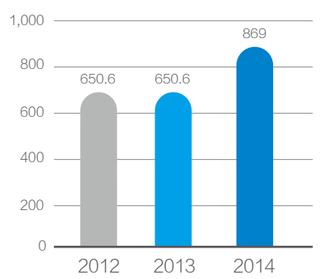


# Enhancing the Ability to Ensure Power Supply

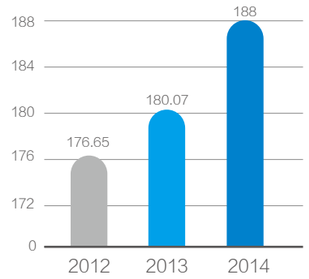
The nuclear power is an efficient, economical and reliable clean energy. Compared with thermal power, hydropower and other means of power generation, the nuclear power generation is more efficient, but with lower fuel consumption, greater generated output and less waste emission. Grasping trends of the energy development, CNNP safely develops nuclear power to firmly safeguard economic and social development.

## Stable Power Supply

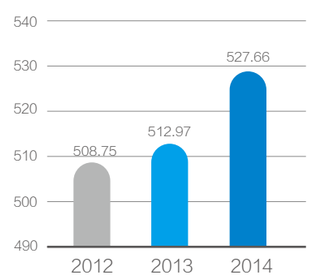
CNNP safeguards the safe production and operation of stock units through enhancing units' availability ratio, peaks dispatch and other means. 2014 saw a generating capacity of 52.766 billion kWh, with full-plate load factor reaching 90.03 percent and capability factor 89.85 percent, both of which were the best record in history. The company is leading among domestic nuclear power companies in this regard.




The installed capacity of operating nuclear power units in holdings (ten mW)

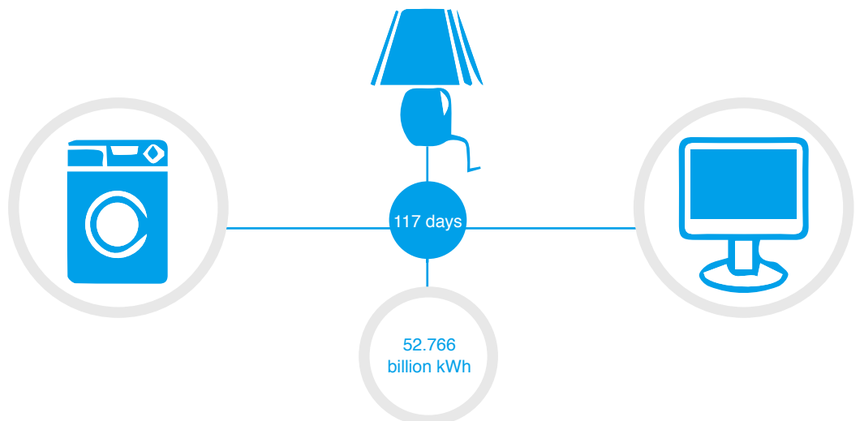



Main business income (hundred million Yuan)




Generating capacity (hundred million kWh)

In the face of the increasing electricity demand year by year and the power shortage in the summer peak of electricity consumption, CNNP formulates a special work plan for such peaks and reasonably adjusts working hours every year to ensure the completion of overhaul tasks before the advent of such peaks. At the same time, CNNP carries out such inspection works as the special safety patrol on flood and typhoon prevention to ensure the safe production of units in the high-temperature weather. In 2014, CNNP's operating nuclear power units always maintained a safe, stable and efficient operation, steadily increased power generation and achieved good operating performance to meet the electricity demand of thousands of households in the summer peak of electricity consumption.




52.766 billion kWh can meet the needs of residential electricity consumption of a large city with a population of 1 million for 117 days

## Improving Power Supply Capability

Since the equipment's reliability and operation time is the basis for stable and increasing power supply, we keep the equipment's normal operation through the overhaul, minor repairs and daily maintenance. We reasonably arrange overhaul for involved units and carry out overlapped inspection work to transport lines through overhaul, optimizing and other ways to avoid the losses caused by transport capability constraints while enhancing operation reliability. The time limit for the overhaul should be shortened to effectively increase units' operation time and improve power supply capability. In 2014, CNNP completed 8 overhaul tasks in which the quality, safety and schedule were well controlled; management was continuously optimized; the time limit for the overhaul cumulatively reduced by 15.29 days of million power, and approximately 367 million kWh of generating capacity effectively increased.

- The overhaul project of 300,000 Kwh unit R15 in Qinshan Nuclear Power Plant lasted for 18.12 days, hitting a record in refueling overhaul duration of operating nuclear power units at home.
- The 111overhaul project of unit 1 in the Qinshan Nuclear Power Plant No. 2 lasted for 56.21 days, hitting a record in refueling overhaul duration of nuclear power units of the same type at home over the past decade.
- The 304 overhaul project of unit 3 in the Qinshan Nuclear Power Plant No. 2 lasted for 28.8 days, indicating leading achievements in unit overhaul projects at home with no unplanned halt or shutdown in the whole fuel cycle since the last overhaul.

Meanwhile, we steadily promote the development of new nuclear power plants. The preliminary work of Haixing Nuclear Power Project in Hebei Province has been approved by Hebei Province Development and Reform Commission; the preliminary work of Jinqimen Nuclear Power Project has been approved by Zhejiang Province Development and Reform Commission; the preliminary work of "Hualong One" project in Fuqing units 5&6 has been approved by National Energy Administration. Therefore, CNNP will significantly improve nuclear power supply capability in the future.



# Joining Hands with Partners for Win-win Development of Industry Chain

As a leading company in the industry chain, we give full play to our own technological advantages and management experience, share development opportunities with partners in the industry chain, and optimize cooperation models to jointly explore a nuclear power development path of high quality and win-win industry chain.

## Equipment Domestication

The domestication of nuclear power equipment is a problem that CNNP must overcome to realize independent development. We have always been treating the independence and domestication of nuclear power's key equipment as a key part of our mission to promote nuclear industry system construction of China.

**Cases** The Equipment Localization Rate of Fangjiashan Nuclear Power Project Reached 80 Percent

In the Fangjiashan Nuclear Power Project, able and qualified home manufacturers were given priority in purchasing fuel assemblies and simulators, which led to the domestication of pressure containers, vapor generators and turbo generator units; foreign manufacturers and home counterparts cooperated to produce equipment that cannot be produced in full set at home, which improved home manufacturers' production level. Main pump was cooperatively made by Austria Andritz AG and Harbin Electric Power Equipment Co., Ltd., and the emergency diesel was cooperatively produced by German MTU and Shanxi Diesel Engine Co., Ltd., which resulted in 80 percent of equipment localization rate.

## Supplier Management

CNNP constantly optimizes supplier management to actively create a procurement environment that is fair, just and open. Relying on supplier management system, the Company propels suppliers to improve products quality and perform social responsibilities to promote the sound development in nuclear power industries.

Stick to responsible procurement concepts. We strictly abided by purchasing procedures, firmly reject all forms of commercial bribe and corruption, and convey the concept of social responsibilities to supplier partners. We require cooperative partners to provide responsible products and services, encourage suppliers to apply for ISO and other standard system certification, and include relevant requirements of environmental protection, quality commitment, no wages in arrears, safety protection for site workers and insurance into the contract text for enhancing suppliers' responsibility awareness.

Support and drive the development of SMEs. Paying attention to collecting suppliers' information, the Company established databases of qualified suppliers and standby suppliers, to whom preference should be given in choosing follow-up suppliers, and cultivated a group of internationally compatible medium and small-sized suppliers. We provide the training in environmental protection, personal health, safety production, etc. for long-term suppliers, and the induction training for suppliers who participate in such outsourced production as warehouse management and construction of thermal insulation layer to ensure relevant staff's qualification. In 2014, Fuqing Nuclear Power Plant trained 36 suppliers in social responsibilities, the environmental protection and safety management, and helped over 20 suppliers improve their technologies or services.

# Contributing for Mutual Benefits and Common Growth

The Nuclear Power Project integrates high safety, high technology, multidisciplinary, cross-industry and other particularity, which determines the necessity and importance to synergistically and innovatively develop nuclear power industry chain. With the global vision and the mental state of openness and inclusiveness, CNNP cooperates with industry partners to actively carry out technology R&D and cooperation exchanges, cultivate industrial talents and promote the development of nuclear power cause.

## Technology R&D

By giving full play to our own advantages of resources and capabilities, we carry out technology R&D and innovation to realize breakthroughs in key technologies of China's nuclear power cause. In 2014, China's independent third-generation nuclear power technology "Hualong One" was adopt for using for Fuqing Nuclear Power Project on a trail basis. The advanced nuclear fuel element (CF3) independently developed by CNNC was tested in the nuclear reactors of Qinshan Nuclear Power Plant, which marks a milestone in China's independent R&D course of nuclear fuel technologies.

**Cases** Independent Third-Generation Nuclear Power Technology "Hualong One" was First Used for Fuqing

In November 2014, CNNP was approved by National Energy Administration to apply the integrated "Hualong One" technical scheme into Fuqing units 5 and 6 to construct domestic demonstration projects, verify China's independent third-generation nuclear power technology and smoothly carry out preliminary work of Fuqing units 5 and 6. As an important brand for China's nuclear power to "go global", the landing of "Hualong One" in Fuqing would greatly help the CNNP participate in international competition in an all-round way, laying a foundation for ultimately realizing the national strategic goal of nuclear power's "going global".

On the basis of China's over-three-decade experience in nuclear power's scientific research, design, manufacture, construction and operation, "Hualong One" is the third-generation nuclear power type developed and designed by fully referring to international advanced concepts of third-generation nuclear power technologies, drawing experience feedback from the Fukushima accident and adopting the internationally highest safety standard, so it has completely independent intellectual property. The safety and performance indicators of "Hualong One" have reached the advanced level of the international third-generation nuclear power technology.

## Extended Reading:

**Definition of the third-generation nuclear technology**

To eliminate the public doubt about nuclear power safety and economicality, the Unites States and Europe have successively introduced Advanced Light Water Reactor Utility Requirement Documents (URD) and European Utility Requirements for LWR Nuclear Power Plants (EUR), which present higher requirements for newly-built nuclear power plant in terms of safety, economicality and advancement. Internationally, the nuclear power units that meet requirements of URD or EUR documents are generally called the third-generation nuclear power units.

The third-generation nuclear power plant is superior in the design of facilities capable of preventing and mitigating serious accidents, with the economical efficiency comparable to that of natural units and the massive adoption of second-generation mature technologies for energy conversion.

The third-generation nuclear power unit mainly has the types of reactors including ABWR, System80+, AP600, AP1000, EPR, ACR, among which the most representative are the United States' AP1000 and French EPR.

**249 million Yuan**
Total R&D Investment

**25 Awards**
Science and Technology Achievement

**Over 80 Awards**
Patents

**Cases** Establishing the HWR advanced fuel technology R&D center

The supply capability of nuclear fuels directly determines the scale and speed of nuclear power development. In 2014, CNNP established the HWR advanced fuel technology R&D center which is in charge of HWR development strategy research, advanced fuel and isotope technique R&D, and provided support to HWR projects at home and abroad. Advanced fuel HWR can meet the latest safe requirements and third-generation nuclear power technology requirements, having good safety. The establishment of HWR advanced fuel technology R&D center is conducive to promoting the long-term development of China's nuclear power cause.

## Developing Inland Nuclear Power

To build nuclear power plants inland can shorten the distance of electric power supply and reduce loss, hence is one of the future development trends of nuclear power development. In 2011, Hunan Taohuajiang Nuclear Power Co., Ltd. applied the "Key Technology Cooperative Study Project on Inland Nuclear Power Safe Emission"-a special international cooperation funding project of the Ministry of Science and Technology, and conducted the first domestic special research on the nuclear power development. In 2014, Taohuajiang Nuclear Power successfully realized cascaded test, patents application and reports publication of relevant achievements, studied and realized the stated objective of reducing emission of radionuclide and boron, made technological achievements with domestic proprietary intellectual property rights, filled in the blank of the radioactive effluent processing technology in domestic nuclear power plants and broke the foreign technological monopoly. Through undertaking or participating in the many inland nuclear power researches, Taohuajiang Nuclear Power Co., Ltd. can provide necessary technical support and reference base for the future safe technology emission, environmental impact evaluation and evaluation of inland nuclear power plants.

## Extended Reading:

The US is a big nuclear power country in the world. According to the estimation of International Atomic Energy Agency in 2014, the US had the annual nuclear power generation capacity of 770,719 kWh, accounting for 19 percent of the gross generation, and ranking first in the world's nuclear power countries. There are 65 nuclear power plants in the US and 104 nuclear power units, among which, 64 nuclear power units of 39 nuclear power plants are located inland, accounting for 61.5 percent of the total nuclear power units in the US.

## Expanding International Cooperation

CNNP actively responds to the national energy development strategy, conducts international exchanges and deepens cooperation with its peers to promote CNNP's "going global".

CNNP formally wrote to the Chairman of WANO to propose establishing the Beijing Center of WANO, the construction work of which is expected to start in 2015. The establishment of Beijing Center of WANO will greatly enhance the cooperation of CNNP with WANO and China Nuclear Energy Association in such fields as peer assessment of nuclear power plants and experience exchanges.

CNNP comprehensively undertakes the cooperation business with Russia, conducts substantial benchmarking communication with French electric power company, and signs MOU on technology cooperation with Korean hydroelectric and nuclear power companies, which deal marked a steady advancement of international cooperation.

# Rooted in Regional Development for Promoting Local Prosperity

While providing energy to local economic development, we insist on opening, cooperation, mutual benefit and multi-win results, promoting cooperation with all stakeholders and injecting vigor into local economic development.

During the acquisition of ordinary maintenance items, CNNP pays attention to enhancing communication with the contractors of the neighboring power plants in the project location, and gives preference to reliable local contractors. In 2014, Taohuajiang Nuclear Power Plant signed 17 purchase orders with Changsha, Yiyang and other places in Hunan Province. In terms of projects, the rate of local acquisition accounts for 71 percent with a contract amount of 2.42 million Yuan and in terms of amount, the rate of local acquisition accounts for 72 percent, without purchasing disputes all through the year.

Haiyan County, Zhejiang Province, the location of the Qinshan Nuclear Power Plant, is dedicated to building a "China Nuclear Power City". By the end of 2014, there were nearly 70 affiliated enterprises of nuclear power in the China Nuclear Power City and 19 Research (R&D) Centers of provincial level or above. One enterprise has acquired Nuclear Security Acceptance Permit for Civil Use and 13 have been listed among qualified suppliers of CNNC, forming a favorable development pattern. In 2014, the gross output of affiliated enterprises of nuclear power in Haiyan County surpassed 20 billion Yuan.

**5,218 million Yuan**

Total amount of taxes and dues in 2014



"Qinshan Nuclear Power Plant, within 30 years of landing in Haiyan, has become an example of integrative and harmonious development of nuclear power with the local. As the nuclear power industry becomes increasingly bigger and stronger in Qinshan, the affiliated industries of nuclear power in Haiyan are beginning to take shape, involving a number of fields such as design, operation, maintenance, technology debugging, construction and installment of nuclear power projects. In January 2015, Qinshan Nuclear Power Plant Expansion Project (Fangjiashan Nuclear Power Project) was comprehensively completed and put into operation. Haiyan has therefore become the nuclear power base with the richest types of nuclear power station reactors, the highest domesticization degree and the best investment ratio of nuclear power units, providing a huge marketplace for the development of the affiliated enterprises of nuclear power in China Nuclear Power City of Haiyan.

Qinshan Nuclear Power Plant also plays an important role in promoting the economic and social development of Haiyan, accelerating the fast growth of Haiyan's economic strength, driving the significant progress of urban construction and social undertaking as well as greatly improving the humanistic environment. All these not only provide chances for the Haiyan residents to truly experience the advantages brought by nuclear power enterprises and enhance their sense of identity towards nuclear power enterprises, but also fully manifest the favorable image of nuclear power enterprises performing their social responsibility.

We hope that Qinshan Nuclear Power Plant and Haiyan County could deepen communicative and cooperative mechanism and continuously strengthen the integrative development between enterprises and the local on the basis of the current development foundation."

——County Magistrate of Haiyan County, Zhang Jian

"Hand in hand for 30 years, nuclear power enjoys pretty good development environment in Haiyan and has created the "Qinshan blueprint" and "Haiyan standard" in the development, making Haiyan a national place of harmony and happiness as well as a place of model."

——Office Director of Affiliated Industries of Nuclear Power in Haiyan County, Secretary of Party Group and Director of Off-site Emergency Office of Nuclear Power Accidents in Haiyan County, Xu Liuhua

# 4 Committed to Humanity for a Better Life

We treasure the understanding and support of staff and communities, conscientiously perform global corporate citizen's responsibilities, pay attention to and promote the community development, concern and protect staff development, and strive to create a healthy, harmonious and humanistic environment.

Staff training
108,219 person-time

Recruited fresh graduates
646 persons

The world's first
qualified AP1000 operators
74 persons

## Stakeholders' Expectations

- Providing reasonable salary and welfare
- Paying attention to career development and training
- Providing good working environment
- Providing working opportunities for communities
- Devoted to social welfare
- Serving for communities' construction and development

## Our Actions

- Respecting staff's rights and interests
- Paying close attention to career health
- Realizing staff's values
- Caring for the staff
- Supporting cultural and educational development
- Promoting community employment
- Improving construction, concerning people's livelihood
- Devoted to pubic welfare activities

## Our Achievements

2014

- Established the CNNP WeChat communication group, microblog as well as other network communication platforms, and knew about hot and difficult issues concerned by the staff timely
- No event of over-dosage limitation and abnormal irradiation
- Qinshan Nuclear Power Co., Ltd. has contributed 740 million Yuan as local educational surcharge in total
- Improved the five post sequences and provided definite clear career development paths for staff
- Developed corporate culture
- Boasted 937 nuclear power plant operators and 537 senior operators

## Our Promises

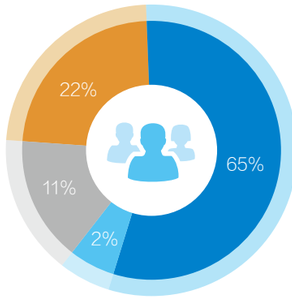
2015

- Improve career development path and provide the staff with broader development space
- Promote and use cooperation experience from Haiyan, Fuqing and other places for reference, and boost new projects' diversified cooperation in local places
- Give play to industry advantages and improve welfare of the people in poverty-stricken areas
- Encourage more staff and the public to participate in volunteer activities

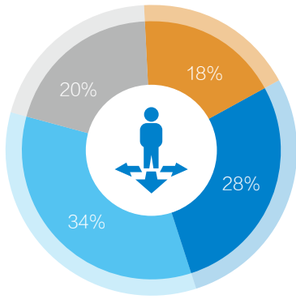


# Growing with staff together

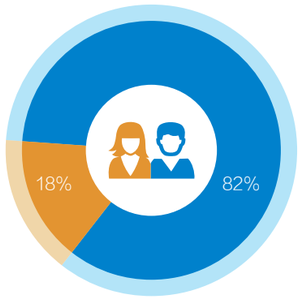
We pay attention to the common development of staff and CNNP, safeguard the legitimate rights and interests of staff, constantly improve staff's sense of identity and pride, and create the pleasant working environment and atmosphere.




Staff age structure




Staff professional title structure




Staff gender structure

## Respecting Staff's Rights and Interests

We respect staff's labor and insist on equal employment to build harmonious labor relations. In accordance with the relevant laws and regulations, we sign labor contracts with staff, establish a salary increase system, respect and safeguard staff's legitimate rights and interests as well as their personal information and privacy. We also set up scientific and standardized system for performance management, explore innovative incentive mechanism, encourage staff to make reasonable salary plans, and promote scientific, standardized and normalized salary management. The total number of the staff in 2014 was 9,594, including 646 fresh graduates. The rates of concluding labor contracts, collective contracts and social security coverage all reached 100 percent.

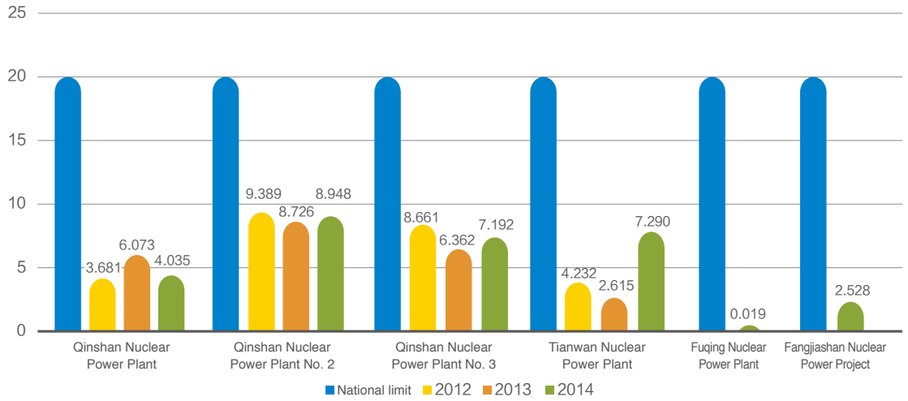
We improve the democratic management systems, such as Workers' Congress, equal consultation system and affairs openness system, encourage and support staff to take an active part in democratic management activities, and ensure their rights of participating, knowing and voting. In addition, we broaden the communication platform to reflect hot and difficult issues concerned by staff timely and create a corporate cultural atmosphere with "warm management". In 2014, labor unions at all levels were established at the rate of 100 percent, and the staff membership rate was also 100 percent.

We carry out educational practice activities under the Party's mass line, collect 1,389 opinions from staff, and propose 105 rectification measures with the rectification rate of nearly 90 percent.

## Paying Close Attention to Career Health

We strictly implement the national occupational health and safety regulations, constantly improve the occupational health and safety management system, consistently conduct staff health examination and overall rehabilitation, provide mental health consultation for staff, and protect employees' health effectively.

We enforce the license management system, arrange professional radiation protection personnel to conduct risk evaluation on radiation-related work, and develop targeted radiation protection program. We also carry out monitoring management for personal radiation dose, analyze the abnormal data timely, and take the appropriate radiation protection measures.




Maximum individual radioactive dose of operating nuclear power plant (mSv)

In order to cultivate staff's healthy living philosophy and improve their ability of self-protection, self-rescue and mutual rescue, we invite experts to give health lectures on common diseases, health protection, occupational hazard protection and first aid according to lifestyles and working styles of staff in nuclear plants.

**Cases** Professional mental health guidance

Hainan Nuclear Power Co., Ltd. invited the experts from the Second Affiliated Hospital of Suzhou University to give mental health lectures on nuclear accident and mental stress, stress disorder and mental intervention after a nuclear accident, psychological quality requirements and test standards of nuclear power plant operators, and how to improve psychological quality of operators, and regularly conducted mental tests for them. The Company tries to improve psychological quality of the staff effectively and make them have a healthy mental state through professional psychological guidance, reasonable coping strategies and effective communication.

## Realizing Staff's Values

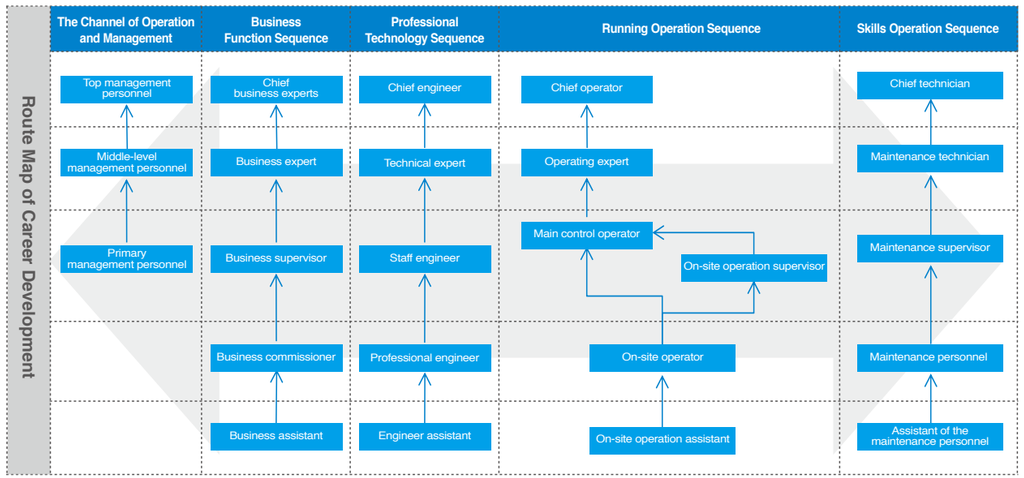
We know very well that nuclear power talent resource is one of the most competitive advantages for the Company to promote the scale construction of nuclear power and enhance the development of nuclear power industry.

**6,281 persons**
Professional technology talents in nuclear power

**937 persons**
Operators from Nuclear Power Plants

**537 persons**
Senior operators from Nuclear Power Plants

Smoothening Channels for Career Development. According to every staff's characteristics and professional orientation, we formulate sound career plans and create platforms and space for the staff's growth through a parallel route of administrative and technical career development. We establish five post sequences including operation management, business function, professional technology, operational manipulation, and skill operation to offer definite clear career development paths for staff.




Career development "Five-sequence"

New Staff Training. We pay attention to the training and guidance of the new staff through a system of standardized, process-based and normalized induction training. We organize and carry out training activities including inductive education, team development, basic authorization, post cognition, sailing training camp, basic theory on nuclear power, military training, and basic post skills training. In the process of training, the specified supervisors exert their efforts to help and guide the new staff so as to lay a solid foundation for their later practices. We actively help new staff establish their career development orientations and positions, establish the right working and life attitudes, and keep a positive and healthy state in the process of induction guidance.

"Sailing" training camp

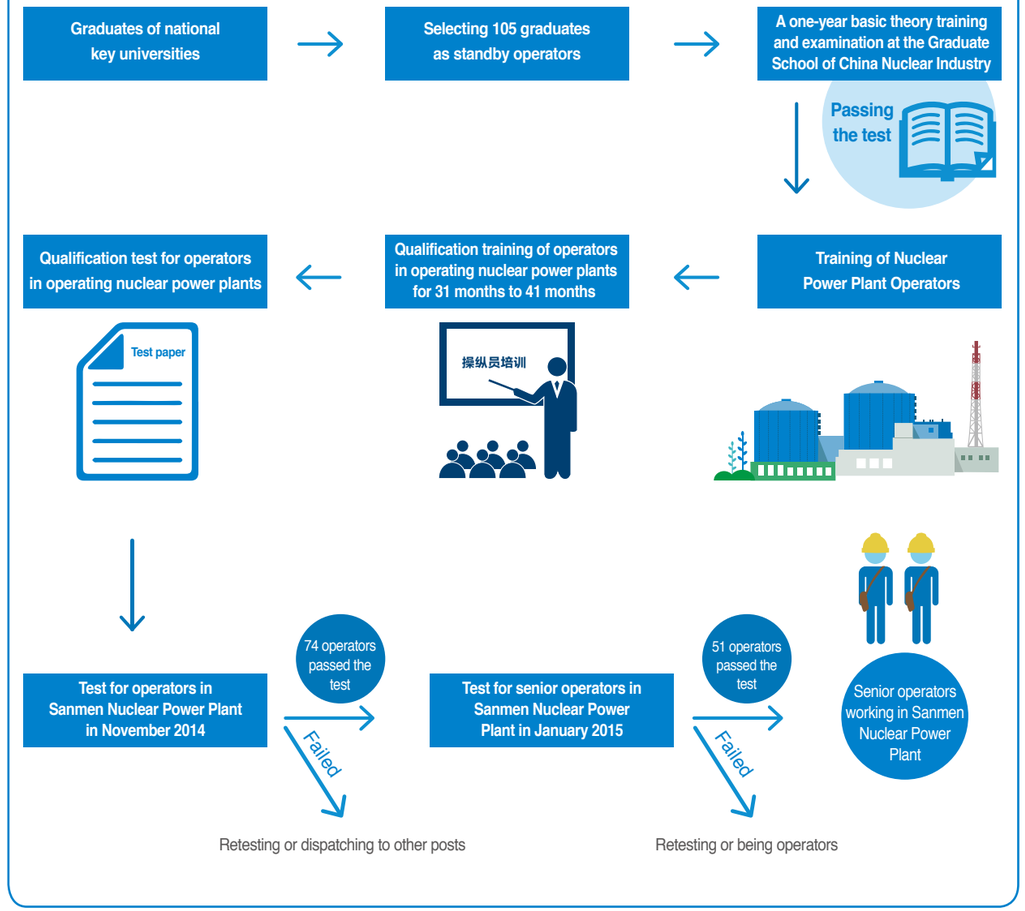

Military training of new staff

Foster professional talents. High technology nuclear power talents not only inject vitality for the industry development, but also guarantee the sound operation of nuclear power. CNNP attaches importance to talent construction, and exerts the advantages of its own resource and technology. We cultivate nuclear power talents and provide technologies and experience while strengthening the cooperation with research institutes and promoting peer exchanges.

He Shaohua (the third from the left) is an expert on the underwater repair of nuclear power plant reactor internals, the design of fuel repair devices, the maintenance, loading and unloading of nuclear reactor body, and also a holder of twenty patents. On December 29, he won the "China Skills Award" at the 12th high-skilled talent commendation conference sponsored by the Ministry of Human Resources and Social Security of the People's Republic of China.

## Cases Process of becoming the world's first AP1000 "Golden men"

A qualified nuclear power plant operator is vital for nuclear safety. Sanmen Nuclear Power Co., Ltd. pays high attention to the cultivation of operators. They selected 105 graduates of national key universities as standby operators, respectively 35 in 2004, 2005 and 2006, and sent them to Qinshan Nuclear Power Plant No. 2, Qinshan Nuclear Power Plant and Tianwan Nuclear Power Plant for the purpose of training. The theory and qualification training lasted for 43-50 months. After hard learning on the theoretical knowledge of operating, operating skills, job responsibility, management requirement, nuclear safety culture and human performance tools, 74 trainees finally became qualified operators of Sanmen Nuclear Power Plant, 51 trainees obtained the senior operator qualification after the harsh assessment, becoming the world's first AP1000 "Golden men".



## Gathering Sincere Care

We advocate healthy working and life styles, carrying out various activities to enrich staff's spare time and providing platforms for staff to show themselves. We learn about staff's satisfaction through questionnaire surveys, identify problems that staff concern and timely respond. Persistent mechanism of assistance for staff is established to increase staff's happiness. In 2014, we expressed sympathy and solicitude to three extremely poor staff.

The activity of "The First Lesson for the Father-to-be and Mother-to-be" was carried out to explain physiological change in the period of pregnancy, postpartum care, neonatal nursing and so on, so we get warm response and support from young staff and their family members.

CNNP Nuclear Power Operation and Management Co., Ltd. carried out the activity of "National Day's Music and Poetry Party". 25 poetry fans from 20 departments, including operation department and maintenance department shared their favorite poems in an elegant and warm atmosphere.

"Mothers' Association" was established to carry out interesting parents-child activities so as to comprehensively care for physical and psychological health of children and mothers and cultivate a kind of positive family culture.


On July 29, Qinshan Nuclear Power Plant organized young volunteers and retired staff to carry out partner assistance activity.

**Cases** Carrying out staff satisfaction surveys

Jiangsu Nuclear Power Co., Ltd. pays attention to staff's heartfelt wishes. Since 2011, special investigations for staff have been conducted to different extents by adopting questionnaire survey, panel discussion and other ways. Procedure of Staff Investigation Management was formulated and issued, marking the establishment of a normal mechanism for staff satisfaction survey. In 2014, satisfaction surveys for all the staff in Jiangsu Nuclear Power Co., Ltd. were carried out in the aspects of work, report, team, management, development, and staff's ideas. The result showed that staff's evaluations over the relationship between colleagues, authorization and work authorization are higher than other aspects, helping us clearly know the key factors that influence staff's satisfaction and initiative and providing the basis for the improvement in the follow-up management.



# Developing with Communities

We support the development of social welfare undertakings to spread love in the society by helping the poor, making donations to schools, supporting disaster relief and helping the disadvantaged groups.

## Supporting Cultural Education

We strongly support activities to assist the impoverished students, helping impoverished students to realize their dreams of attending school. Activities to popularize scientific knowledge of nuclear power are brought to campus. We integrate the knowledge of nuclear power into the campus interest games, establishing knowledge gallery of nuclear power and training publicity personnel for nuclear power. All the activities are well received.

| Member Companies | Measures for Supporting Cultural Education |
|---|---|
| Hainan Nuclear Power Co., Ltd. | ● Holding the first activity themed "Green Nuclear Power, Charming Hainan" to popularize scientific knowledge of nuclear power to the campus of Haikou No.4 Middle School |
| CNNP Zhangzhou Nuclear Power Co., Ltd. | ● Setting up the educational base of popularizing the scientific knowledge of nuclear power in Yunxiao No.1 Middle School, integrating the scientific knowledge of nuclear power into the training system for the newly recruited students, and opening an optional course of popularizing the scientific knowledge of nuclear power |
| Sanmen Nuclear Power Co., Ltd. | ● Liuao elementary school students go to Sanmen nuclear power public exhibition hall, to learn the development of the sanmen nuclear power project, the advanced and safe of AP1000 technology, and communicate with staff<br>● Donating stationary and sporting goods to Sancun Primary School in Zhiluo Town, Butuo county, Liangshan of Sichuan province; donating basketball, football, shuttlecock, skipping rope and other sports goods to Sengdaoguan Primary School in Faguan Town, Shanyang county of Shaanxi province |
| Fuqing Nuclear Power Co., Ltd. | ● Helping Fujian province promote the plan of "Spring Breeze Aid to Poor Students" and subsidizing 10 impoverished college students in Fuqing to complete their four-year studies every year |
| Changjiang Nuclear Power Co., Ltd. | ● Donating 300 books including coaching books, famous books and periodicals suitable for teachers to a primary school in Changjiang, to enrich its book resources |
| CNNP Nuclear Power Operation and Management Co., Ltd. | ● Qinshan Nuclear Power Co., Ltd. Paying 719 million Yuan of local education surcharge in total<br>● With our help, Haiyan ranks first in Jiaxing in key university enrollment ratio of the national college entrance examination and the rate of undergraduate enrollment per 10,000 examinees for 5 consecutive years, and is also home to several city-level or provincial top scorers in the college entrance examinations |
| CNNP Liaoning Nuclear Power Co., Ltd. | ● Partner assistance relationship is established between 112 staff and 64 students from Haibin Town School, Liutaizi Middle School, Xiaozhuangzi Middle School and so on, subsidizing the impoverished students in study and life at regular intervals<br>● Establishing "Playroom for Left-behind Children" and "Love Bookstore" in 3 schools; choosing 10 female staff as the "caring mothers", make the children feel the concern of the family |
| Sanming Nuclear Power Co., Ltd. | ● Donating books, and raising 60,000 Yuan for purchasing 3,000 books of different kinds. Sanming Nuclear Power Plant was awarded as the honor plague of "donating books and assisting the poor students show the greatest love, and enthusiastic public welfare shows precious warmth" by The Next Generation Working Committee of Education Department in Fujian province |

## Helping the Improvement of People's Livelihood

We promote the community development by combining our own professional advantages, learning about the community's needs actively, carrying out partner assistance positively and supporting community infrastructure construction to improve the sustainable development of the community.

No matter in the construction period or the operation period, we actively provide job opportunities for graduates and the local residents, and help them improve labor skills. We have created tens of thousands of job opportunities for the local. More than 400 employees in the CNNP Nuclear Power Operation and Management Co., Ltd. come from Haiyan, achieving the local hiring rate of 11.1 percent. About 2,000 employees from the local provide support in technology or project for the nuclear power operation.

### Cases — Carrying out partner assistance activity in Jinyun county

In 2014, Qinshan Nuclear Power Plant and CNNP Nuclear Power Operation and Management Co., Ltd. carried out partner assistance activity with Choumen village and Gaofan village, Dayuan town, Jinyun county, Lishui, Zhejiang province respectively, the Party member educational practice and youth volunteer services activities. Qinshan Nuclear Power and CNNP Operation and Management Co., Ltd. provided 110,000 Yuan of assistance funds in total for the improvement of streetlight facilities and sanitary condition in villages. Besides, they also donated books on agricultural science and technology, humanity and nuclear power science popularization, stationery, quilts and so on, with a total value of 20,000 Yuan. All these measures were designed to help the villagers develop ecological resources and improve the income level and cultural quality, contributing to the construction of "Beautiful Zhejiang with Beautiful Life".

Assistance activity in Choumen village, Jinyun county.



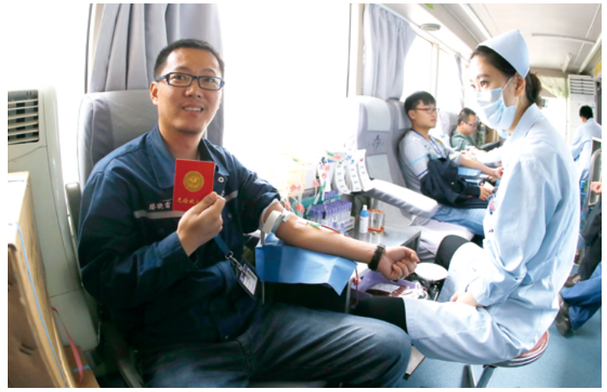
## Active Participation in Public Welfare Activities

We commit to feedback to the society with love and contribute to the improvement of people's living standard through activities such as charitable donations and voluntary activities.

We donated disaster relief materials for victims in Yanfeng town, Meilan District, Haikou, Hainan province, including 250kg of rice, 50 boxes of drinking water, medicine, health products and emergency food in order to help them pull through. Besides, we also help the victims clear away the rubbish.

In Fujian, we carried out activities with the theme of "Care for and help the disabled, and realize the beautiful China dream" together with local volunteer team by visiting the orphans, the disabled in exceptional poverty and their family members in outlying mountain villages in each town of Yunxiao county; we also organized staff to donate over 37,000 Yuan to Gaotang town which was attacked by continuous rainstorm and extraordinary rainstorm.

In Hebei, we pay close attention to households enjoying the five guarantees, elderly persons without families, low income families and other families with financial difficulties by delivering gifts and expressing sympathy or solicitude to Bianzhuang, Liuzhuangzi, Erguan and Xiangfang villages, Xiangfang town, Haixing county; we also actively communicate with Civilization Office and actively throw ourselves into the "Pass positive energy, realize small wishes with love" activity to help the children of needy families in Cangzhou area realize their small dreams.



The total person-times of blood donation of Tianwan Nuclear Power Plant in 2014 exceeded 1,900.

CNNP Nuclear Power Operation and Management Co., Ltd. carried out the "A Breakfast" & "Cherish Love and Walk with You" public benefit activities in 2014, in order to help 457 teachers and students from Tianfu Primary School of Ping'an village and Wanquan Primary School of Jiunaishan village, Nujiang prefecture, Yunnan province to have breakfast on time. 500 persons took part in the charity sale and public benefit donation, and the total amount of donations was over 15,622 Yuan which could meet the breakfast need of 457 teachers and students for 10 days.

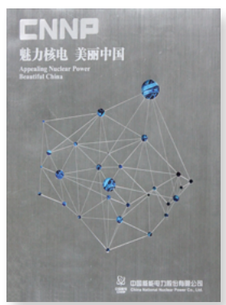
"A breakfast worth of 3.75 Yuan seems common to most people, but it is an extravagant hope for children in needy families with annual income below 3,000 Yuan in remote mountain areas. It is said that a cup of milk could make a nation stronger, and we hope that the breakfasts we delivered could help the children in remote mountain areas become more healthy and stronger, thus laying a more solid foundation for national rejuvenation."

——Secretary Li Wei and Deputy Secretary Yang Bowen, Youth League General Branch, Maintenance Division 5, CNNP Nuclear Power Operation and Management Co., Ltd.

# Appendix

## Relevant Reports and Publications


Corporate Culture Manual of CNNP

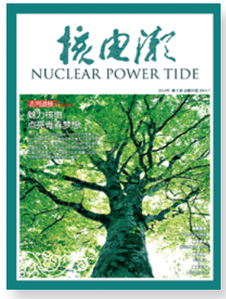



Publicity Pamphlets of CNNP


Science Popularization Manual of CNNP


A Pleasing Tune of CNNP


Visual Image Recognition Manual of CNNP




Nuclear Power Tide


Why do We Develop Nuclear Power?


Date Nuclear Power


Ideas and Culture


Tianwan Nuclear Power Plant


Youth of Hainan Nuclear Power


Core of CNNP

## Expert Comments

It is so glad to see the new CSR report issued by CNNP. The Report with "Appealing Nuclear Power, Beautiful China" as its theme better presents the social responsibility practice and achievement of CNNP in 2014, which is characterized as follows:

**Integrate with international standard, and possess stronger substantiality.** The Report focuses on the overall operation and management process of CNNP, analyzes the possible economic, social and environmental impacts in the process of business operation, identifies the materiality issues out of performing the social responsibility, defines the disclosure scope of materiality issues, and makes targeted disclosure about specific methods and achievement of management over economic, social and environmental impacts.

**Focus on key issues of nuclear power industry, with strong content integrity.** From four aspects of "Dedicated to Safety", "Supporting the Environment", "Powering Economy" and "Committed to Humanity", the Report fully discloses concerned issues of stakeholders, such as safety management of nuclear power plant, technology research and development, climate change addressing and local development promotion, thus better demonstrating the new measures, new progress and new achievement in the process of performing social responsibility in safety, environmental, economic and social aspects.

**The report is concise and readable.** The Report is more vivid and visualized by presenting abundant cases and full and accurate data, makes the specialized knowledge of nuclear power more understandable for readers by using socialized expressions, and enhances the credibility through objective data and voices of stakeholders. The fresh and decent typesetting, the skillful logical graphics and the harmonious color matching bring relaxed, convenient and joyful experience to the readers.

All in all, with comprehensive contents and normative and clear information, this is a CSR report of higher level. Meanwhile, I hope that the Report could promote the management, further improve the social responsibility management level, accelerate the overall and deep integration of social responsibility and sustainable development idea with core businesses, gather more experience for social responsibility performance of nuclear power enterprises, and help the Company become the most appealing international nuclear enterprise.

Deputy Director of China WTO Tribune

Director of International Research Center for Social Responsibility & Sustainable Development of Peking University

# Terms and Definitions

| | |
|---|---|
| Nuclear energy | Nuclear energy (or atomic energy) is the energy released from the atomic nucleus through mass conversion, in line with Albert Einstein's equation E=mc2, wherein, e = energy, m = mass, and c = constant of light velocity. |
| Nuclear power | Nuclear power is a way of electricity generation by using the thermal energy released by nuclear fission in nuclear reactor. |
| Pressurized water reactor | A nuclear reactor in which water is not boiling, with pressurized light water (ordinary water) as coolant and moderator. |
| Heavy water reactor | A nuclear reactor, using heavy water as moderator, with natural uranium used as its fuel directly, and light water or heavy water coolant, is divided into two types by pressure vessel and pressure pipe respectively. |
| Reactor year | One reactor year equals to one year of operation of one reactor in nuclear power plant. |
| WANO | Abbreviation of the World Association of Nuclear Operators, which was founded in 1989 in Moscow. |
| WANO performance indicators | WANO organized establishment of a series of indicators to evaluate all member power stations. Each member can objectively compare with other power plants by performance indicator ranking. |
| Capacity factor | The ratio between the power capacity actually generated by a unit within a certain period and the power capacity calculated by nameplate capacity, it reflects the safety operation and management level of a unit. |
| INPO | Abbreviation of Institute of Nuclear Power Operations which was founded in 1979 after the Three Mile Island accident to promote the information exchange, share the experience of operating nuclear power plants, periodically assess nuclear power plants, establish performance goals and help train personnel for nuclear power plants. |
| IAEA | Abbreviation of International Atomic Energy Agency. Founded in 1957 and headquartered in Vienna, Austria, IAEA keeps a close relationship with the United Nations, and serves as a platform for scientific and technical cooperation of all countries in the field of atomic energy. |
| Equivalent dose | A product of multiplying radiation weighting factor by the average dose absorbed by tissues or organs, with the unit of sievert (Sv). |
| Millisievert | Physics unit, used to measure the effective dose of radiation and reflect the degree of personal injury due to exposure to ionizing radiation. |
| Absorbed dose | Volume of radiation energy absorbed by unit mass of tissue or organ. |
| Gy | International unit of absorbed dose, 1Gy=1J/Kg, meaning the energy brought by radiation to tissues or organs of a kilogram is one joule. |
| Effective dose | Effective dose equivalent is the sum of product of the appropriate tissue weight factor and the average dose equivalent acceptable to all organs and tissues of the human body, under the condition of stochastic effect as the radiation effect of human tissue or organ, and of inhomogeneous exposure of the whole body. |
| Environment background | environmental factors in unpolluted natural environment, that is, original basic chemical composition and energy distribution of environmental factors such as atmosphere, water, soil and biology during their natural formation and development before disturbance by human activities. |
| Bq | With a full name of "Becquerel" in French, it is an SI derived unit of radioactivity, used to measure radioactive materials or radioactive sources. GBq is equivalent to 109 Bq; TBq is equivalent to 1,012 Bq. |

# Reporting Index

MATERIALITY DISCLOSURES SERVICE MAY 2015
CHINA NATIONAL NUCLEAR POWER CO., LTD.

| General Standard Disclosures | GRI Index | Page | External Assurance |
|---|---|---|---|
| Strategy and analysis | G4-1 | P2/P3 | No |
| | G4-2 | P3/P8/P9 | No |
| Organization profile | G4-3 | P4 | No |
| | G4-4 | P4 | No |
| | G4-5 | P4 | No |
| | G4-6 | N/A | No |
| | G4-7 | P4 | No |
| | G4-8 | P4 | No |
| | G4-9 | P4 | No |
| | G4-10 | P61 | No |
| | G4-11 | N/A | No |
| | G4-12 | No statistics available | No |
| | G4-13 | P4/P5 | No |
| | G4-14 | P9 | No |
| | G4-15 | No statistics available | No |
| | G4-16 | No statistics available | No |
| Identified material aspect and boundaries | G4-17 | Inside front cover | No |
| | G4-18 | P11 | No |
| | G4-19 | P12/P13 | No |
| | G4-20 | P12/P13 | No |
| | G4-21 | P12/P13 | No |
| | G4-22 | Inside front cover | No |
| | G4-23 | Inside front cover | No |
| Stakeholder engagement | G4-24 | P16 | No |
| | G4-25 | P16/P17/P18/P19 | No |
| | G4-26 | P16/P17/P18/P19 | No |
| | G4-27 | P16/P17/P18/P19 | No |
| Report profile | G4-28 | Inside front cover | No |
| | G4-29 | Inside front cover | No |
| | G4-30 | Inside front cover | No |
| | G4-31 | Inside front cover | No |
| | G4-32 | P70/P71 | No |
| | G4-33 | N/A | No |

| General Standard Disclosures | GRI Index | Page | External Assurance |
|---|---|---|---|
| Governance | G4-34 | P9 | No |
| Ethics and integrity | G4-56 | P7/P8 | No |
| Economics | G4-EC1 | P4/P48/P49/P54 | No |
| | G4-EC2 | N/A | No |
| | G4-EC3 | No statistics available | No |
| | G4-EC4 | No statistics available | No |
| | G4-EC5 | No statistics available | No |
| | G4-EC6 | No statistics available | No |
| | G4-EC7 | P66/P67 | No |
| | G4-EC8 | P54/P55 | No |
| | G4-EC9 | P51 | No |
| Environment | G4-EN1 | No statistics available | No |
| | G4-EN2 | N/A | No |
| | G4-EN3 | P42 | No |
| | G4-EN4 | No statistics available | No |
| | G4-EN5 | No statistics available | No |
| | G4-EN6 | P42 | No |
| | G4-EN7 | N/A | No |
| | G4-EN8 | No statistics available | No |
| | G4-EN9 | No statistics available | No |
| | G4-EN10 | No statistics available | No |
| | G4-EN11 | P41 | No |
| | G4-EN12 | P41 | No |
| | G4-EN13 | P41 | No |
| | G4-EN14 | No statistics available | No |
| | G4-EN15 | N/A | No |
| | G4-EN16 | N/A | No |
| | G4-EN17 | N/A | No |
| | G4-EN18 | P42 | No |
| | G4-EN19 | P42/P43 | No |
| | G4-EN20 | No statistics available | No |
| | G4-EN21 | N/A | No |
| | G4-EN22 | No statistics available | No |

| General Standard Disclosures | GRI Index | Page | External Assurance |
|---|---|---|---|
| Environment | G4-EN23 | P40/P41 | No |
| | G4-EN24 | N/A | No |
| | G4-EN25 | No statistics available | No |
| | G4-EN26 | N/A | No |
| | G4-EN27 | N/A | No |
| | G4-EN28 | N/A | No |
| | G4-EN29 | N/A | No |
| | G4-EN30 | N/A | No |
| | G4-EN31 | No statistics available | No |
| | G4-EN32 | P52 | No |
| | G4-EN33 | N/A | No |
| | G4-EN34 | N/A | No |
| Labor practices and decent work | G4-LA1 | P61 | No |
| | G4-LA2 | P61 | No |
| | G4-LA3 | No statistics available | No |
| | G4-LA4 | N/A | No |
| | G4-LA5 | N/A | No |
| | G4-LA6 | No statistics available | No |
| | G4-LA7 | No statistics available | No |
| | G4-LA8 | N/A | No |
| | G4-LA9 | P63 | No |
| | G4-LA10 | P63 | No |
| | G4-LA11 | No statistics available | No |
| | G4-LA12 | P61 | No |
| | G4-LA13 | No statistics available | No |
| | G4-LA14 | No statistics available | No |
| | G4-LA15 | No statistics available | No |
| | G4-LA16 | N/A | No |
| | G4-HR1 | N/A | No |
| | G4-HR2 | N/A | No |

| General Standard Disclosures | GRI Index | Page | External Assurance |
|---|---|---|---|
| Human rights | G4-HR3 | N/A | No |
| | G4-HR4 | N/A | No |
| | G4-HR5 | N/A | No |
| | G4-HR6 | N/A | No |
| | G4-HR7 | N/A | No |
| | G4-HR8 | N/A | No |
| | G4-HR9 | No statistics available | No |
| | G4-HR10 | No statistics available | No |
| | G4-HR11 | No statistics available | No |
| | G4-HR12 | P61 | No |
| Society | G4-SO1 | P19 | No |
| | G4-SO2 | P19 | No |
| | G4-SO3 | P9 | No |
| | G4-SO4 | P9 | No |
| | G4-SO5 | P9 | No |
| | G4-SO6 | N/A | No |
| | G4-SO7 | N/A | No |
| | G4-SO8 | N/A | No |
| | G4-SO9 | No statistics available | No |
| | G4-S10 | P52 | No |
| | G4-S11 | No statistics available | No |
| Product responsibility | G4-PR1 | N/A | No |
| | G4-PR2 | N/A | No |
| | G4-PR3 | N/A | No |
| | G4-PR4 | N/A | No |
| | G4-PR5 | N/A | No |
| | G4-PR6 | N/A | No |
| | G4-PR7 | N/A | No |
| | G4-PR8 | N/A | No |
| | G4-PR9 | N/A | No |

# Feedback from Readers

Dear readers,

Thank you for reading our report! This is the third Corporate Social Responsibility Report that we have published. We look forward to your opinions and recommendations so that we can improve future reports.

Please answer the following questions and fax the table to 010-6855 5984 or mail it to us.

Please tick √ the appropriate answer.

| | Yes | Partially | No |
|---|---|---|---|
| Do you think the report highlights our economic, social and environmental work and our significant impacts? | ☐ | ☐ | ☐ |
| Do you think the information and indicators provided in the report are clear, accurate and complete? | ☐ | ☐ | ☐ |
| Do you think arrangement of the content and style of the report are clear and help your reading and understanding of the report? | ☐ | ☐ | ☐ |

Open-ended questions:

1. Which part of the report were you most interested in?

2. What information do you think needs to be provided about CNNP that is not provided in the report?

3. What are your recommendations for our future social responsibility reports?

If you wish, please provide us with the following information:

Name:

Company:

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Address:

E-mail:

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CNNP public micro-channel two-dimensional code

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