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

2019 China National Nuclear Power Co., Ltd.
Social Responsibility Report

About This Report

Reporting period

The report covers our business activities from January 1, 2019 to December 31, 2019, and also includes additional information beyond the stated reporting period.

Reporting cycle

Since the first report of China National Nuclear Power Co., Ltd released in 2012, we have continuously disclosed social responsibility information in public. This is the eighth CSR report from our company.

References to China National Nuclear Power Co., Ltd.

In the report, “China National Nuclear Power Co., Ltd.” is also referred to as “CNNP”, “the Company”, or “we”.

Reporting scope

The report covers all relevant information of CNNP and its holding subsidiaries, joint ventures, and companies with direct investment from CNNP.

Data source

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

Compilation conformance

This Report is prepared in accordance with the *Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities* issued by State-owned Assets Supervision and Administration Commission of the State Council (SASAC), *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises* (CASS-CSR 4.0) issued by the Chinese Academy of Social Sciences, the *GRI Sustainability Reporting Standards (GRI Standards)*, and the *Guideline on Environmental Information Disclosure by Listed Companies of Shanghai Stock Exchange*(SSE).

Reliability assurance

The Company assures that no fictitious record, misleading statement, or material omission are included in this report, and will joint and several liability for the report’s authenticity, accuracy, and completeness.

Report Access

This Report is available in both Chinese and English, including paper and electronic versions.
You can download the electronic version of the Report from CNNP official website (http://www. cnnp.com.cn).
For a hard copy of the Report, please contact us at cnnp@cnnp.com.cn or 010-8192 0188.

Contents

Message from the Chairman

The year 2019 marked the 70th founding anniversary of the People's Republic of China, and was a crucial year to secure a decisive victory in completing the 13th Five-Year Plan and achieve the first Centenary Goal of building a moderately prosperous society in all respects. In face of the complicated domestic and international situation, CNNP stayed true to the mission of "developing the nuclear industry to strengthen the country and serve the society", and shouldered the responsibility to build a country with strong nuclear power and provide high-quality energy supply, striving to be a world-leader in safe nuclear power/nuclear energy operation and the most attractive world-class nuclear energy company.

We promote Party building to lead high-quality development. Following the Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we have fully implemented the guiding principles of the 19th CPC National Congress, upheld the Party leadership and strengthened Party building by carrying out high-quality education campaigns themed "staying true to our founding mission". To achieve the goal of "Excellent Party Building and First-class Management", we have continuously improved governance systems such as the Decision-making System Composed of "the Articles of Association, Three Regulations and Four Rules"and the "3655" management system , enhanced our governance capacity and forged ahead under the guidance of high-quality Party building.

We fulfill safety responsibility to achieve sustainable development. Focusing on the key targets of "ensuring nuclear safety" and "zero causality", we have promoted the development and evaluation of nuclear safety culture, the fulfillment of safety responsibilities and the improvement of the nuclear safety system. We have actively stepped up work safety standardization, carried out monitoring and identification of hidden dangers, and promoted the construction of key projects in an orderly manner. By building the human error prevention system, equipment reliability management system and unified feedback system for all plants, we have improved the operating capacity of nuclear power unites and ensured safety and steady operation of the Company from all aspects. By the end of 2019, we have achieved 171 reactor-years of safe operation in total. In 2019, nine of our operating units achieved full marks in WANO composite index, ranking first among all rated reactors.

We foster green development to protect our beautiful home. We have promoted the development of clean energy such as nuclear power and wind power, constantly improved the environmental protection management system, and strengthened daily environmental management and risk identification and control. We have also improved carbon emission management and resource utilization, reduced discharge of radioactive waste , effluents and solid waste, so as and built an energy system that is clean and low carbon, safe and efficient, contributing to ecological progress. In 2019, we produced 136.801 TWh of electricity safely, which, as compared with coal-fired power generation, was equivalent to reducing 54.7204 million tons of standard coal consumption, and cutting CO_2, SO_2 and NO_X emissions by 136.3906 million tons, 4.104 million tons and 2.052 million tons respectively.

We stimulate innovation to drive the development. We have innovated in our business layout by "focusing on five major sectors with nuclear energy as core business, expanding presence in both domestic and global markets, and attaching equal importance to industrial activity and financing", and vigorously developed technical services of nuclear power operation to create new momentum for development. Fostering management innovation, we have built the 3A/4E information system and improved management quality and efficiency. Paying attention to technological innovation, we have continuously hired and cultivated highly-skilled talents, strengthened intellectual property protection and promoted the application of innovations to improve our ability of independent innovation. In 2019, we invested RMB 890 million in R & D , hired 40 highly-skilled talents in different areas and were granted 95 patents in total.

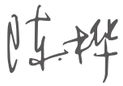
> Supplying safe and efficient energy for a clean and low-carbon life style

We deepen cooperation to create value with stakeholders. Based the principle of consultation, contribution and shared benefits, we have set up a platform for cooperation with stakeholders including the government, enterprises, colleges and suppliers to create value together, which effectively promotes industry development and domestic production of equipment. Meanwhile, guided by the strategy of international development, we have expanded the international market, cooperated and made exchanges on clean energy with other countries to jointly build a sustainable supply chain across the world. By now we have 145 strategic suppliers.

We support development of employees and make progress together. We respect the value of employees, fully protect their legitimate rights and interests such as equal employment opportunities, compensation and benefits, occupational health and safety, etc. We provide a great career development platform with joint training programs, "CNNP Elite Program" and the training center, so as to improve the ability of employees and support their career development. We also organize various recreational and sports activities, and care for special groups including female employees, retirees and employees in need, so that employees can enjoy a decent work and live a quality life. In 2019, our employee training was up to 16,029.79 man-months.

We pursue harmony and contribute to a better life. We have opened up multiple communication channels for information disclosure, project communication and publicity of nuclear knowledge, with a view to promote harmonious interaction with the public. We also promote effective integration of business prosperity and local development. By supporting local industry, consumption, infrastructure construction and cultural development, we facilitate poverty alleviation. Besides, we organize volunteer activities to serve vulnerable groups. We work with all walks of life to build a harmonious society and contribute to a better life. In 2019, we invested RMB 6.85 million in poverty alleviation and paid taxes of RMB 5.873 billion.

The clean, safe and reliable nuclear energy is playing a more and more prominent role in optimizing energy structure, promoting ecological progress, and addressing climate change. Safe and efficient nuclear development should be ensured to advance the energy revolution and achieve high-quality energy development. We are willing to work with stakeholders to build a shared community for innovative development of nuclear energy, and accelerate nuclear power development in the world.



Chen Hua

Chairman & Party Secretary, CNNP

About Us

Company Profile

China National Nuclear Power Co., Ltd. (SSE: 601985) headquartered in Beijing, which is jointly invested by its controlling shareholder China National Nuclear Corporation (CNNC), China Three Gorges Corporation(CTG), China Ocean Shipping (Group) Company (COSCO), and China Aerospace Investment Holdings Ltd. Its main business scope covers development, investment, construction, operation and management of nuclear power projects and supporting facilities. The Company is also engaged in investment and development of clean energy projects, investment and investment management of power transmission and distribution projects, research of safe technologies for nuclear power operation, related technical and consulting services, and electric power sales.

On June 10, 2015, CNNP went public and became the first nuclear power company to issue A-shares.

❶	Qinshan Nuclear Power Plant No.1	Type of reactor: PWR CNP 300 Rated power: 1X330MWe	First nuclear power plant ever built in the Chinese mainland, hailed as “national glory”
❷	Qinshan Nuclear Power Plant No. 2	Type of reactor: PWR CNP 600 Rated power: 2X650MWe 2X660MWe	First large commercial nuclear power plant independently designed, built, operated and managed by a Chinese company
❸	Qinshan Nuclear Power Plant No. 3	Type of reactor: HWR CANDU700 Rated power: 2X728MWe	China’ s only commercial HWR nuclear power plant
❹	Fangjiashan Nuclear Power Plant	Type of reactor: PWR CNP1000 Rated power: 2X1089MWe	One of the first group of 1 GW reactors independently designed, manufactured, constructed, and operated by a Chinese company
❺	Jiangsu Nuclear Power Plant	Type of reactor: PWR VVER1000 Rated power: 2X1060MWe 2X1126MWe	A model of China-Russia cooperation
❻	Fuqing Nuclear Power Plant	Type of reactor: PWR CNP 1000 Rated power: 4X1089MWe	One of the first group of 1 GW reactors independently designed, manufactured, constructed, and operated by a Chinese company
❼	Hainan Nuclear Power Plant	Type of reactor: PWR CNP 600 Rated power: 2X650MWe	Southernmost nuclear power plant as well as the first nuclear power plant to be built in the minority-inhabited areas in China
❽	Sanmen Nuclear Power Plant	Type of reactor: PWR AP1000 Rated power: 2X1250MWe	The world’ s first AP1000 three generation nuclear power unit
❾	Jiangsu Nuclear Power Plant Units 5 and Unit 6	Type of reactor: Improved PWR M310 Rated power: 2X1118MWe	Final nuclear power project in China that started construction during 2011-2015
❿	Fuqing Nuclear Power Plant Units 5 and Unit 6	Type of reactor: HPR1000 Rated power: 2X1161MWe	The world's first Hualong One nuclear reactor (Hualong One is a third-generation reactor model independently developed by a Chinese company)
⓫	Zhangzhou Nuclear Power Plant Unit 1	Type of reactor: HPR 1000 Rated power: 2X1212MWe	The bulk production of the “national business card” Hualong One reactor goes well and strives to create a "Clean Energy Park"
⓬	Zhangzhou Nuclear Power Plant Units 2	Type of reactor: HPR1000 Rated power: 2X1212MWe	The bulk production of the “national business card” Hualong One reactor goes well and strives to create a "Clean Energy Park"

Units in operation Units under construction Approved unit

As of the end of 2019,

CNNP has **28** holding subsidiaries

9 companies with direct investment from CNNP

1 joint venture

controls **21** nuclear power units under operation with a total of installed capacity of **19.112** GW

controls **5** nuclear power units under construction installed capacity reached **5.77** GW

the total assets reached RMB **340** billion

net assets attributable to shareholders of listed companies exceeded RMB **50** billion

Corporate Culture

Mission	Develop the nuclear industry to strengthen the country and serve society
Vision	A global leader in nuclear technology
Vision	Responsibility, safety, innovation, and collaboration
Core values	The spirit embodied by the “Two Bombs, One Satellite” project
	The cause-oriented, responsibility-oriented, strictness/carefulness-integrated, and striving-based spirit of the nuclear industry
Goals	Provide safe and efficient energy Create a clean and low-carbon life style
	To be a globally recognized, influential nuclear power company
	Pursue excellence and keep selftranscendence
	Large scale Standardized Internationalized
	Create business values, generate profits for shareholders, increase employee happiness, and create social wealth

Party Building

Consistently promoting the Party's leadership over SOEs and a modern enterprise system, CNNP has fully implemented the major decisions of the CPC Central Committee, upheld the Party leadership while improving corporate governance, clarified the legal status of the Party organization in corporate governance structure and put it into practice to push forward full and rigorous governance over the Party.

Strengthening Education about the Party's New Theories to Foster In-depth Learning and Earnest Belief

Improving the political stance

- The education campaigns focused on Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, the underlying principles of the fourth plenary session of the 19th Central Committee of the CPC, and President Xi's instructions on the nuclear industry

Promoting political work within the Party

- Based on the education campaigns, we organized the central group of the Party committee to participate in 17 learning activities, 1 awayday meeting and 18 Party lectures given by the Party committee, providing multiple forms of activities for them to study central leadership's instructions and policies of the Party committee

Promoting high-quality development

- Keeping an accurate understanding of the changes in international and domestic situations, we fully promoted the construction of major military projects, and promoted the integration of Party leadership and corporate governance, as well as the combination of Party building and central tasks to achieve the goal of "Excellent Party Building and First-class Management"

Launching High-quality Campaigns with the Focus on Main Tasks

Inspiration program

We organized an awayday meeting themed "staying true to our founding mission and restudying the implementation of strategies", and guided subsidiaries to solve problems in reforms and development, thus inspiring them to foster the reform and development of the Company

Cultivation program

Our high-quality campaign covered all members of the Party committee, supervisors and over 7,200 Party members from 413 Party branches (including the general Party branch), helping them stay true to the original aspiration and founding mission

Leadership program

We promoted Party members and leaders to have a deeper understanding and emancipate the mind while pursuing unity in thought, taking the lead in studying and implementing the Party's new theories

Improving Party Building to Promote the Party Leadership in Corporate Management

Strengthening Party leadership

- We promoted subsidiaries to include Party building into their articles of association, prioritized discussions by the Party organization and organized official appointment and removal meetings led by the Party committee
- We promoted the comprehensive implementation of the "3 + 1 + N" list model for the decision-making process of the Party committee, and the system composed of "one articles of association", "three systems" and "four rules"

Improving Party building in grassroots organizations

- We further improved work mechanism such as the system of "Party committee members come to branches and Party members come to working teams", the warning system and points-based system for Party members
- We further promoted Party building and joint building activities in Xiapu and Zhangzhou projects to concentrate a powerful force for Party members and industrial workers

Promoting the Party building more systematic and well-organized

- We organized subsidiaries to carry out pilot programs of the Party building quality management system, further explore and improve the system from its framework, business segments, operational mode, management tools and forms

Fostering the Party's participation in corporate management

- By organizing activities such as collection of reasonable proposals and the special meeting on "reducing unplanned shutdown", we promoted "Excellent Party Building and First-class Management", collected 731 valuable suggestions and led the implementation of 42 measures

Continuously Fighting Corruption to Improve Party Conduct and Enforce Party Discipline

Working ceaselessly to improve Party conduct and enforce Party discipline, CNNP has actively promoted the fulfillment of responsibilities, conducted in-depth inspections, rectification and supervision, improved employees' awareness of integrity and self-discipline and their ability to resist corruption, and created a good atmosphere of integrity and entrepreneurship, which has strongly supported the sound development of the Company.

Fulfilling responsibilities

- We formulated and released the *Key Tasks for Improving Party Conduct and Fighting Corruption in 2019* to clarify 23 key tasks in 8 aspects
- We organized CNNP Party committee secretary and members as well as departments to sign the letter of responsibility for building a clean Party in 2019

Strengthening supervision

- We carried out special supervision and inspections on the performance of Party members and departments in improving Party conduct, and gave 43 suggestions for future improvement
- We monitored the rectification of 13 departments and 13 subsidiaries

Improving abilities

- The headquarters and subsidiaries launched the "Anti-corruption Month" campaign with a series of activities in various forms to improve the integrity awareness of employees. We organized 6 trainings on this topic with 391 participants

Strategy and Governance

Development Strategy

Upholding the vision of becoming a global leader in nuclear technology, CNNP implements strategies for large-scale, standardized and internationalized development, and pursues excellence with a high sense of responsibility to build a leading nuclear energy company in the new era.

Strategic Positioning

With the focus on investment, construction and operation of nuclear power projects, CNNP strives to promote the efficient utilization of cutting-edge nuclear technologies and the production of clean and low-carbon energy. It bears the tasks to build a country with strong nuclear power and provide high quality energy supply.

Strategic Goal

CNNP's strategic goal for the new era is to build a world-class nuclear company with global competitiveness, which will be gradually achieved in three periods: now-2020, 2020-2035 and 2035-2050.

Basically achieving the goal to build a world-class nuclear company and be listed as a Fortune Global 500 company

(2020-2035)

(Now-2020)

Fully developing the business layout of "five major sectors with nuclear energy as core business", and improving the modern corporate system

(2035-2050)

Becoming a world-leader in safe operation of nuclear power, and a clean energy company with advanced technologies, cost control, and management

Strategic Guidelines

Large scale

Coordinate efforts on business development, asset management, marketing, talent development, and value creation, and enhance the capability of energy security to build a bigger, better, stronger company

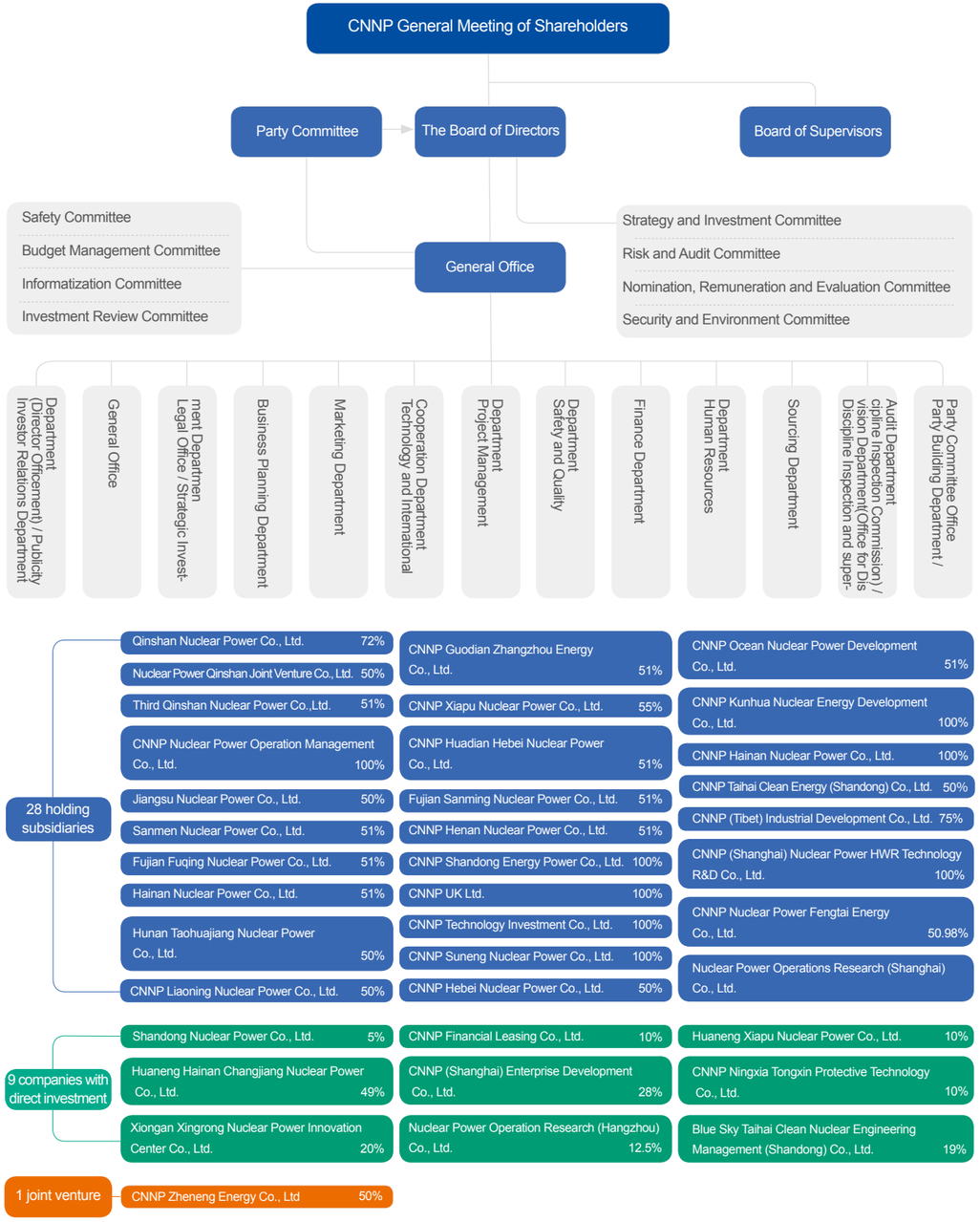
Standardized

Advance standardization of technical and managerial positions and processes in all business and functional areas, and build an efficient, flexible, and standardized management system to increase profitability

International-ized

Expand global presence, foster global business operations, improve international management capability and have a greater say to build a globally recognized, influential nuclear energy brand

Organizational Structure



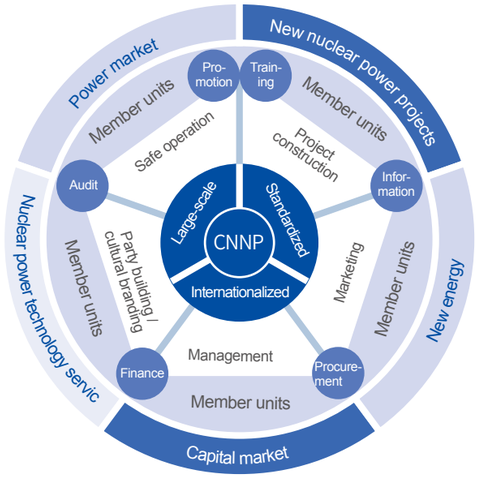
Governance Mechanism

The Decision-making System Composed of "the Articles of Association, Three Regulations and Four Rules"

CNNP improves its corporate governance mechanism to build a modern SOE governance system. Consistently promoting the Party's leadership over SOEs and a modern enterprise system, the Company has actively promoted the establishment of a modern state-owned enterprise system with Chinese characteristics. With the decision-making system composed of "the Articles of Association, three regulations and four rules" and the "3 + 1 + N" list model for the decision making process of the Party committee, we have built a modern state-owned enterprise system with Chinese characteristics, which features combination of "the Party's comprehensive leadership and corporate governance procedures, the Party committee's guidance and strategic decision-making of the board, the reform led by the Party committee and full managerial authority of the management, as well as the Party Committee's coordination of all supervision departments and the establishment of an comprehensive and multi-level supervision structure.

"3655" Management System

According to the three strategies of large-scale, standardized and internationalized development, CNNP continues to promote the "3655" Management System and has improved the functions of six centers for promotion, training, information, procurement, finance and audit. Focusing on the five main lines and five markets of strategic operation, the Company improves its overall business structure, coordinates tasks on all fronts, and strives to improve business capacities for high-quality development.



"3655" Management System

Risk Management and Control

The Company has continuously improved the risk management mechanism of "putting prevention first while imposing punishment", and established a compliance management structure featuring division of responsibility, collaboration and coordination. We carry out strict prevention and control of risks when making major decisions, and conduct comprehensive legal risk management to promote compliance operation and ensure stable development. In 2019, our Risk and Audit Committee under the Board of Directors held 4 meetings, discussed 18 proposals, reviewed and made decisions on the risks in management and other aspects, ensuring stable operation of the Company.

Improving management systems and mechanisms

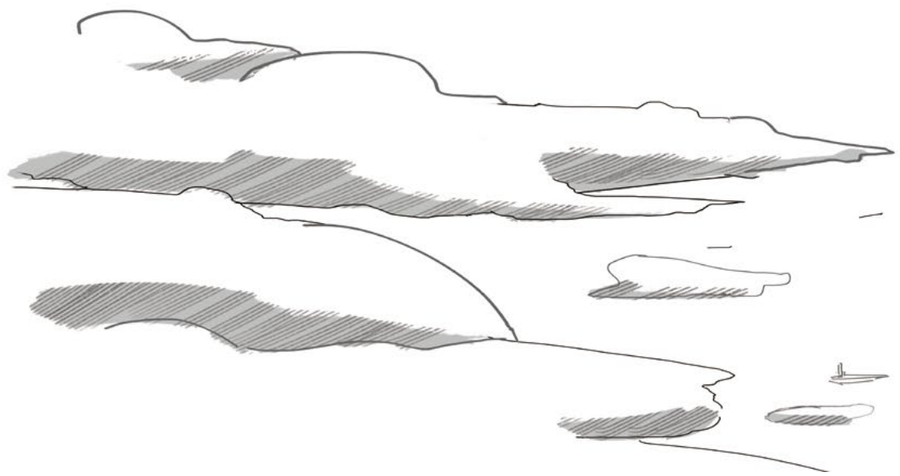
- We established a leading group for risk control and compliance, conducted centralized risk management by specialized departments, and required subsidiaries to set up corporate governance offices so as to coordinate risk control, internal control and compliance management
- We integrated internal control manuals with management systems, and combined management systems with risk management. We set unified MKJ assessment targets and coordinated the annual supervision and evaluation plan
- Three lines of defense for risk management composed of the business departments, risk management department and internal audit department have ensured the effectiveness of the risk management system

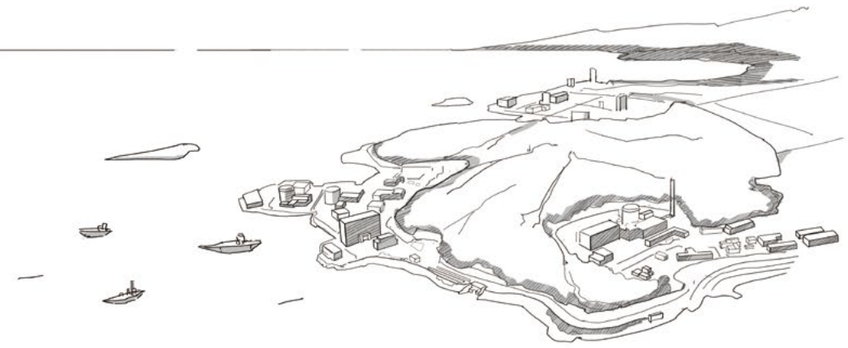
Strictly assessing risks in key areas

- With the focus on "winning the battle to prevent and defuse major risks", we carefully prevented risks before making major decisions and issued 53 special risk assessment reports throughout the year
- We carried out quarterly, semi-annual and annual risk assessments to identify major risks in key areas. In 2019, major risks were controlled

Carrying out special management of legal risks

- We established a special group for comprehensive legal risk management so as to promote the identification of legal or compliance risks in all respects
- By sorting out legal risks of the headquarters and subsidiaries in various links of production and operation, we formulated legal risk identification standards
- We made a manual of prevention and control standards for legal risks, conducted regular supervision and inspection on risk responses, and continuously improved legal risk management





Compliance Operation

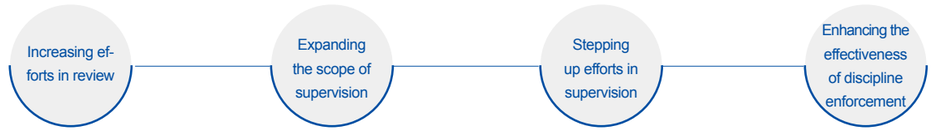
The Company has strictly abided by Chinese laws and regulations such as the *Company Law* to promote compliance management and operation. The internal risk prevention also has been strengthened to ensure law-based management and compliance operation.

- The headquarters established a risk control and compliance group led by the board chairman to coordinate relevant tasks, and the three lines of defense for risk management need to bear the new responsibility of compliance management
- Subsidiaries set up compliance management departments, which laid the organizational foundation for integrated management by combining compliance management with risk and internal control, legal affairs, and audit-based supervision
- We standardized the early warning and response process for compliance risks, unified early warning indexes and response plans, and included risk countermeasures into the annual plan to coordinate the risk response work
- We standardized the compliance review process for major projects or issues, and invited our general counsel to join the major decision-making process and give compliance suggestions. In this way we coordinated compliance review and decision-making process for major projects or issues

- We systematically sorted out legal and compliance risks in key areas such as intellectual property rights, engineering construction, production and operations, safety and environmental protection, etc
- For each legal risk, we took legal measures. And based on these measures we upgraded relevant systems and optimized related processes and forms
- We integrated internal control management standards for key business through the “five steps” approach
- We fostered a compliance culture through on-site trainings, distance learning, benchmarking and exchanges. In 2019, CNNP and its subsidiaries have conducted a total of 20 trainings with 560 participants
- We set up a research team and sent them to benchmark against and communicate with pilot enterprises designated by the SASAC for compliance management, so as to provide new thought in building our compliance management system

“Macro-supervision” System

In 2019, the Company integrated resources to build a joint supervision mechanism combining discipline inspection, overseeing, audit, inspections and legal measures, and released a special plan for building the macro-supervision system during the 13th Five-Year plan period, thus establishing a comprehensive and multifaceted “macro-supervision” system of “prevention, control and accountability“.



By integrating the discipline inspection, audit, and legal functions, and uniting relevant departments of subsidiaries, we have built a more professional supervision team

Through establishing and improving the supervision system, we strengthened the control of staff, funds and equipment, put discipline and rules into practice

We kept ensuring accountability for overseeing discipline compliance. While paying attention to clues, we made better use of laws, regulations and disciplines

Focusing on performance instead of problems, we conducted comprehensive supervision on Party building, decision-making capability, decision-making effect, and leadership of the management

Investor Relations

Adhering to the open and transparent operation philosophy, CNNP has continuously enhanced communication and interaction with investors. The timely and objective information disclosure and multiple exchanges helps the Company build harmonious relations and mutual trust with investors and thus promote the healthy development of the Company. In 2019, CNNP was awarded “Best Investor Relations (Team) Award”.

Information disclosure

With authentic, accurate, complete, and timely disclosure of periodic and temporary announcements about the election of the board of directors, 2018 annual report, convertible bonds and equity incentives, the approval for the Zhangzhou project, etc., CNNP’s information disclosure has been rated A by the Shanghai Stock Exchange for four consecutive years

Interactions and exchanges

We promoted interactions and exchanges with investors by organizing Q & A activities through the SSE E-interactive platform, attending brokerage strategy meetings, and inviting investors to conduct on-site investigations

We exchanged ideas with industry analysts and institutional investors from dozens of well-known brokers at home and abroad including UBS, Merrill Lynch, CITIC Securities, China Securities, and received more than 300 visitors

CSR Management

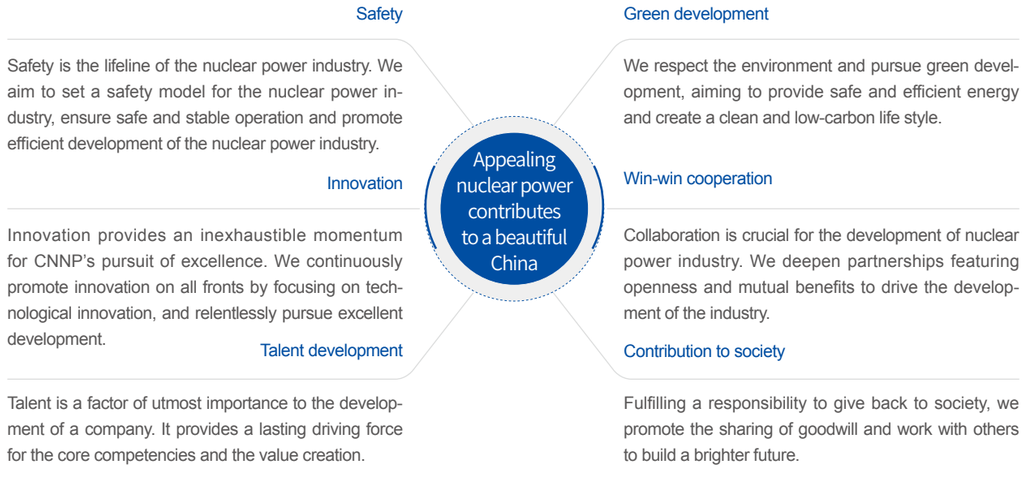
Opportunities and Challenges

Paying close attention to external environment and industry trends, CNNP seizes development opportunities and actively responds to challenges to promote sustainable development of clean energy in the world.

External Environment and Industry Trends	Opportunities and Challenges	Actions of CNNP
Energy revolution and transformation to clean energy	· Nuclear energy plays an important role in building the green and low-carbon energy system in China, which complements other new energy. · The new round of policies may lower the on-grid nuclear power price. New power units face more risks in feed-in tariff application. Nuclear companies will face financial pressure in many aspects such as idle capacity, price cuts, etc.	· Following development path of focusing on five major sectors with nuclear energy as core business, expanding presence in both domestic and global markets, and attaching equal importance to industrial activity and financing, CNNP promotes the development of clean energy such as nuclear power, wind power and photovoltaic power.
Innovation-driven development	· Technological innovations support the upgrading of nuclear technologies and management. · The government has set higher requirements for innovation and development of the nuclear industry, which further clarifies the focus and direction for nuclear technology innovation.	· CNNP continues to hire highly-skilled talents to build a strong team. · Following the guidelines of independent design, manufacturing construction, and operation, CNNP keeps improving domestic production of equipment and independent design quality.
International cooperation	· New opportunities for expanding the international market. · Risks in global macro-economy and local region pose challenges to our operation.	· CNNP actively expands the overseas market to go global. · CNNP continuously promotes cooperation and pools strengths in resources with peer companies in the world to foster industry development.
Communication with the public	· More and more attention is given to the risks of nuclear power posed to the society and relevant countermeasures. The public gets more sensitive to nuclear-related incidents.	· CNNP has held the nuclear knowledge contest themed “Appealing Light” for seven consecutive years. · CNNP discloses its progress and major events through multiple online and offline channels such as the official website, WeChat Account, press conferences and media reports.

CSR Connotation

Constantly expanding the scope of social responsibility, CNNP has promoted sustainable development in its daily operation and management, and achieved integration and balance between its economic performance and social and environmental responsibilities, so as to build a beautiful China with all parties.



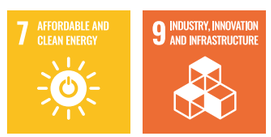
CSR Management System

CNNP has continuously optimized the CSR organizational structure and developed a CSR management system featuring a complete organizational structure, clarified rights and responsibility, joint efforts of the headquarters and subsidiaries, and efficient operation. Based on the three-in-one approach of corporate culture, social responsibility, and branding, we incorporate CSR philosophy into our strategic development, corporate management and business operations. By actively responding to the expectations and demands of stakeholders such as the government, shareholders and the public, and continuously carrying out CSR management, we strive to build the image of “the most attractive and first-class nuclear energy company in the world“.

CNNP Social Responsibility Management System

CSR Management Strategies

Based on the United Nations Sustainable Development Goals (SDGs), CNNP determines its CSR management strategies from six aspects including safety, environmental protection, innovation, cooperation, employees and the community, so as to promote sustainable development in the world.

CSR Fields	CSR Topics	Contribution to SDGs
Ensuring safety to lay a solid foundation for corporate development	• Nuclear safety culture • Nuclear safety management • Quality project development • Safe and stable operation • Continuous improvements	
Promoting green development to protect our beautiful home	• Enhancing environmental management • Combating climate change • Conserving energy resources • Reducing pollution emission and discharge • Monitoring environmental impact • Protecting ecological environment	
Igniting the development engine through innovation	• Innovating in the industrial layout • Deepening management innovation • Promoting technological innovation	

CSR Fields	CSR Topics	Contribution to SDGs
Strengthening coordination to creating values	• Deepening strategic cooperation • Building a responsible supply chain • Promoting the domestic production of equipment • Advancing the international development	
Supporting employee development to make progress together	• Employee rights and interests • Employee growth • Employee care	
Pursuing harmony and contributing to a better life	• Transparency and communication • Targeted poverty alleviation • Combining corporate business development with local development • Public welfare and charity	

Materiality

Based on the macro environment of sustainable development and its own development plan, CNNP, in accordance with the principles of materiality, completeness and stakeholder engagement, comprehensively analyzed and identified the 2019 sustainability material topics from the dimensions of “importance to CNNP’s sustainable development” and “importance to stakeholders” while considering the expectations of stakeholders.

Identification

- Industrial trends
- CNNP development strategy and plans
- Feedback from stakeholders
- Government requirements
- Industrial standards

Prioritization

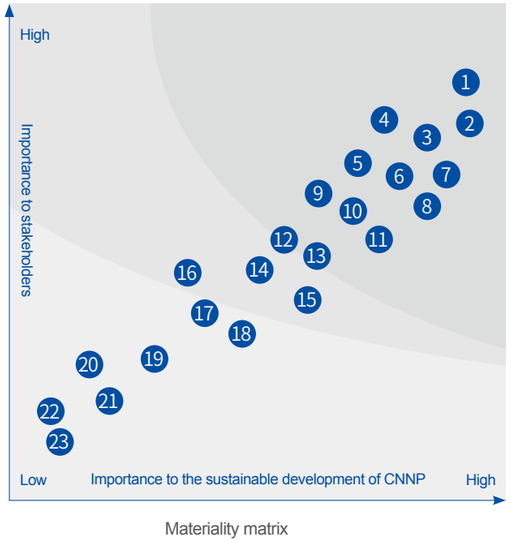
- Strategic significance of topics and their impacts on the operation of the Company
- Social trends on the topics and the importance of topics to stakeholders

Review

- Review by the management of the Company
- Review by functional departments
- Review by involved subsidiaries
- External expert collaboration
- Employee opinion collection

Continuous improvement

- Continuous communication with stakeholders
- Prioritizing CSR topics
- Updating CSR work plan



Materiality matrix

1. Nuclear safety management
2. Radioactive waste
3. Clean energy development and utilization
4. Equipment self - determination
5. Epidemic prevention and control
6. Transparency and communication
7. Monitoring of environmental impacts
8. Safety in project construction
9. Strategic cooperation
10. Occupational health and safety
11. Employee development
12. Technological innovation
13. Addressing climate change
14. Employee care
15. International exchanges and cooperation
16. Targeted poverty alleviation
17. Water resource management
18. Employee rights and interests
19. Community engagement
20. Energy conservation and emission reduction
21. Biodiversity protection
22. Supplier management
23. Public welfare activities

Stakeholder Communication and Engagement

Attaching much importance to stakeholder communication and engagement, CNNP has set up a regular communication mechanism to effectively identify and respond to stakeholders’ expectations and demands, and build a closer relationship

Major stakeholders	Expectations and demands	Performance in 2019
Shareholders and investors	• Returns • Protection of rights and interests • Compliance management	• Revenue: RMB **46.067** billion • Total profits: RMB **10.349** billion • **21** units in operation • Cash dividends: RMB **1.899** billion
Government	• Abiding by the law • Paying taxes in accordance with law • Driving local development	• Taxes payment: RMB **5.873** billion
Customers	• Safe and steady electricity supply • High-quality services	• **9** power units achieved **100** marks in WANO composite index, ranking first among all rated reactors. • We have achieved **171** reactor-years of safe operation in total.
Partners	• Contract fulfillment • Responsible procurement • Win-win cooperation • Promoting industry development	• In the “Hualong One” demonstration project, over **90%** of pump units were produced in China. • **100%** bulk materials such as valves and nuclear cables were made in China.
Employees	• Compensation and benefits • Occupational health and safety • Career development • Humanistic care	• The total number of employees reached **13,152**. • Investments in trainings reached RMB **47.225** million. • CNNP provided health examinations for employees **100%**.
Environment	• Energy conservation and emission reduction • Protecting the ecosystem • Addressing climate change	• We produced **136.801** TWh of electricity safely, which, as compared with coal-fired power generation, was equivalent to reducing **54.7204** million tons of standard coal consumption, and cutting CO_2, SO_2 and NO_X emissions by **136.3906** million tons, **4.104** million tons and **2.052** million tons respectively.
Society	• Promoting community development • Supporting public welfare • Providing volunteer service	• Investments in targeted poverty alleviation: RMB **6.85** million.

Feature

Celebrating the 70th Founding Anniversary of the PRC, CNNP Writes a Magnificent Chapter of Nuclear Development

The year 2019 marked the 70th founding anniversary of the PRC and the 64th anniversary of the nuclear industry, which was also a crucial year to fully implement Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the underlying principles of the 19th CPC National Congress, secure a decisive victory in completing the 13th Five-Year Plan and achieve the first Centenary Goal of building a moderately prosperous society in all respects. Reviewing China's achievements in the past 70 years, we have accomplished our task to write a magnificent chapter of nuclear development.

Intrinsic Safety Lays a Foundation for Development

On January 15, 1955, the CPC Central Committee made the decision to develop atomic energy. That's when China's nuclear industry started. That day marked the first and an important step to become a new nuclear power.

On March 20, 1985, the 300 MW nuclear power unit of Qinshan Nuclear Power Plant, the first nuclear power plant in mainland China, was put into construction, marking a breakthrough in nuclear power in mainland China

On May 3, 2004, the No.2 Unit of Qinshan Nuclear Power Plant was put into commercial operation, marking the completion of China's first large commercial nuclear power plant that was independently designed, constructed, operated and managed.

On January 21, 2008, CNNC Nuclear Power Co, Ltd., the predecessor of CNNP, was established.

In 2012, CNNP launched the first "Appealing Light" Cup Knowledge Contest for Middle School Students in China, taking a crucial step in communication with the public.

On June 10, 2015, the first demonstration project of Hualong One nuclear reactor in No.5 Unit of Fuqing Nuclear Power Plant was put into construction, which is a third-generation nuclear technology independently developed by China.

On June 10, 2015,CNNP was listed on the Shanghai Stock Exchange and became first listed nuclear power company in the A-share market (stock code: 601985).

On December 1, 2016, CNNP released the first public communication white paper in the industry and launched the first initiative for promoting nuclear industry's communication with the public, calling on the public to support the development of China's nuclear industry.

On October 16, 2019, No.1 Unit of Zhangzhou Nuclear Power Plant started the FCD, marking the batch construction of Hualong One nuclear reactor.

On December 18, 2019, CNNP won the first Technology Transfer Award issued by international organizations and was selected as one of the top 100 brands in China.

Intrinsic Safety Lays a Foundation for Development

Safety is the lifeline for the nuclear industry. Upholding the spirit of the nuclear industry emphasizing the cause, responsibility, preciseness and endeavor, and the guidelines of "giving priority to safety and quality, and emphasizing prevention while promoting integrated governance", CNNP has established a nuclear safety culture system with its characteristics, and carried out safety culture year campaign themed "performing duties, and complying with rules and regulations" to improve the nuclear safety culture. We have continuously improved our nuclear safety management by improving the organization arrangement and operation, implementing the supervision mechanism, and strengthening the whole-process safety management and emergency management. We also promote benchmarking against advanced companies, organize peer evaluation, and encourage experience sharing to enhance intrinsic safety.

9 power units achieved **100** marks in WANO composite index, ranking first among all rated reactors.
We have achieved **171** reactor-years of safe operation in total.

Technological Innovation Supports Industrial Upgrading

Innovation drives the development of the nuclear industry. The grid-connected power generation of Qinshan Nuclear Power Plant marked the historic progress in CNNP's independent development of nuclear power. CNNP actively promotes technology research and development, develops key technologies in multiple fields, and fosters the domestic production of nuclear equipment manufacturing. CNNP has strengthened exchanges and cooperation with partners along the industry chain, and took advantage of its strengths and management experience to realize common development of the industry. We have also actively stimulated technological innovation, explored new research systems and mechanisms and built a research team composed of top technical personnel, equipment reliability experts and young talents to cultivate talents for the industry.

In the "Hualong One" demonstration project, **100%** the key and main equipment was produced in China.

Communication with the Public Shows the Charm of Nuclear Power

Strengthening communication and interaction with stakeholders will benefit the healthy and sustainable development of the nuclear power industry. CNNP adheres to transparent communication principle of "confidence, connection and coordination", aiming to achieve "sincere communication and exchanges, mutual understanding and accompany" and create a new model for communication with the public. CNNP released the first public communication white paper in the industry and launched the first initiative for communication with the public, calling on nuclear companies to have professional, transparent and open communication with the public and create a good environment for nuclear power development. We also disclose nuclear-related information and share nuclear knowledge so as to improve public awareness of nuclear power and nuclear safety, and build public confidence in China's nuclear industry.

CNNP has held the "Appealing Light" Cup nuclear power knowledge contest for seven consecutive years with total participants of **2.34** million.

Feature

CNNP Spared no Efforts to Fight the COVID-19

In early 2020, the spread of the coronavirus disease (COVID-19) concerned everyone. Since the outbreak, CNNP has complied with the decisions and policies of the State Council, and implemented the requirements of the SASAC to spare no efforts in pandemic prevention and control. While preparing manpower and materials for pandemic prevention and control, CNNP also tried its best to help Wuhan fight the pandemic.

Comprehensive Deployment for Pandemic Prevention and Control

Making quick response to carry out strict pandemic prevention and control

After the COVID-19 outbreak, CNNP set up a special working group led by the board chairman, also the secretary of CNNP Party committee, to coordinate pandemic prevention and control. The Company established a monitoring and reporting system promptly to monitor and track the pandemic prevention of subsidiaries. We also formulated and issued pandemic prevention documents such as Safety Tips and Warnings of the Pneumonia Caused by the Novel Coronavirus, so as to improve employees' awareness and ability to protect themselves from the disease.

Promoting orderly resumption of work to ensure the safety of employees

To protect employees and promote resumption of work, CNNP carried out urgent procurement of pandemic prevention materials during the Spring Festival, set up an information sharing platform, and let subsidiaries signed their own contracts after unified purchase negotiation, so as to help them solve shortages in pandemic prevention materials, and resume work and normal operation. We have also assessed the risks in contracts being carried out and projects to be signed caused by the pandemic, and taken effective measures to respond in a timely manner, which ensures the healthy and stable operation of the Company.

Providing technological support for the battle against COVID-19 with Co-60

On February 7, 2020, the medical supply support team of the Joint Mechanism of the State Council on Prevention and Control of COVID-19 issued the *Circular on Implementation During the COVID-19 Pandemic*, which clearly specified sterilization of medical protective suits by irradiation (with Co-60 or electron accelerator). As the only cobalt producer in China, Qinshan Nuclear Power Base sent its cobalt to various places for radiation sterilization of medical materials. It took only 6 hours to upload tens of thousands of disposable medical protective suits, complete sterilization by irradiation with Co-60, and upload those supplies for transportation. Co-60 sterilization greatly has improved the sterilization efficiency, shortens the time from production to use of medical protective suits, and effectively eased the shortage of disposable protective suits during the pandemic. Our "national glory" once again demonstrated the responsibility of central SOEs by providing technological support for fighting the pandemic.

Carrying out urgent procurement of pandemic prevention materials to ensure orderly resumption of work

Further Reading

At present, most of medical protective suits are sterilized by ethylene oxide according to national standards, which takes 7 to 14 days, while sterilization by irradiation with Co-60 has the same effect but with higher efficiency. The protective suits packaged in boxes can be sterilized by irradiation in only one day without being unpacked, which is at least 7 times more efficient than conventional sterilization methods. Also, as Co-60 has strong penetrating power, sterilization by radiation is more thorough and sterilized products can be stored for a long time.

Shouldering the Responsibility as a Central SOE

Mobilizing all our subsidiaries to donate pandemic prevention and control supplies

Since the outbreak of COVID-19, CNNP has made active response by making use of its strengths in the nuclear industry, allocating pandemic prevention and control supplies, and mobilizing all its subsidiaries with complementary advantages to donate various supplies to Hubei province, the front line of the pandemic, and also help other regions solve shortages of pandemic prevention and control supplies.

Russia makes concerted efforts with China to combat the pandemic despite the distance

The sudden outbreak and increasing severe COVID-19 disease caused shortages in protective materials in Lianyungang. Once we knew that Lianyungang was collecting pandemic prevention and control materials, CNNP Suneng Nuclear Power Co., Ltd. made quick response and deployment to coordinate available resources. Only within half a month, the company promoted Russia Atomic Machinery Export Co., Ltd. to donate 104,500 disposable medical masks to the Red Cross Society of Lianyungang. In order to put donated supplies to good use as soon as possible, CNNP Suneng Nuclear Power Co., Ltd. helped with import customs clearance procedures promptly and coordinated with the Red Cross societies of Jiangsu province and Lianyungang city to deliver the supplies to Lianyungang for the battle against COVID-19.

Sticking to our duty to ensure production and operation

In face of the pandemic, CNNP mapped out a strategy with quick response from all operating bases. They established special teams at all levels immediately. Party members and officials as well as employees volunteered to perform their duties and ensure electricity production while fighting against COVID-19, striving to win this tough battle. Employees of the 21 in-service units of five major nuclear power bases stuck to their posts, ensured safe production, and went all out to go through tough times.

"We stop the spreading of virus but not services. As long as there is a need for production, our physics team is here!"

——Wang Jun, No.3 Physics Office of Qinshan Nuclear Power Plant

"To fight against the pandemic, what we can do is to stay home and always wear a mask to prevent ourselves and those around us from becoming sources of infection. What we can do for the nuclear power units is to ensure safe and stable operation at this critical moment."

——Wang Yang, No.4 Operation Duty Office of Jiangsu Nuclear Power Co., Ltd.

Donating pandemic prevention and control supplies

Scan the QR code: Russian friends compose a song about fighting against COVID-19 to cheer for China

Scan the QR code: Russian colleagues send best wishes for fighting COVID-19

From the outbreak to the end of the first quarter of 2020, CNNP's **21** in-service nuclear power units have generated more than **30**TWh of electricity, providing power supply for pandemic prevention and control.

Ensuring Safety to Lay a Solid Foundation For Corporate Development

We have achieved 171 reactor-years of safe operation in total.

171 reactor-years

Nine power units achieved full marks in WANO composite index, ranking first among all rated reactors.

9 units

Nuclear Safety Culture

Nuclear safety culture is the cornerstone of the nuclear safety system. CNNP has continuously improved the nuclear safety culture development system, carried out the “Safety Culture Year” campaign, and integrated nuclear safety culture in the thoughts and actions of employees and in the whole process of production and operation, so as to ensure safe development of nuclear power.

Nuclear Safety Culture Development

CNNP continues to improve the management system for nuclear safety culture, strengthens the promotion of nuclear safety culture, and carries out warning and education activities, which helps integrate the nuclear safety culture into the daily production and life of employees, and raise their awareness to promote nuclear safety culture. 7 innovative achievements in safety culture were selected as one of the 2019 Outstanding Innovative Achievements in National Electric Power Safety Culture Development.

Nuclear safety culture systems

CNNP continuously organized employees to study the CNNP Ten Principles of Excellent Nuclear Safety Culture and CNNP Nuclear Safety Culture Development History to raise their nuclear safety awareness. CNNP also carried out the CNNP Plan to Promote Nuclear Safety Culture Development to effectively integrate nuclear safety culture in daily operation.

Nuclear safety culture promotion and education

The management gave nuclear safety culture lectures. CNNP organized nuclear safety culture promotion activities such as knowledge contests and training courses. In 2019, CNNP carried out 9 trainings courses on nuclear safety culture with over 300 participants from 12 subsidiaries.

Nuclear safety culture awareness education

CNNP released safety information every day, and developed an “incident clock” to remind employees integrate safety culture in research, production and operation. CNNP also organized representatives from operating nuclear power plants to participate in the awareness education activity in Fukushima, Japan, so as to raise their awareness of safety and self-discipline.

Scan the QR code:
MV themed “Putting Nuclear Power Safety first”

The closing conference of the “Electric Power Safety Culture Year” campaign organized by National Energy Administration

CNNP organizes the awareness-raising education in Fukushima where the nuclear accident occurred.

Nuclear Safety Culture Review

CNNP continues to carry out nuclear safety culture review, and attaches much importance to on-site assessments. For the first time, the Company conducted a questionnaire survey of nuclear safety culture in business partners, and made systematic analysis of the assessment and survey data, so as to provide a scientific basis for and continuously promote nuclear safety culture development.

On-site assessment system of nuclear safety culture

It has helped get results from on-site assessments. In 2019, we carried out 11 nuclear safety culture assessments in 5 nuclear power bases, from which we drew over 120 conclusions.

Questionnaire survey system of nuclear safety culture

It has provided support for fully understanding nuclear power plants’ acceptance and implementation of CNNP Ten Principles of Excellent Nuclear Safety Culture. We have conducted questionnaire surveys on nuclear safety culture for four consecutive years. In 2019, we surveyed 13,000 employees from 12 enterprises about 20 key questions, and collected 2.4 million data points.

Management module of nuclear safety culture

It is used to conduct unified management of the data of on-site assessments and questionnaire surveys, as well as the conclusions from NSCA (Nuclear Power Culture Assessment) , so as to carry out comprehensive data processing and analysis of the nuclear culture assessments.

Nuclear Safety Management

CNNP has continuously improved its safety management by optimizing the safety management system, promoting the standardization of safety management, eliminating hidden dangers and enhancing its emergency response ability, so as to guard the lifeline of safety.

Safety Management System

CNNP has continued to improve the safety management system, regulated the operation of the Safety and Environment Committee, and fulfilled its safety management responsibility, effectively ensuring work safety and safe operation.

The Safety and Environment Committee under the Board of Directors was set up to ensure the board’s effective management and supervision on work safety. Composed of five directors, the committee reviews our safety and environmental practices and gives reasonable suggestions. The head of the committee is appointed by the Board of Directors, who organizes relevant meetings. CNNP relies on the committee to solve problems in safety management and provide organizational support for the safe and reliable operation of nuclear power plants.

In 2019, CNNP revised the regulations related to safety and quality such as the *Safety Management System, Production Management System and Quality Management System*, so as to regulate its safety management effectively.

As of the end of 2019, none of our **21** commercial nuclear power units had any incident rated level 1 or above according to the International Nuclear and Radiological Event Scale (INES), and we achieved work safety with **"zero casualty"** during work.

99.94% of the hidden dangers to safety management have been rectified.

Standardization of Safety Management

CNNP has actively promoted standardization of work safety, and unified standards for equipment management, product operations and the information system with information and automation technologies, effectively improving the standardization of safety management.

CNNP has comprehensively promoted the N1-EAM (Production Management Information System of Nuclear Power Plants) project to build standardized and replicable nuclear power plants. The Company formulated the *CNNP's Plan for Implementing the N1-EAM Standardization and Replication Project*, and carried out the project immediately and thoroughly through providing unified trainings for employees of nuclear power plants, upgrading production management procedures, etc. As of the end of 2019, 17 nuclear power units of Qinshan Nuclear Power Plant, Fuqing Nuclear Power Plant, and Hainan Nuclear Power Plant completed production management standardization based E1-EAM, and developed a standardized process covering all links in the production of nuclear power plants, marking our production management and informatization reached a new level.

CNNP has organized the development of the nuclear power work safety management platform. This lays a foundation for supporting the production preparation, operation and power generation, maintenance and equipment management, and safety management of our nuclear power plants, and promoting the standardization and automation of multi-reactor operation and management as well as further development in existing nuclear power bases.

Safety Supervision and Hidden Danger Identification

Adhering to the GOSP management philosophy (Govern, Oversight, Support and Put into effect), CNNP continues to improve the safety supervision system, implements the notice and supervision mechanism for major work safety problems in nuclear power units, and strengthens identification of hidden dangers to ensure safety of the system, equipment and employees, thus building the line of defense for safety.

Promoting effective operation of the independent safety supervision system

- We promoted independent safety supervision in the headquarters, improved the on-site safety director reporting system, innovated in the inspection approaches of n-site safety directors, and invited experts from the China Academy of Safety Science and Technology to provide professional support, thus enhancing intrinsic safety of the Company in all aspects.
- We organized seven safety director inspections on all our operating nuclear power plants and nuclear power projects under construction.

Continuously implementing the notice and supervision mechanism for major work safety problems

- We actively promoted to solve work safety problems that are of concern to regulatory authorities and common to multiple plants, and gave full play to our strengths of experience sharing to reduce repeated research, which effectively ensured safe and reliable operation of the nuclear power units.

Identifying and dealing with hidden dangers to work safety

- We identified and rectified hidden dangers to personal safety, equipment and facilities as well as safety management.
- We found no major hidden safety hazards throughout the year.

Emergency Management

CNNP strictly complies with the *Regulations on Emergency Measures for Nuclear Accidents at Nuclear Power Plants*, and improves emergency management from multiple aspects including emergency organization, emergency systems, emergency equipment and emergency drills, so as to enhance our preparedness for and response to emergencies.

Qinshan Nuclear Power Plant organizes an joint emergency drill involving on-site and off-site departments.

Hainan Nuclear Power Co., Ltd. organizes an on-site emergency drill in 2019.

Improving the emergency management system and working mechanism

We improved the emergency organization by clarifying job responsibilities. We strictly implemented the emergency duty management system to verify the emergency situation and ensure timely emergency response. We optimized the *Emergency Management System* and other emergency management documents to make them more scientific and feasible.

Improving and optimizing emergency equipment management

In forms of self-inspection and internal and external inspections, we have actively carried out regular maintenance and inspections, and constantly improved our emergency equipment and facilities such as the emergency broadcast network and on-site monitoring system to ensure that they are readily available.

Strengthening the management of emergency trainings and drills

Our subsidiaries have developed emergency training programs and carried out emergency trainings and drills in a planned and systematic way to improve joint response in actual emergency situation. In 2019, we carried out 419 single emergency drills and 8 comprehensive emergency drills.

Building emergency teams and bases

The headquarters has actively promoted the building of emergency rescue teams and emergency bases, and sent more emergency personnel to each nuclear power plant. Now we have a total of 191 emergency workers. We have actively coordinated the approval of Qinshan and Tianwan emergency base projects and specified their investors.

CNNP fully defends against super Typhoon Lekima to ensure safe and stable operation

On August 9, 2019, Typhoon Lekima, the strongest typhoon of the year, was approaching Qinshan Nuclear Power Plant, Sanmen Nuclear Power Plant and Tianwan Nuclear Power Plant. These nuclear power plants began preparation immediately and gave early-warnings of floods and typhoon in an orderly manner. To ensure safety of the production site during the typhoon, CNNP released an early warning notice to prepare and allocate materials against typhoon. The Company organized meetings on flood prevention and response to typhoon to map out timely on-site response plans based on the typhoon data and arrange next moves. We also organized relevant departments to conduct inspections so that we could rectify potential safety risks in a timely manner. After Typhoon Lekima landed, all our nuclear power plants maintained work safety and demonstrated a high level of safety of our nuclear power bases.

On-site emergency personnel of Qinshan Nuclear Power Plant go up the mountain to check wiring.

Quality Project Development

CNNP has promoted orderly construction of key projects and strengthened the safety management of projects under construction to ensure their safety, quality, and progress of are under control. In 2019, all our special operations personnel worked with certificates, zero casualty in project construction. We achieved zero occurrence of major equipment accident, man-caused major quality accident, major transportation accident, theft or loss of hazardous materials, and fire accident.

In 2019,
100% of our special operations personnel had certificates.
Zero casualty in project construction

Improving the work safety credit system

More punishments were imposed on business partners and employees who seriously violated work safety regulations. Meanwhile, we gave targeted work safety assessments and incentives to ensure safety in construction.

Providing special support for new nuclear power projects

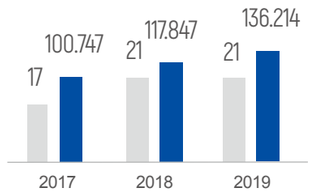
We made special support plans for new nuclear power projects. By supporting the quality system inspections, and welding and non-destructive testing for the Hualong One projects of Fuqing Nuclear Power Plant and CNNP Guodian Zhangzhou Energy Co., Ltd., we ensured the smooth implementation of the projects.

Unit 3 and Unit 4 of Fuqing Nuclear Power Plant wins the "National Quality Engineering Gold Award"

In 2019, Unit 3 and Unit 4 of Fuqing Nuclear Power Plant won the National Quality Engineering Gold Award and became the first nuclear power project in China to receive this honor. Adhering to the construction philosophy of "pursuing excellence and building classic projects", the company has made outstanding achievements: it has shorter duration for constructing nuclear power units of the same type as compared with other companies in the industry, the lowest unit costs in the investment industry, and the highest welding quality in the main steam and feed water system. It has set a good example for nuclear power companies in promoting safe and green development, innovative development, communication with the public, and mutual benefits between the company and local community, and also provided rich management and technical experience for building the Hualong One third-generation nuclear reactor demonstration project.

Safe and Stable Operation

Always putting nuclear safety first, CNNP continuously optimizes its management of overhaul, improves the ability of operators and enhances equipment reliability to ensure safe and stable operation of the nuclear power plants.



Units in operation

Total annual power generation of nuclear power units in operation (TWh)

Unit 1 of Tianwan Nuclear Power Plant refreshed the shortest VVER overhaul period record of **26.72** days.

Unit 4 of Tianwan Nuclear Power Plant refreshed CNNP's shortest overhaul period record of **53.91** days.

Prevention of Human Errors

We have continuously improved the human error prevention system, implemented strict operator admission system, enhanced operators' safety awareness and skills, and made good use of tools for human error prevention to avoid operational risks and ensure safe operation.

Implementing strict operator admission system

We set up and continuously improved the operator recruitment, training, and evaluation system, and adopted the strict operator admission system to ensure safe and stable operation.

Improving operators' skills

We provided lifelong learning opportunities for operators, including trainings about human error prevention knowledge and skills as well as skill competitions for employees to constantly improve their safety awareness and operating skills.

Avoiding operational risks

We developed human error prevention courses and tools including eleven human error prevention tools, human error prevention videos, and human error prevention labs so as to prevent operators from human errors.

Qinshan Nuclear Power Plant's training system of human error prevention tools is promoted in the nuclear power industry as conduct standards.

Equipment Reliability Management

CNNP has established the equipment reliability management committee to strengthen equipment reliability management and monitoring of key equipment, and taken multiple measures to reduce downtime caused by equipment failure.

Launching the “ER8/4” mechanism, enhancing SPV management and risk control, and promoting the operation of the critical function team to improve equipment reliability.

Formulating the *Work Plan for Overall Improvement of DCS System Performance and Reliability* to reduce unplanned outages caused by DCS (Decentralized Control System) equipment failures.

Promoting domestic production of spare parts to reduce unplanned outages caused by quality problems of imported spare parts.

Continuous Improvement

CNNP has continuously carried out internal and external peer reviews, improved the experience feedback mechanism, found out and effectively solved problems in work safety and safety management, so as to consolidate the foundation for safety and promote safer operation.

Peer Reviews

CNNP invites external experts from the IAEA, WANO and CNEA to visit its nuclear power plants and give assessments and guidance. At the same time, the Company conducts internal assessments based on its needs to guide the improvement of safety management. In 2019, the Company carried out 6 external peer reviews and 19 internal peer reviews.

Strengthening analysis of the assessment data

We strengthened analysis of the assessment data, compiled assessment briefings and quarterly report on assessment data analysis, and also carried out annual analysis of the assessment data to guide and support our management improvement.

Making special assessments

We carried out special assessments about electrical operation safety and implementation of maintenance regulations in CNNP Nuclear Power Operation Management Co., Ltd., as well as the improvement of Hainan Nuclear Power Co., Ltd. in WANO composite index.

Evaluating the rectification effect

We evaluated the rectification effect after the special assessments conducted in 2018, followed up the assessment effect and carried out close-loop management to help solve relevant problems and improve the management of the Company.

Experience Sharing

CNNP effectively adopts the multiple-plant experience sharing system. Based on class A/B incident management mechanism, we comprehensively manages and control major factors that affect safe, and stable operation of nuclear power units, and continue to share experience for further improvement.

Improvement of the class A/B incident experience sharing mechanism. Class A/B incidents have been included in the agenda of the meetings hosted by the general manager, morning meetings and evening meetings, so that we can strictly control and track the implementation of adaptability evaluation and rectification. We have taken a series of measures such as accurate identification, quick detection and in-depth investigation, and improved the timeliness and effectiveness of experience sharing. In 2019, the number of class A/B incidents, operation incidents, and unplanned outages continued a downward trend.

Effectively use of the status reporting system. Through the experience sharing management platform and EAM system, all status reports of the Company have been rated and distributed. The status reports serve as a platform to help us find out the primary cause and make rectifications, which effectively help prevent and reduce human errors and recurrence of equipment failures.

Promoting Green Development to Protect Our Beautiful Home

- Generated 136.801 TWh of electricity safely throughout the year

136.801 TWh

- Equivalent to cutting down 136.3906 million tons of carbon dioxide emissions

136.3906 million tons

Enhancing Environmental Management

CNNP upholds the principle of "taking responsibility for workplace safety in performing duties, holding those who fail to uphold safety standards accountable, and strengthening collaboration and coordination" and continuously improves the environmental protection management system. Under the Board of Directors, the Safety and Environment Committee is set up to inspect the Company's work on safety and environmental protection. The committee has formulated the *Rules of Procedure for the Board of Directors Safety and Environment Committee* to guarantee effective management and supervision of the Company's safety work and environmental protection. The general managers of member units are assigned as the first responsible persons and the vice general managers in charge of safety and environment work is responsible for environmental management; the environmental emergency departments of nuclear plants conduct centralized risk management. As of the end of 2019, all nuclear power plants in operation of CNNP had passed the environmental management system certification.

CNNP strictly complies with national and local laws and regulations on environmental protection. The Company has formulated and improved regulations such as Guidelines for the Identification and Evaluation of Environmental Factors and *Guidelines for Environmental Protection*, enhanced the identification and evaluation of environmental factors and daily management, and formulated environmental emergency response measures, so as to improve environmental management capability of nuclear power plants and prevent environmental accidents. In 2019, neither environmental incident nor environmental accident occurred at CNNP.

Identification of environmental factors

- Organizing activities to identify environmental factors and conduct environmental pollution remediation with non-thermal discharge technology
- Identifying key environmental factors and making a list of them

Enhancing daily environmental management

- Clarifying environmental management targets and formulating the environmental protection work plan
- Improving the environmental protection regulations and processes, rigorously implementing the environmental impact evaluation system, setting up the environmental quality system for project completion acceptance and building environmental facilities
- Assigning management personnel and inspectors for environmental protection, and conducting environmental monitoring and supervision through internal and external supervision and peer review

Strengthening environmental emergency response

- Establishing the environmental emergency response system and plan
- Organizing environmental emergency drills and training to improve emergency response operations

Combating Climate Change

Guided by the conviction that lucid waters and lush mountains are invaluable assets, CNNP actively promotes the development of clean energy and persists in green production and operation with the hope of contributing to the construction of a beautiful China.

Generated **136.801** TWh of electricity safely throughout the year

——Reduced **54.7204** million tons of standard coal consumption

——Cutting down **136.3906** million tons of carbon dioxide emissions

——Cutting down **4.104** million tons of sulfur dioxide emissions

——Cutting down **2.052** million tons of nitrogen oxide emissions

The total installed capacity of new energy reached **1.0196** GW

Developing Clean Energy

Nuclear power plays an indispensable role in the process of building a green, low-carbon and sustainable energy system. Guided by the development path of "ocusing on five major sectors with nuclear energy as core business, expanding presence in both domestic and global markets, and attaching equal importance to industrial activity and financing", the Company actively promotes the development of clean energy such as nuclear power, wind power and PV power and improves new energy technologies to proactively address climate change.

First affordable grid-connected wind power demonstration project

In August 2019, CNNC Heiyazi 50MW-Affordable-Wind Power Demonstration Project in Gansu was officially put into operation, which was first affordable grid-connected wind power demonstration project. With a total of 25 wind turbines, the project can provide 159.01 GWh of electricity every year, equivalent to reducing standard coal consumption by about 48,600 tons. The project has provided experience for other wind power projects in utilization of wind energy and application of new wind power technologies. In 2019, the project won the award of "China Wind Energy • Pioneers".

CNNC Heiyazi Wind Power Demonstration Project in Gansu won the award of "China Wind Energy • Pioneers"

Intensifying Carbon Emission Management

CNNP incorporates the environmental protection concept into project construction and operation, and take technical approaches and management measures to reduce greenhouse gas emissions.

Project construction: conducting environmental impact evaluation and review according to law and regulation, and embedding the environmental protection concept into construction design and technical scheme; optimizing concrete casting through industrial means to reduce carbon dioxide emissions.

Project operation: optimizing the operation method, shutting off all unnecessary equipment, and eliminating high energy consumption equipment; making technical renovations, optimizing equipment energy efficiency, and enhancing energy conservation and carbon reduction; putting up air conditioner and light bulb tags and intensifying power usage management in office buildings; spreading the energy saving philosophy and motivating employees to transport and travel in a low-carbon way.

Conserving Energy Resources

CNNP has established and improved the energy management system and procedure, applied new technologies, new processes and new equipment to improve energy efficiency, and conducted energy saving publicity activities to promote the philosophy of energy conservation and low carbon. Jiangsu Nuclear Power Co., Ltd. has established energy consumption regulations such as the *Regulations on Use of Freshwater* and the *Regulations for Nuclear Power Plants on Use of Electricity* to promote employees to save water and electricity.

Improving fuel utilization efficiency

- Optimizing fuel assembly manufacturing, management and usage strategies, and developing a reliable and economical fuel recycling model
- Extending the fuel operation period to ensure full use of the fuel
- Intensifying quality monitoring, ensuring stable operation of nuclear power units, and improving fuel usage efficiency

Cutting down on water usage

- Using freshwater based on the *Water Management Regulations* to reduce the freshwater consumption
- Adopting water purification technology to treat and recycle domestic sewage of the nuclear power plant to improve water usage efficiency
- Putting up water conservation signs in water access areas of the construction sites to remind employees to save water

Saving electricity

- Spreading the energy conservation philosophy, popularizing energy saving knowledge, and raising employees' energy conservation awareness
- Putting up air conditioner and light bulb tags and intensifying power usage management in office buildings
- Installing LED lights in the nuclear power plant to cut down power consumption

Jiangsu Nuclear Power Co., Ltd. strengthens water conservation to build a water-saving enterprise

Jiangsu Nuclear Power Co., Ltd. deeply taps the water conservation potential, mainly uses seawater as the cooling water, and adopts the optimal water intake and drainage plan to reduce freshwater consumption. The company has rebuilt water pump stations to realize centralized recovery, which saves 730m³ of water per year. The domestic sewage treatment system of freshwater plants has also been renovated with the integrated water treatment equipment to use processed water as landscaping water, which saves 1,825m³ of landscaping water per year. Besides, the company has renovated the slag discharge pool valve well of chlorination stations into water reservoirs to recycle clear liquid in the upper layer, which saves 10,000m³ of water per year. In 2019, Jiangsu Nuclear Power Co., Ltd. was awarded "Outstanding Water-saving Enterprises in Lianyungang City".

In 2019, Jiangsu Nuclear Power Co., Ltd. was awarded

"Outstanding **Water-saving Enterprise** in Lianyungang City"

Reducing Pollution Emission and Discharge

CNNP implements the requirements of the action plans for air pollution prevention, water pollution, and soil pollution, and takes measures like minimal waste and optimal emission, so as to effectively reduce pollutant emission and discharge.

Management of Solid Waste, Waste Water and Waste Gas

CNNP continuously improves the radioactive waste management system, rigorously implements the procedure specified in radioactive effluent discharge management procedure, enhances monitoring and supervision to promote the minimization of radioactive waste, in an effort to control and minimize radioactive effluent discharge.

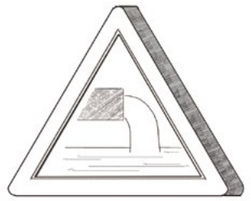
Radioactive liquid effluents	• Carrying out cyclic sampling of radioactive wastewater, and discharge effluents when the analysis results meet relevant standards • Collecting the radioactive resin and evaporation residue generated during the operation and maintenance of the power station, and discharging them to the radioactive waste solidification system for disposal after temporary storage in the radioactive wastewater storage system
Radioactive gaseous effluents	• Installing radiometers to monitor emissions of waste gas in real time • Treating the radioactive waste gas with the waste gas treatment system to prevent the excessive emissions
Solid radioactive wastes	• Transporting and incinerating radioactive combustible wastes to reduce the waste volume for treatment • Treating all the radioactive waste with the radioactive waste solidification system
Spent fuel	• Innovating in the whole-process dry storage technology of spent fuel, and completing the process of storage tank preparation, loading, drying and sealing, transshipment, and storage, and promoting the implementation of dry fuel storage • Sending the spent fuel to designated treatment plants according to national requirements

Noise Prevention and Control

CNNP rigorously complies with the *Law on Prevention and Control of Pollution from Environmental Noise* and intensifies the management of environmental noise impact of project construction and operation.

- Regularly examining construction equipment, eliminating outdated products, and installing noise reduction equipment such as noise enclosure, shield and soundproof cotton
- Reviewing the explosion design and construction plan, controlling the explosion timing, and supervising the construction site in locations that are not densely-packed
- Organizing construction operations in a scientific and rational way and avoiding construction during the night
- Regularly monitoring noise generation and ensuring the noise level during daytime and nighttime meets the noise standard

Sewage Treatment



CNNP actively implements the requirements of water pollution treatment and effectively controlling production wastewater and domestic sewage of nuclear power plants to reduce sewage discharge.

- Installing the online monitoring device and the flowmeter to monitor data such as wastewater PH and COD in real time and meter the discharged wastewater, and ensuring water quality in compliance with discharge standards
- Conducting the upgrade and renovation of sewage treatment facilities in nuclear power plants and using processed water for landscaping and spraying for dust prevention to recycle and reuse water resources
- Entrusting qualified monitoring units to regularly monitor the sewage treatment station at the plant to ensure effective sewage treatment

Solid Waste Treatment

The non-radioactive solid waste of the Company mainly includes recyclable waste, industrial waste and hazardous waste.

- Centralized reporting and treating recyclable waste and recycling waste and outdated materials such as waste tires and wood-based panels
- Designating collection sites for industrial garbage, entrusting professional companies to regularly collect industrial garbage for treatment, and guaranteeing on-site environmental safety
- Formulating the hazardous waste management plan and submitting it to relevant department, and regularly entrusting qualified units to collect and treat hazardous waste

Monitoring Environmental Impact

Strictly abiding by laws and regulations including the *Environmental Radiation Protection Regulations of Nuclear Power Plants* and *Regulations for Environmental Radiation Monitoring of Nuclear Power Plant*, CNNP has effectively monitored the surrounding environment of nuclear power plants in operation, submitted monthly and annual environment monitoring reports, timely disclosed monitoring data, and accepted supervision from regulators at all levels and the public. In 2019, the three shields of nuclear power plants were kept intact, the capability of the radioactive exhaust, effluent and solid waste treatment system met the design requirements, and the discharge of radioactive effluents was effectively controlled, with no tangible impact on the surrounding environment.

Nuclear Power Plant / Region	Monitoring Project		Monitoring Results	
			Maximum	Medium
Qinshan	Environmental dose rate around the plant by continuous monitoring（μGy/h）	Γ radiation	0.174	0.099±0.007
	Radioactivity of aerosols around the plant（mBq/m3）	Total α radiation	0.215	0.07±0.02
		Total β radiation	4.50	1.3±0.5
Tianwan Nuclear Power Plant	Environmental dose rate around the plant by continuous monitoring（μGy/h）	Γ radiation	0.131	0.105
	Radioactivity of aerosols around the plant（mBq/m3）	Total α radiation	0.234	0.078
		Total β radiation	3.759	1.300
Fuqing Nuclear Power Plant	Environmental dose rate around the plant by continuous monitoring（μGy/h）	Γ radiation	0.190	0.101±0.020
	Radioactivity of aerosols around the plant（mBq/m3）	Total α radiation	0.0465	0.0244±0.0015
		Total β radiation	1.02	0.574±0.006
Changjiang Nuclear Power Plant	Environmental dose rate around the plant by continuous monitoring（μGy/h）	Γ radiation	0.24	0.15±0.013
	Radioactivity of aerosols around the plant（mBq/m3）	Total α radiation	0.227	0.065±0.021
		Total β radiation	3.777	0.798±0.052
Sanmen Nuclear Power Plant	Environmental dose rate around the plant by continuous monitoring（μGy/h）	Γ radiation	0.102	0.101
	Radioactivity of aerosols around the plant（mBq/m3）	Total α radiation	0.14	0.06
		Total β radiation	2.70	1.25

Protecting Ecological Environment

CNNP values biodiversity protection and balances project operation management and natural resource protection to reduce nuclear power plants' ecological impacts. The Company regularly investigates marine ecology of nearby sea areas and evaluates the ecological impact of nuclear power plant operation on nearby sea areas; samples and examines the surrounding waters and soil to record ecological environment situation; formulates protection measures in design plans and construction processes to relieve ecological impact; and promotes landscaping to build garden-like plants.

Egrets flying over Qinshan Nuclear Power Plant

Plants growing nearby Qinshan Nuclear Power Plant

Egrets perching nearby Qinshan Nuclear Power Plant

The beautiful countryside nearby Qinshan Nuclear Power Plant

The beautiful scenery of ecological nuclear power plants

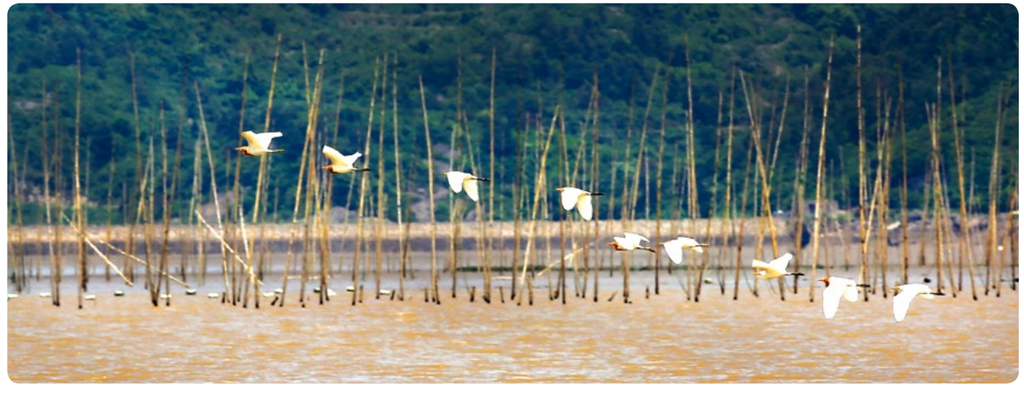
Qinshan Nuclear Power Plant values ecological environment protection and improves the environment of the plant, attracting more and more egrets to forage in and nearby the plant. In 2019, more than RMB 20 million was invested in landscaping and renovation of the surrounding areas of the plant to create a favorable environment for nurturing biodiversity.

Tianwan Nuclear Power Plant collaborated with Jiangsu Administration for Nuclear and Radiation Safety Regulation to conduct ambient medium monitoring and continuously track and evaluate the environmental impacts of the nuclear power plant on the surrounding areas. Meanwhile, the monitoring data were disclosed on the official websites of the Ministry of Ecology and Environment and the enterprise under the public's supervision. Tianwan Nuclear Power Plant is the first nuclear power plant to be listed as "Demonstration Base of National Industrial Tourism" and has received several honors such as "Demonstration Base of Jiangsu Industrial Tourism".

Adhering to the principle of "respecting nature and pursing green development", Sanmen Nuclear Power Plant has implemented biodiversity protection in daily operation and management, and fully achieved the balance of economic, environmental and social benefits.

Plants growing nearby Tianwan Nuclear Power Plant

Sooty-headed bulbul perching nearby Sanmen Nuclear Power Plant



Egrets flying over Sanmen Nuclear Power Plant

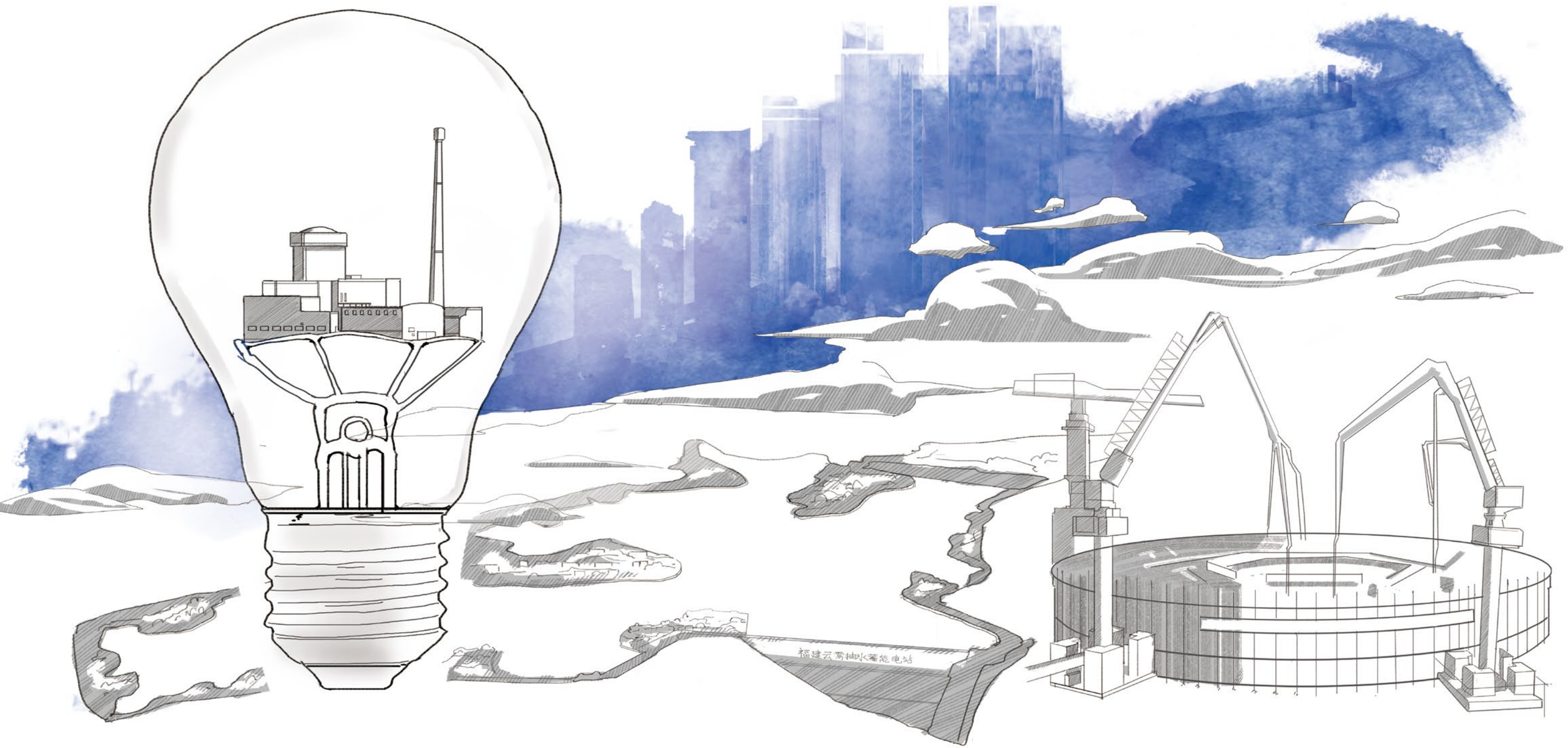
Igniting the Development Engine through Innovation

- Introduced 40 high-end talents such as academicians and Yangtze River Scholars throughout the year

40 high-end talents

- Obtained 95 patents throughout the year

95 patents



Innovating in the Industrial Layout

CNNP implements the national energy strategy, continues to focus on the core business of nuclear energy, and actively promotes the development of non-nuclear clean energy. Moreover, the Company develops nuclear power operation technology and service and constantly enhances the driving force for future development.

Advancing Diversified Development

December 31, 2019,
CNNP had **12** domestic heating reserve projects，with a total reserve area of **155.14** million m^2

Based on an accurate judgement of the new stage and the new trend, the Company has gradually developed an industrial layout of “focusing on five major sectors with nuclear energy as core business, expanding presence in both domestic and global markets, and attaching equal importance to industrial activity and financing”, which fosters new drivers of growth for corporate development.

The first self-built clean energy heating project commences construction, which aids the fight against air pollution

On May 25, 2019, the renewable water heat pump heating and cooling project of China Nuclear Kunhua Energy Development Co., Ltd. (China Nuclear Kunhua) in the downtown of Nanyang City commenced construction, which is the first self-built geothermal power heating project of CNNC. The heating capacity of the project is 3.2 million m^2. The project recycles the thermal energy of renewable water processed in Nanyang Sewage Purification Center to supply heating and cooling energy to public and private buildings in the planned scope, which covers an area of 11.8 km^2. The project has been included in the lists of Nanyang Jingwan Cooperation Platform Introduced Projects, Top 10 Key Projects and Top 10 Key Livelihood Projects; it has also been the renewable water heating and cooling project in China that supplies energy to the largest scope.

The project has generated considerable economic and social benefits and filled in the gap of local heating and cooling capacity, which promotes the completion of the Nanyang downtown centralized heating construction plan and meets the heating and cooling demand of colleges and residence communities in the planned scope. While improving infrastructure construction, after completion, the project is expected to realize about RMB 12 million per year, reduce about 23,800 tons of stand coal consumption, cut carbon dioxide, hydrocarbon, nitrogen oxide and sulfur dioxide emissions by 53,700 tons, 10.7 tons, 86.4 tons and 397.4 tons respectively, and reduce 240 tons of dust. The project has substantially promoted the prevention and control of air pollution in Nanyang City and produced good demonstration effects for surrounding areas.

Developing Technical Service

CNNP makes full use of its nuclear power operation and maintenance experience and professional talent advantage, coordinates the resources of member units, and seizes domestic and international market opportunities so as to realize the leapfrog development of technical service within the entire system.

In 2019,
the Company signed nearly **400** technical service contracts

8 technical service products of CNNP

Preparation for production

Mainly including the assignment of production personnel; the preparation of production management documents, technical documents and relevant licenses; the construction of the production preparation information platform; and the preparation of materials.

Nuclear power debugging

Mainly including the debugging of the management system, the preparation of specific debugging execution documents and the overall debugging plan, the debugging of all single systems, special debugging tasks, and trial operation.

Special maintenance and repair

Mainly including the preparation of maintenance and repair strategies and plans, technical documents, tools and instruments, on-site operations and quality control, after-repair function reassessment, and the compilation of the maintenance and repair report, etc.

Professional training

Mainly including the general nuclear power training, the training for operational personnel, the technical training for maintenance personnel, the training for production technicians, and the training for nuclear power management personnel.

Operational support

Mainly including the construction of document systems for equipment management, fuel management, nuclear power materials, nuclear power plant chemical process, safety analysis, radiation prevention, renovation work, as well as technical services such as technical consultation, R&D and on-site operations.

Technical support

Mainly including the research and development of nuclear power operation training facilities, the renewal of the nuclear power plant operation license, nondestructive examination (NDE), nuclear power operator license examination, nuclear power operation evaluation, experience feedback and some other technical services.

Nuclear power overhaul

Mainly including the overhaul of the safety management system, risk management system, quality management system and process management system, the preparation of technical documents, the implementation of the overhaul, and the organization and management of major overhaul tasks.

Information and digital technology

Mainly including the construction, operation and maintenance of nuclear power digital technology and information system, nuclear power data and information service, featured software for nuclear power operation, major data of materials, and IT infrastructure service, etc.

China's third-generation nuclear power technology - HPR1000 fuels the development of Fujian with nuclear energy

On October 16, 2019, the demonstration project of CNNC Hualong One (HPR 1000) - China's third-generation nuclear technology with intellectual property ownership - commenced construction in Zhangzhou, Fujian. It marked that the bulk production of the "national business card" Hualong One reactors has officially been launched. Hualong One meets the latest global nuclear safety standards and is one of China's major landmark achievements in nuclear power innovation and development. It is of vital importance for China to realize historic development transforming from a big nation of nuclear power to a strong nation of nuclear power. The official commencement of mass production of Hualong One enhances the confidence of countries along the Belt and Road in this technology; meanwhile, its construction commencement in Zhangzhou will create a new "business card" for Fujian and drive local economy with nuclear energy.

The technical service of Chinese nuclear power debuts on WFES 2019

From January 14 to 17, 2019, for the first time, CNNP exhibited on the 12th World Future Energy Summit (WFES 2019) to present the technical service and overall operation & maintenance capacity and shared practices, achievements and experience to over 800 exhibitors and visitors from over 40 countries across the world. Thanks to the exhibition, CNNP actively integrated the international market, further built the nuclear power brand, and laid a foundation for promoting Chinese nuclear power technical service to the world.

Deepening Management Innovation

CNNP vigorously promotes management innovation, constantly optimize the mode of enterprise management, actively develops informatization management platforms, improves management quality and efficiency, and stimulates endogenous impetus to drive the efficient development of the Company.

Innovating in Party building

Improving the Party building quality management system and further promoting the joint work mechanism of Party building to strengthen the scientific and systematic level of Party building

Innovating in supervision

Building the joint supervision mechanism that integrates disciplinary inspection, supervision, audit, and legal governance, and fostering a comprehensive and multifaceted "macro-supervision" system

Integrated Management

Integrating aspects of management to explore the integration of risk control and compliance, enhancing risk prevention, and ensuring operational compliance

IT-based platform construction

Continuously promoting the 3A/4E informatization project to realize the targets of 3A, and successfully building and promoting the 4E systems to improve the operation efficiency

3A

ASP-based Work Safety Management Platform
AGP-based Operational Management Platform
ADP-based Party Building Culture Platform

4E

N1-EAM (Production Management Information System)
N1-ERP (Enterprise Resource Planning) System
N1-ECM (Enterprise Content Management) System
N1-ERDB (Equipment Reliability-based Design) System

D.T.C

1D:Data Management Platform
1T :Cybersecurity Lab
1C:IC card

The accounting sharing platform initiates a new era for CNNP to realize intensified and smart accounting sharing

To promote the intensified and smart accounting sharing, CNNP has endeavored to build an accounting sharing center. On June 28, 2019, the accounting sharing service platform was launched, symbolizing an important milestone and a step closer towards building the CNNP accounting sharing center.

Based on the CNNP N1-ERP System, the operation system of the accounting sharing service platform has built the front-end, mid-end and back-end systems that are geared to users, shared accounting, and financial accounting respectively. The launch of the operation system improves the intensification, standardization and informatization of accounting, promotes the unification of business standards, reduces operational costs, and drives the comprehensive transformation of financial accounting, which helps realize standardized, shared, digital and smart financial accounting.

Promoting Technological Innovation

Science and technology leads the future while innovation drives development. CNNP attaches great importance to building a technological talent team and protecting the intellectual property right. Through actively promoting independent innovation and application of advances in science and technology, CNNP has made remarkable progress in the development of nuclear energy.

In 2019, the cumulative R&D investment reached RMB **890** million; the independent R&D expenditure accounted for **1.93** percent of the revenue.

Building a Technological Talent Team

CNNP makes continuous efforts in building a technological talent team, introduces high-end technological talents, and improves the scientific and technological platform to fully inspire innovation vitality. As of the end of 2019, 22 employees received governmental allowances, 1 employee won the prize in the Chinese Vocational Skills Competition, and six employees were awarded the honor of National Skilled Technician.

Enhancing the introduction of high-end talents

Throughout the year, 40 high-end talents were introduced, including 11 academicians, 3 talents of the New Century Talent Project, 3 professors of the Yangtze River Scholar Program

Building the talent cultivation platform

Establishing the nuclear power operation research institute and more than ten scientific research platforms including academician workstations, high-tech enterprises, university-enterprise cooperation platforms and technical alliances, etc

Establishing the Nuclear Power Operation Research Institute to build an innovative talent cultivation platform

In 2019, CNNP, together with Qinshan Nuclear Power Plant, Tianwan Nuclear Power Plant, Fuqing Nuclear Power Plant, Hainan Nuclear Power Plant and Sanmen Nuclear Power Plant, etc., jointly initiated the establishment of a nuclear power operation research institute. Through benchmarking against international advanced practices, the research institute aims to make full use of the operation mechanism featuring "core business, widespread synergy" and build the nuclear power operation support platform, technological innovation platform and international cooperation platform.

The nuclear power operation research institute helps CNNP seize the strategic opportunities of the Chinese nuclear power development, innovate in the talent cultivation mechanism, and develop a group of chief experts and academic leaders, so as to realize the goal of leading the global nuclear power industry.

In 2019, CNNP obtained **95** patents, including **15** invention patents and **80** patents for utility model.

Strengthening IPR Protection

CNNP values the protection of intellectual property rights. To achieve this goal, the Company promotes the invention patent application and IPR authorization, and encourages all employees to engage in innovation so as to inspire new drivers of growth for corporate development.

Golden Prize is not accidently received: CNPO Tech makes advance preparation for IPR protection to support patents to "go global"

On November 9, 2019, the invention patent of China Nuclear Power Operation Technology Corporation, LTD. (CNPO Tech) - *An Ultrasonic Inspection Tool of Main Pipeline of Reactor Pressure Vessel* - unveiled and won the Golden Prize on the 23rd National Invention Exhibition· The Belt and Road and BRICS Skills Development and Innovation Competition. This is the first time for CNPO Tech to receive this honor, adding a new milestone in the scientific and technological development history of CNNP.

To support patents to "go global", CNPO Tech makes advance preparation for IPR protection. Taking the inspection device R&D plan as the major patent and key technologies and innovations as minor patents, the company strives to realize systematic management of intellectual property rights, which effectively interprets and protects patents. As of the end of 2019, the company applied for seven patents of the inspection device, including 3 invention patents and 4 patents for utility model that cover nuclear power and nuclear equipment plant inspection.

Promoting the Application of Innovations

With a well-established research and innovation system, we have continuously improved our independent innovation ability and promoted the application of innovation achievements to make innovation an effective driving force for enterprise development.

Breaking import independence, the "Chinese core" of Gamma Knife successfully developed at Qinshan Nuclear Power Plant

At 12:37:24, April 1, 2019, the first cobalt component for medical use was successfully developed at HWR Unit 1 of Qinshan Nuclear Power Plant after being exposed to irradiation, symbolizing China owned the ability to independently produce medical cobalt-60 radioactive sources. This technology has broken down the independence on the import of medical cobalt-60 radioactive sources with high specific activity. The domestically-produced cobalt-60 core will be used to produce gamma knives for cancer treatment, which will benefit cancer patients across the country.

Gamma knives have been widely used in cancer treatment for its strengths such as accurate positioning, minor side effects and no surgical operation. The core component of gamma knives is the high specific-activity cobalt-60 radioactive sources. For a long time, China depended largely on the import of such materials. The cobalt supply shortage severely hindered the development of the industry. While guaranteeing safe and stable power generation by the two HWR units, Qinshan Nuclear Power Plant has developed the ability to produce medical cobalt-60 radioactive sources based on the independently-developed industrial cobalt technology. These efforts have provided a solid foundation for the sustained development of the gamma knife sector, which will better benefit society and the people.

The water chemical application technology of Sanmen Nuclear Power Plant wins international recognition

The world's first AP1000 nuclear power unit: Based on the research results of EPRI on zinc-injected nuclear power plants, Sanmen Nuclear Power Plant has formulated the strategy of zinc injection during the first operating cycle. The successful application of this technology has helped Sanmen Nuclear Power Plant establish the water chemical management system and standard and rapidly meet the technical standards of water quality. On February 6, 2019, this technology won the 2018 nuclear power technological advance application award on the annual Nuclear Power Commission meeting of the Electric Power Research Institute (EPRI) in Florida, USA. This was the only award-winning Chinese project in EPRI NPC 2018 and the first time that CNNP was awarded such award by an international organization.

Up to now, this technology has been incorporated in CNNP Guiding Rules of Standardization (guiding rules of chemical processes) and applied in CNNP's 21 units in operation.

Strengthening Coordination to Creating Values

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

17 PARTNERSHIPS FOR THE GOALS

In the Hualong One demonstration project, the domestic production rate of the critical major equipment reached 100%

100%

145 strategic suppliers

145

Deepening Strategic Cooperation

CNNP continues to collaborate with stakeholders, including the governments, enterprises, universities, financial institutions and research institutes, to fulfill responsibilities and create values for all.

Governments

- Collaboration with governments: Energy cooperation and industrial cooperation
- Value of collaboration: Drive local economy and foster new drivers of growth

Enterprises

- Collaboration with enterprises: Information sharing, industrial alliance, project cooperation
- Value of collaboration: Optimize resources allocation and extend the industrial value chain

Universities

- Collaboration with universities: Jointly cultivate talents and build research academies
- Value of collaboration: Cultivate scientific and technological talents and conduct technical research

Financial institutions

- Collaboration with financial institutions: Credit cooperation, financial consultation
- Value of collaboration: Support the robust development of enterprises and improve the capital usage efficiency

Research institutes

- Collaboration with research institutes: Jointly build research platforms and conduct research projects
- Value of collaboration: Develop new technologies, promote the integrated development and exploitation of nuclear power, and facilitate the development of the industry

The Nuclear Power Technical Service Alliance promotes the Chinese nuclear power to "go global"

On November 22, 2019, 13 units from China National Nuclear Corporation (CNNC), China General Nuclear Power Group (CGN), State Power Investment Corporation Limited (SPIC), and China Huaneng Group Co., Ltd. (CHNG) became the signatories to the Nuclear Power Technical Service Alliance (NPTSA) on the NPTSA foundation meeting and symposium on technical service "going global" held by CNNP.

The alliance fulfills the duties of information sharing, resource utilization, innovation and experience sharing, etc. It specializes in the whole life cycle of all commercial reactor types in China, ranging from design, construction, commissioning, lifespan extension to decommissioning. The members of the alliance can jointly improve the nuclear safety guarantee level and promote the development of the nuclear power technical service sector while complying with relevant laws and regulations and the requirements of corporate governance. The alliance has provided a larger platform for member units to make exchange and cooperation and foster a more scientific and highly efficient cooperation mechanism, which strengthens information and resources sharing and promotes mutual communication and trust between member units. A win-win situation has been created to support the Chinese nuclear power technical service to "go global".

Building a Responsible Supply Chain

Upholding the principle of mutual benefits and inclusive development, CNNP continues to conduct cooperation on the industrial chain, enhances complementary advantages, and improves supplier management, contributing to the development of the industry.

CNNP has **145** strategic suppliers and its centralized procurement rate reaches **95.98%**

Standardizing procurement management

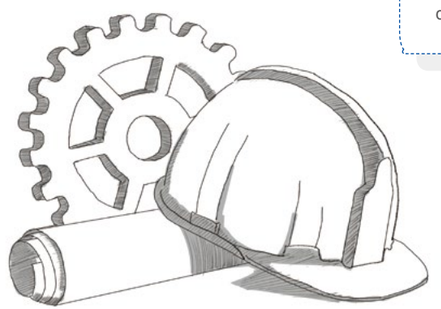
- Promoting centralized procurement, implementing the cost control and standardized procurement processes, and enhancing centralized procurement management to guarantee transparent procurement, improve inventory management and provide bases for procurement management optimization

Enhancing supplier management

- Rating suppliers in terms of technical strength, quality guarantee, industrial safety, business development and credit standing, and enhancing supplier screening and qualification management
- Clarifying the working principle and scope of the supplier performance assessment; improving the supplier performance assessment process and formulating incentives and restrictive measures to respond to the assessment results, so as to improve suppliers' capabilities

Establishing the Work Safety Integrity System to raise the integrity awareness of collaboration units

To help collaboration units raise the integrity awareness, CNNP amended the red line and yellow line standards for work safety, improved the work safety integrity database and the blacklist system, and promoted the construction of the work safety integrity system in 2019. The Company regularly blacklists the units and individuals that commit serious violations and forbids them to participate in the business of CNNP. Throughout the year, the Company blacklisted 38 people who broke red line of safety and 14 collaboration units that had improper production operations to avoid related risks and realize the robust development.



The domestic production rate of pump equipment of the Hualong One Demonstration Project surpassed **90%**

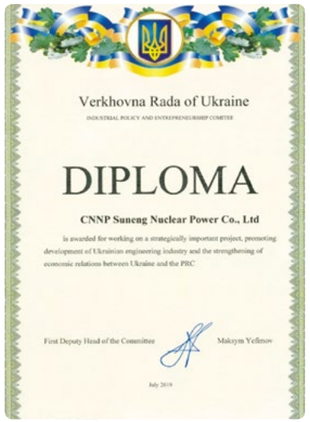
The domestic production rate of bulk materials such as critical valves and nuclear power cables reached **100%**

Promoting the Domestic Production of Equipment

CNNP adheres to the innovation-driven development philosophy and follows the construction principle of “independent design, manufacturing, construction, and operation”, continues to improve the domestic production rate of equipment, and drives the transformation and upgrade of a group of auxiliary nuclear power equipment and parts manufacturers. With independent innovation, CNNP has reduced construction costs, improved the domestic production rate and the independent design level, and promoted the development of the nuclear power industry of China.

The Company has established the working group of equipment localization. In 2019, the working group held 11 meetings, screened 511 sub-projects in 11 categories, recorded the progress of 2,769 projects, and compiled 19 reports. Moreover, the working group prepared the *SPV Equipment Quality Management, SPV Contract Sample*, the *Opinions on Procurement Management of Localized Research Projects* and several other system documents, providing institutional guarantee for project localization. Besides, it built the domestically-produced spare parts project database, which consisted of 300 general projects and key featured projects of nuclear power plants, and further promote the implementation of these projects.

Advancing the International Development



The Verkhovna Rada of Ukraine (Ukrainian Parliament) awarded CNNP Suneng Nuclear Power Co., Ltd. an honor diploma to commend its contributions to the construction of key Sino-Ukraine strategy projects, the development of the Ukrainian industry, and the bilateral trade and economic cooperation.

With the guidance of the international development strategy, CNNP persists in opening and cooperation for mutual benefits. The Company conducts cooperation with several countries overseas on clean energy and promotes Chinese manufacturing and technology in overseas markets.

Developing the International Market

Seizing the opportunities of the Belt and Road Initiative, CNNP makes use of its advanced project experience and technological edge to actively develop the international market, build a world-class international nuclear power enterprise, and promote Chinese nuclear power to “go global”.

The Chinese third-generation nuclear power simulator model included in the IAEA analog machine sequence, winning international recognition

In 2019, CNPO Tech successfully bid the IAEA's project of Basic Principles Simulator for Severe Accidents in Advanced Water Cooled Reactors. Through the project, the International Atomic Energy Association (IAEA) works for better guarantee, supervision and peaceful uses of nuclear energy and uses the simulator series to disseminate nuclear power station knowledge among member states. The bid-winning third-generation simulator is the first product in the series of China to be included in the IAEA simulator sequence and will be applied and tested by relevant nuclear institutions across the world. The successful bid of CNPO Tech symbolizes that the Chinese third-generation nuclear power simulator went global again for widespread recognition.

Intensifying Exchange and Collaboration

CNNP actively enhances peer exchange and participates in industrial activities to learn advanced concepts and share experience. Moreover, CNNP continues to intensify collaboration with overseas peers and integrate advantageous resources to jointly promote the sustainable development of the industry.

Participating in WANO activities and winning the WANO Nuclear Excellence Awards

WANO’s members vote to establish WANO Shanghai Center

On February 21, 2019, the membership of the World Association of Nuclear Operators (WANO) voted to establish a new Branch Office and Support Center in Shanghai, China. The WANO Shanghai Center project is initiated by WANO, led by CNNC, and supported by several other Chinese enterprises.

The establishment of WANO Shanghai Center is another practice of Chinese enterprises to build a new platform for international cooperation, add new growth drivers for common development, and actively participate in global governance, which will contribute more Chinese power to the safe and reliable global nuclear power operation. In future, CNNP will collaborate with other nuclear power enterprises to jointly build WANO Shanghai Center into an internationally influential regional exchange and cooperation platform for nuclear power operators.

CNNP collaborates with Tecnatom to establish the Hualong International Training Center

CNNP further fulfilled the strategic cooperation framework agreement with Tecnatom. On November 12, 2019, the Hualong International Training Center, co-built by CNNP and Tecnatom, was officially founded. The establishment of the center is of vital importance to further advancing the Memorandum of Understanding on the Development of Hualong One Training Center signed by CNNC, CNNP and Tecnatom. Following the establishment and operation of the Hualong International Training Center, an internationalized and digital Hualong training system will be built in future to provide a full range of training services for overseas trainees.

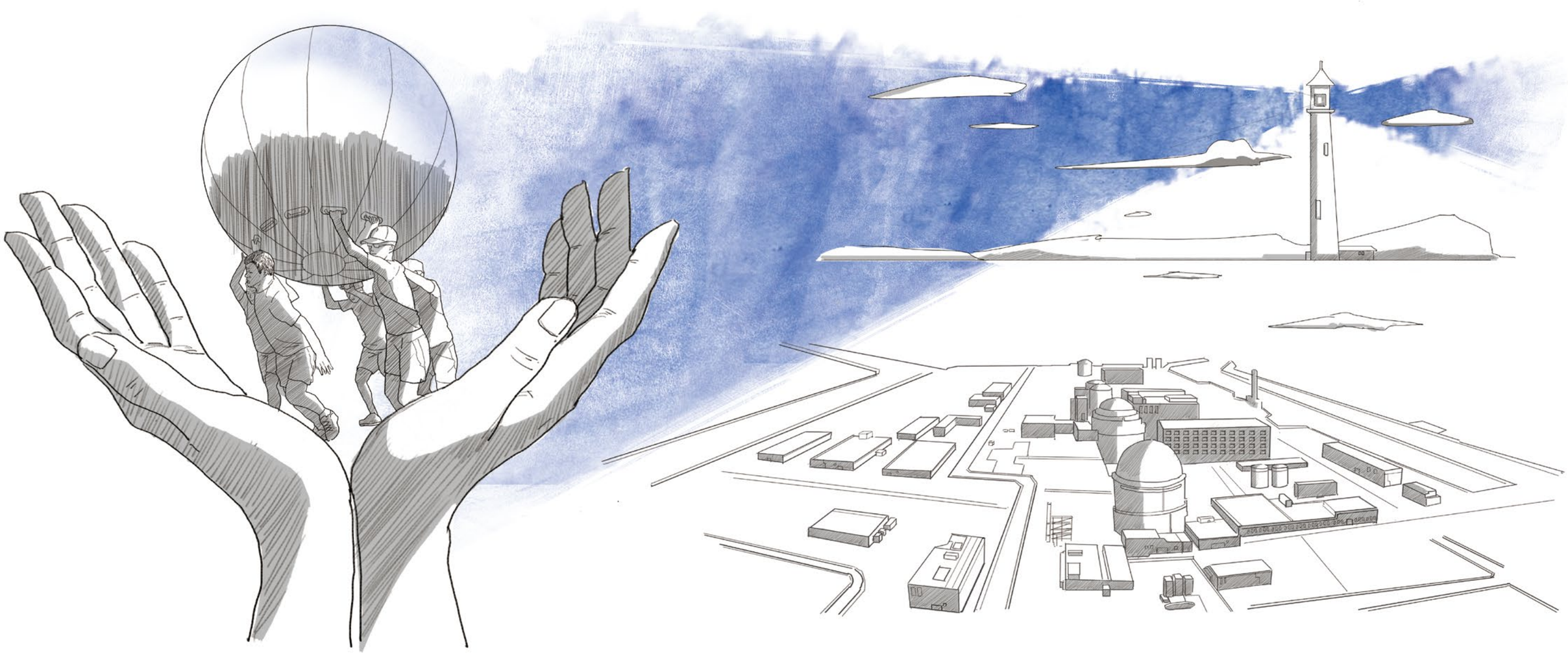
Supporting Employee Development to Make Progress Together

- Number of employees: 13,152

13,152

- Training investment: RMB 47.225 million

47.225 million



Employee Rights and Interests

Strictly abiding by relevant laws and regulations as well as labor policies, CNNP fully protects the legitimate rights and interests of employees, builds an equal and inclusive workplace, and ensures that employees to can make the most of their talent.

Equal Employment

In strict accordance with national laws and regulations including the *Company Law* , the *Labor Law*, and international human rights norms, CNNP builds a diversified and inclusive workplace and provides every employee with equal employment and promotion opportunities, regardless of gender, age, educational background and ethnicity.

Type of personnel	Managers	13.91%
	Specialized personnel	35.93%
	Operational personnel	22.19%
	Skilled personnel	6.92%
	Personnel of business functional units	15.02%
	Others	6.03%
Education background	Master's degree or higher	9.09%
	Bachelor's degree	82.38%
	Junior college	6.87%
	Secondary vocational school or lower	1.66%
Age structure	Below 30 years of age	53%
	30-39 years of age	36%
	40-49 years of age	9%
	50 years of age and above	2%

In 2019,

Employee contract signing rate **100%**

we had a total of **13,152** employees

Compensation and Benefits

CNNP follows national laws and regulations, optimizes the compensation system, and improves the salary rise mechanism based on market and performance. The Company provides mandatory insurance schemes (pension fund, medical insurance, work injury insurance, unemployment insurance, and maternity insurance), the housing fund, enterprise annuity as well as allowances for shifts, organize recuperation activities, and continues to develop company benefits to let employees enjoy decent work and maintain the quality of life.

In June 2019, the Company officially implemented the first plan for equity-based incentives, rewarded the management and key technical and skilled personnel with options to stimulate their innovation and creativity. CNNP became the first state-owned listed power company in the A-share market to provide equity-based incentives.

In 2019,

Coverage of social insurance schemes

100%

Democratic Management

CNNP continuously advances democratic management by establishing multiple communication channels, improving the system of workers congress, and encouraging employees to make suggestions and participate in the decision-making process of the Company. These efforts have fully protected employees' rights to know, to participate, to express, and to supervise.

- "Voice of employees" mailbox
- Surveys on employee opinions
- Collection of valuable suggestions
- Meetings of democratic life
- General manager reception day
- Enlarged meeting of the labor union committee

In 2019,

Labor Union membership rate **100%**

We collected over **8,500** suggestions in **49** fields, among which **7,150** were very helpful.

Carrying out a survey on the employer branding of CNNP

To build an irresistible employer brand, the Company entrusted a third-party organization to conduct a survey on employer branding of nuclear power companies in China. Through interviews and questionnaires about the brand image, employer culture, organization and management, compensation and benefits, workplace, and trainings, we learned about the opinions and suggestions of all parties on our employer brand image. We also conducted field interviews with 27 employees and leaders from various departments such as the Party Building Department and Human Resources Department. Meanwhile, employees of the Company and college students received a questionnaire survey, and 4,370 and 501 valid questionnaires were collected respectively. The results showed that both employees and college students considered CNNP as a responsible enterprise with great development potential.

Occupational Health and Safety

While strictly complying with the *Law of Occupational Disease Prevention and Control* , *Regulations on Workplace Occupational Health Supervision and Management* and other relevant laws and regulations, CNNP has implemented the working principle of occupational health and safety that features "putting people first, putting prevention first while enhancing supervision, conducting scientific management" and formulated the *Guidelines for Compliance Evaluation of Environmental Protection and Occupational Health and Safety* and *Guidelines for Monitoring and Measurement of Environmental Protection and Occupational Health and Safety Performance*. Moreover, the Company has carried out safety facility maintenance and monitoring of occupational health hazards to create a healthy, safe and pleasant workplace for employees.

In 2019,

Health examination coverage

100%

Occupational health examinations and surveillance	Carrying out occupational health examinations and assessments; conducting daily monitoring and informing employees of occupational disease hazards such as high temperature and noise; organizing the compliance evaluation of occupational health and safety(OHS) management; making competence assessments for radiation workers; inspecting various operating systems, houses, workshops and equipment; carrying out occupational health surveillance of occupational hazards and establishing occupational health surveillance archives for employees.
Raising OHS awareness	Strengthening the nuclear emergency response and medical rescue capabilities , and improving the health protection ability of employees; exchanging ideas and conveying OHS suggestions through annual reports and special meetings to strengthen OHS education and improve employees' awareness of OHS protection.
Mental health care and psychological counseling	Compiling the Guidelines on Caring for the Mental Health of Employees, and caring for employees' psychological health through psychological health education activities, such as the "soul harbor", psychological counseling room and mental health website, and the Employee Assistance Program.
Improvement of occupational safety protection facilities	Completing the construction of protective facilities against occupational diseases of nuclear power units; improving warning signs and caution signs for hazards; providing professional cleanup of radioactive contamination of humans.

Fuqing Nuclear Power Plant carries out the EAP program to care for the physical and mental health of employees

Fuqing Nuclear Power Plant provides psychological tests for employees in its Employee Assistance Program (EAP), in order to learn about their mental and physical health. The plant organizes 8 activities such as mental health courses, group counseling, group discussions and quality development programs, and establishes counseling rooms, sandplay rooms and group counseling rooms to offer relaxing space for employees. It also provides remote counseling and face-to-face counseling as well as monthly open classes through WeChat for all employees and their lineal relatives, which have helped them, especially the operating personnel, in physical and mental health and self-growth. The EAPs effectively facilitates employees enjoy work and life with a more positive attitude.

Employee Growth

CNNP unblocks career development channels, establishes the talent cultivation platform, and conducts diversified employee trainings. It is committed to building an influential and leading nuclear power company with a well-structured high-quality team with a reasonable number of employees.

Unblocking Career Development Channels

CNNP has built five career paths and a top talent channel and unblocked career development channels so that employees can choose career paths based on their expectations and strength, which creates a broader stage for employees to use their talent and lays a foundation for the training of technical talents, skilled workers, and management personnel.

Five career paths: Based on its actual situation, CNNP classifies career development channels into management, business, technical development, engineering and operations. According to the systems such as the *Unified Position System and Standards of CNNP* and *Administrative Measures for Employee Career Development*, CNNP has established reasonable and workable position system and standards for the headquarters and subsidiaries to specify the qualifications for different positions on each career path, with clear requirements for promotion, change of career paths, promotion evaluation, etc., thus helping employees achieve rapid promotion with standard process.

Top talent channel: CNNP has issued the *Guidelines for Cultivating Technical and Skilled Personnel*, which opened a top talent channel for those with strong capabilities and good performance at different levels to get rapid promotion without the limits of the five career paths and fully reach their potential on a wider development channel and platform, thus accelerating the development of technical and skilled personnel in the nuclear power industry.

Building a Talent Training Platform

Based on our resources and strength, CNNP has built a training platform for employees to systematically improve their nuclear power knowledge and technical skills, aiming to reserve talents for the nuclear power industry.

Joint training programs

We have signed joint training agreements with North China Electric Power University, Harbin Engineering University, Northeast Electric Power University and Lanzhou University, which helps select high-quality graduates, provides a platform for college students to build on expertise in nuclear power, and promotes talent cultivation for CNNP.

CNNP Elite Program

We have established a CNNP Elite Program for outstanding graduates, which provides special career planning, systematic trainings, evaluation and selection activities to unlock their potential and support their career development.

Studios for technical and skilled personnel

We provide the Master Studio and Studio for Young and Highly-skilled Personnel so that employees can undertake key technical research projects, learn from each other and improve their skills.

Investment in trainings:
47.225 million yuan

Total training hours:
16,029.79 person-months

Improving Training Systems

Continuously fostering the standardization of the training center, CNNP has formulated guidelines for standardization of training activities and promoted a hierarchical training system covering different positions on the five career paths. The Company has conducted systematic trainings for employees in different positions and at different ranks, held skill competitions, and provided financial support for employees involved in special type of work to obtain occupational qualification certification. These moves have effectively tapped employees' potentials and improved their vocational skills.

Orientation trainings

Following the principle of unified organization, standards, training materials, tests and evaluation, we carry out trainings for new hires, which introduce the history, strategic plans and corporate culture of CNNP and basic knowledge about nuclear safety and operation of nuclear power plants, helping them adapt to their roles. In 2019, a total of 715 new employees participated in trainings.

Trainings for the management

We have formulated trainings plans for the management, and provided trainings for senior leaders, new leaders of division level and section-level, young leaders, etc. A systematic training program for the management is basically developed. We also cooperate with Renmin University of China and other universities to explore a joint training mode, aiming to introduce modern management philosophy, knowledge and approaches, and carry out open and quality-oriented trainings.

CNNP young cadres management training course

Cultivation of international talents

Based on our training and practice platform, we strive to promote the cultivation of international talents in various ways, including cooperating with colleges to carry out English, Spanish and other language trainings, selecting technical personnel to participate in the business cooperation and exchanges with international organizations such as IAEA and WANO organizing technical trainings and leveraging the training platform co-established by CNNP, international institutions and peer companies including Lucas-Nülle. In 2019, 276 employees participated in the international talent training program.

CNNP the fourth foreign language training course

Holding the First "Pursuit for Excellence" Cup Youth Employee Skill Competition to improve vocational skills

In 2019, CNNP held the First "Pursuit for Excellence" Cup Youth Employee Skill Competition. The competition consisted two parts: theoretical knowledge contest and practical operation contest. In the theoretical knowledge contest, all contestants took the same written test; in the practical operation contest, they were asked to participate in four skill contests for key positions including refueling directors, operators of fuel-charging and discharging machines, vice directors of refueling, and bridge crane operators. Through intense contests, the first participating team of CNNP Nuclear Power Operation Management Co., Ltd. (CNNP Nuclear Power Operation Management) stood out, ranking 1st in the team competition; Yang Peng won the First Prize in the individual competition. The Youth Employee Skill Competition is a specific measure for further improving the nuclear power skill competition system and enriching the competition scope and mechanism, aiming to motivate youth employees to learn nuclear power knowledge and skills and practice the spirit of craftsmanship.

Professional skill competition scene

Employee Care

To cater for employees' diversified needs, CNNP holds a plethora of cultural and sports activities. Meanwhile, the Company carries out caring activities for female employees, retirees and needy employees, striving to take care of every employee.

Work and Life Balance

CNNP continues to improve fitness and entertainment facilities and organize colorful cultural and sports activities to balance employees' work and life. Through these efforts, we endeavor to create a harmonious enterprise culture and enhance the vitality and cohesion of the enterprise.

Fitness sports

Setting up a fitness activity room equipped with professional fitness equipment such as treadmills, billiard tables and table tennis tables, organizing or participating in badminton games, basketball games, long-distance running, sports meetings and other forms of fitness sports to help employees develop a healthy lifestyle.

Cultural and entertainment activities

Organizing excellence culture festivals, evening galas, book sharing and other activities to enrich employees' inner mind.

Outdoor tours

Organizing seasonal outdoor tours, such as cherry blossom viewing at Beijing Yuyuantan Park and the spring tour at Beijing Garden Expo Park, to help employees refresh their mind and body.

Hobby groups and clubs

Setting up various hobby groups and clubs to enrich the channels for employees to independently carry out cultural and sports activities.

Wholehearted Care for Employees

CNNP values humanistic care for employees, especially for needy employees, female employees, retirees and employees' children. We pay attention to their work and life and strive to make every employee work and live happily.

Caring for female employees

Formulating a humane breastfeeding leave system for female employees, setting up a "female employee lounge" equipped with special electrical appliances and supplies, and taking care of female employees in menstrual period or in lactation period; organizing Women's Day activities to make female employees feel warm at CNNP.

Helping employees in need

We take measures such as establishing archives for poor employees and building the management platform to help employees in need. In 2019, we established internal archives for 62 needy employees, raised more than RMB 700,000, provided special financial assistance for 8 impoverished employees, and provided care and solicitude for 110 sick employees.

Caring for retirees

Sending gifts to retirees and organizing symposiums and recreational activities for retirees on important holidays; understanding employees' needs and timely responding to them.

Caring for employees' children

Organizing employees to participate in parent-child activities and summer vacation trusteeship classes for employee' children organized by the group company; providing financial support for needy employees to afford their children's schooling and education.

Pursuing Harmony and Contributing to a Better Life

- Investment in poverty alleviation: RMB 6.85 million

6.85 million

- Tax payment: RMB 5.873 billion

5.873 billion

Transparency and Communication

CNNP builds various channels of information disclosure and communication, establishes the bridge of communication with the public, and guarantees the public's rights to know, to participate, to express, and to supervise, projecting a transparent and responsible brand image to the public.

Information Disclosure

Via the official website, press conferences, media reports and other channels, CNNP timely discloses the latest development and major updates of the enterprise to the public so that the public's right to know is guaranteed.

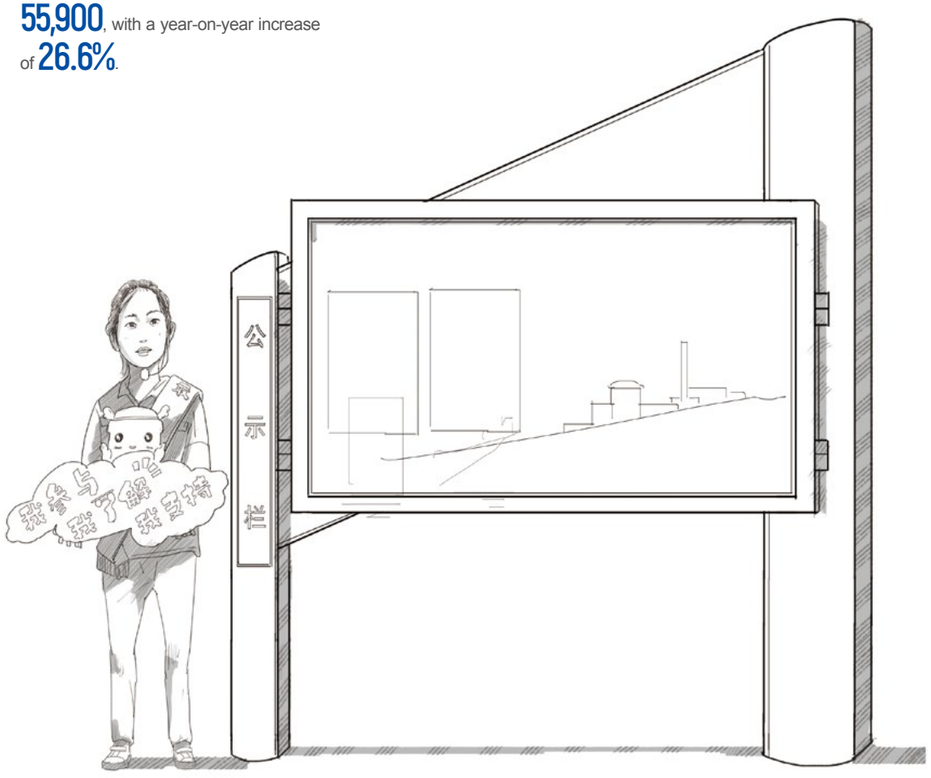
The first ESG report of CNNP released to disclose ESG management performance

On April 26, 2019, CNNP released the 2018 Corporate Social Responsibility (CSR) Report and the 2018 Environmental, Social and Governance (ESG) Report, respectively the 7th CSR report and the first ESG report of CNNP.

The ESG report responds to stakeholders' expectations from three aspects, i.e., environmental impacts, social contributions and corporate governance structure, which manifests the Company's mature ESG management and aspiration to enhance communication with stakeholders to form effective interaction and feedback.

As of the end of 2019,

The views of posts of CNNP's WeChat official account surpassed **1.09** million and the number of followers exceeded **55,900**, with a year-on-year increase of **26.6%**.



Communication with the Public

CNNP enhances targeted communication with the public in a transparent and open way. Through popularizing nuclear power knowledge, the Company tries to help the public gain a better understanding of nuclear power and earn their support to create a favorable environment for the sustainable development of nuclear power. In 2019, three papers of CNNP including *Promoting the Transformation from Compensation Mechanism to Equity-based Incentive Mechanism to Build a Long-term Mechanism for Communication with the Public* were awarded Outstanding Papers of the 3rd Public Communication Conference on Nuclear Energy held by China Nuclear Energy Association (CNEA).

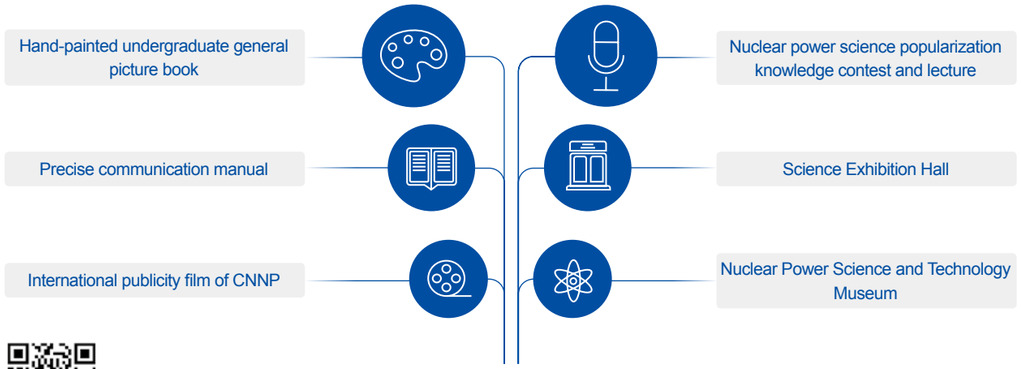
Valuing Community Communication and Support

CNNP always put the public's concerns in the first place. Before the completion of the nuclear power project, the Company pays much attention to information disclosure and formulates different communication plans to respond to different stakeholders' needs, so as to realize targeted communication with stakeholders and build an interactive, trustworthy and harmonious relationship with them.

Accurately identifying communication groups	Attracting and inviting local people with different social and cultural backgrounds to participate in communication activities such as science popularization and Q&A sessions of nuclear power projects, including government departments, provincial and municipal people's congresses, regulatory authorities, media reporters, doctors, other opinion leaders, as well as influential residents and students, and other ordinary people who hold different views.
Unblocking the channels of communication with communities	Soliciting public opinions and identifying people's expectations via questionnaires, seminars, WeChat, Weibo, official website and other channels, and carrying out classified communication and exchange, so as to win the public's recognition and support.
Disclosing the information of newly built projects	Choosing the information disclosure method that the public have easier access to according to the nature of the construction project and the characteristics of the regional public, and enhancing information disclosure and publicity to let the public timely know the real situation of the project.

Improving the Public's Understanding of Nuclear Power

CNNP carries out diverse science popularization and publicity activities to enhance the public's understanding of nuclear power and realize effective communication and interaction with community residents.



Scan the QR code:
International Publicity Film of CNNP

The public communication activity on the theme of "I join, I understand and I support"

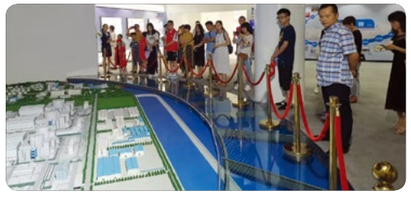
In August 2019, the 5th Science Popularization Week and the public communication activity on the theme of "I join, I understand, I support" were held in Fuqing Nuclear Plant. The series of thematic public communication activities catered for different groups and provided an important platform for the public to know and support nuclear power

"The Most Charming Constructors" visit the exhibition center: Ten front-line workers from Fuqing Nuclear Power Plant who have worked on the Fuqing nuclear power project for nearly a decade visited the Fuqing Nuclear Power Publicity and Exhibition Center.

"Parent-Child" activities of nuclear power: Fuqing Nuclear Power Plant collaborated with Fuqing Tourism Distribution Center and Maiya Parent-Child Camp to organize the parent child activity of nuclear power, which attracted more than 40 participants.

The visit of "neighboring community residents": More than 40 neighboring residents from Rongyin Community and Tianbao Community came to visit the exhibition center. Thanks to the activity, they gained a better understanding of the development history of China's nuclear industry, Hualong One, M310 nuclear power reactor, the four shields of nuclear power plants, and other nuclear power knowledge.

Front-line workers visit the Fuqing Nuclear Power Publicity and Exhibition Center.

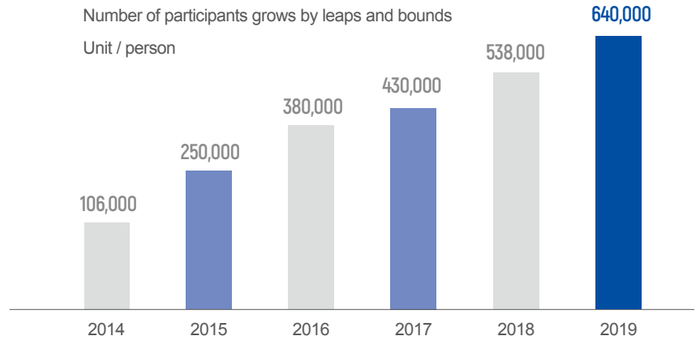


"Neighboring community residents" visit the Fuqing Nuclear Power Publicity and Exhibition Center.

Holding the "Appealing Nuclear Power" science popularization activities for the seventh consecutive year to build a public communication brand of nuclear power

CNNP has held the "Appealing Nuclear Power" Cup National Nuclear Power Knowledge Contest for Middle School Students and Summer Camp for seven consecutive years. Through these activities, CNNP aims to popularize nuclear power knowledge among the public, display the charm of nuclear power, and create a favorable environment for the development of the nuclear power sector.

In 2019, the National Nuclear Power Knowledge Contest for Middle School Students attracted 640,000 students in China and exerted an influence across the globe. The summer camp on nuclear power science popularization covered Hualong One lectures and field trips of Xiamen Museum, Xiamen Science and Technology Museum, and the project site of Hualong One with the hope of enabling camp students to perceive the development and progress of China's nuclear power.



Number of contestants of National Nuclear Power Knowledge Contest for Middle School Students

The 7th "Appealing Nuclear Power" Cup Summer Camp

Targeted Poverty Alleviation

11 employees were sent to **10** targeted villages for poverty alleviation.

Investment in targeted poverty alleviation: RMB **6.85** million

To thoroughly implement President Xi Jinping's instructions on targeted poverty alleviation, CNNP has established a poverty alleviation structure featuring "joint efforts of the headquarters and subsidiaries". By visiting and investigating targeted villages, and undertaking research on targeted poverty alleviation of China Nuclear Industry Corporate Culture Research Association, the Company focuses on the right poverty alleviation direction, and supports poverty alleviation by promoting industry development, consumption, infrastructure construction and cultural development, so as to contribute to building a moderately prosperous society in all respects.

Poverty alleviation through industry development

· Giving full play to our strength, we carried out geothermal power, wind power and PV projects in regions such as Tibet, Tongxin county in Ningxia, Lincheng in Hebei, Guidong county in Hunan, so as to support the industry development and increase the income of local people. In 2019, we carried out 56 projects to combat poverty through supporting local industry . We also invested over 230 million yuan to promote industry development in Tibet, Qinghai, and Xinjiang.

· Our projects created jobs for people in Tibet. The Gulu Geothermal Power Project in Naqu city and the Qiyao PV Project totally spent about 1 million yuan hiring 90 local farmers and herdsmen. The Basu PV Project in Changdu city and the Qiyao PV Project provided 7 permanent jobs for local people.

Poverty alleviation through increasing consumption

· We signed a three-year procurement worth 58 million yuan with Tongxin County Garment Factory in Ningxia, and already purchased products worth nearly 20 million yuan as of 2019.

· In 2019, we purchased agricultural and animal husbandry products worth over 3.4 million yuan from Tibet. We bought consumer goods worth 3.17 million yuan from the four targeted counties and consumer goods worth 1 million yuan from other regions.

Poverty alleviation through infrastructure construction

· We built local infrastructure such as street lamps, roads and irrigation facilities for targeted villages, which facilitated the production and life of local villagers. Sanmen Nuclear Power Plant donated 400,000 yuan to Zhugang village in Jiantiao town for road construction. Hainan Nuclear Power Plant invested 2 million yuan in the pumping irrigation project of Yidong village.

Poverty alleviation through cultural development

· We helped improve the cultural facilities and enrich the spiritual and cultural life of targeted villages by renovating the culture corridor, protecting ancient trees, and building cultural squares.

· We improved local educational facilities and provided more educational resources to help children learn better by building libraries, donating reading materials, and building temporary storerooms.

· We built a volunteer ream, and have participated in volunteer teaching activities in poor areas for many years, so as to improve the education of poverty-stricken areas.

Zhangzhou Energy Co., Ltd. carries out book donation and education support activities for rural left-behind children

Sanmen Nuclear Power Plant donated road construction fund to Zhugang village, Jiantiao town

The 4th CNNP Education Poverty Alleviation Summer Camp held in Sanmen Nuclear Power Plant

In August 2019, the 4th CNNP Poverty Alleviation Summer Camp was held in Sanmen Nuclear Power Plant. 56 teachers and students from Tongxin county in Ningxia Hui autonomous region, Shizhu county in Chongqing, Baihe county and Xunyang county in Shaanxi province gathered in Sanmen county. During the five-day summer camp, three nuclear power workers showed the teachers and students around the AP1000 exhibition hall, analog machines and project sites to feel the third-generation nuclear power technologies. They also visited the Ningbo Museum and Tianyige Museum, the oldest library in Asia. These activities provided a cultural feast to teachers and students, allowing them to feel the culture and inclusiveness of other regions and ethnic groups while improving scientific literacy.

AP1000 "Growing with CNNP" Science Summer Camp

In 2019,
CNNP paid **5.873** billion yuan in taxes.

Combining Corporate Business Development with Local Development

Combining our business development with local development, we cooperate with local governments and enterprises to drive local clean energy industries, and take advantage of our nuclear power bases to help develop scenic spots, promote the development of industrial tourism and create jobs for local areas. With these efforts, we strive to achieve coordinated and common development of CNNP and the local areas.

Hainan Nuclear Power Plant leads the establishment of the Hainan Clean Energy Industry Alliance to build a clean energy industrial park with 100-billion-yuan output value

To accelerate the construction of the Hainan Clean Energy Industrial Park for the development of nuclear power and related industries, Hainan Nuclear Power Plant led the establishment of Hainan Clean Energy Industry Alliance in 2019, which is composed of innovative enterprises with advanced technologies and public institutions such as the Nuclear and Radiation Safety Center of the Ministry of Ecology and Environment. A total of 20 companies and organizations (including 6 subsidiaries of CNNC) planned to settle in Hainan Clean Energy Industrial Park to jointly build an international clean energy industrial park with an output value of over 100 billion yuan. The Alliance will promote the cooperation among the industry, universities and colleges and research institutions, and accelerate the development of the clean energy industry in Hainan.

Hainan Nuclear Power Plant called for the establishment of the Hainan Clean Energy Industry Alliance

Public Welfare and Charity

The Company actively undertakes social responsibilities and makes earnest efforts to promote public welfare. We encourage all employees to engage in volunteer activities, help vulnerable groups such as the elderly, children, and people with disabilities, and take actions to promote the harmonious and orderly development of the society.

Caring for the elderly and children

We have built a long-term mechanism to care for left-behind children. By sharing nuclear power knowledge, organizing foosball and movie-watching activities, and providing psychological counseling for left-behind children, we help enrich their extracurricular life.

We visit and subsidize elderly people in the nursing home. We help the elderly with cleaning, take a temperature and check blood pressure, and give performance for them, bringing happiness and warmth to the nursing home.

Sanmen Nuclear Power Plan organizes the activity themed "We Are Here for You" for left-behind children.

Building a beautiful community

We send volunteers to keep the traffic in order, and protect the environment by cleaning up rubbish and dredging the pipelines on the road, so as to promote the harmonious and orderly development of the society.

Xiapu Nuclear Power Plant organizes the environmental protection activity of "I Love My Home".

Outlook for 2020

Aspect of CSR	CSR Performance in 2019	CSR Commitment for 2020
Intrinsic Safety	· 9 power units achieved 100 marks in WANO composite index, ranking first among all rated reactors · The Unit 3 and Unit 4 projects of Fuqing Nuclear Power Plant were awarded Golden Award for Outstanding National Projects. · Zero casualty	· 50% of units rank top in terms of WANO composite index. · Ensure nuclear safety and realize zero casualty
Green and Low-carbon Development	· Generated 136.801 TWh of electricity safely throughout the year; the total installed capacity of new energy reached 1.0196 GW. · CNNC Heiyazi 50MW-Affordable-Wind Power Demonstration Project in Gansu was officially put into operation, which was first affordable grid-connected wind power demonstration project. · The treatment system for solid waste, wastewater and waste gas ("Three Wastes") ran well with no excessive emissions of radioactive substance.	· Generate 150 TWh of electricity safely · Promote the application of new nuclear energy technology and the development of renewable energy · Continuously conduct environmental impact monitoring · Enhance energy conservation and emission reduction
Innovation-driven Development	· The first pumped-storage project of "nuclear power and pumped-storage integration" commenced construction. · Promoted the 3A/4E informatization project to realize the targets of "3A", and successfully built and implemented the 4E systems to improve the operation efficiency · CNNP, together with Qinshan Nuclear Power Plant, Tianwan Nuclear Power Plant, Fuqing Nuclear Power Plant, Hainan Nuclear Power Plant and Sanmen Nuclear Power Plant, etc., jointly initiated the establishment of a nuclear power operation research institute. · The "Chinese core" of Gamma Knife was successfully developed at Qinshan Nuclear Power Plant, which will benefit cancer patients across the country.	· The percentage of R&D investment is 3%. · Organize the Youth Forum on Nuclear Power Innovation and publish the *Collection of Youth Innovation Achievements (2019-2020)* · Continue to promote the 3A/4E informatization project
Coordinated Development	· The Chinese third-generation nuclear power simulator model was included in the IAEA analog machine sequence. · WANO's members voted to establish WANO Shanghai Center. · CNNP collaborated with Tecnatom to establish the Hualong International Training Center.	· Improve suppliers' responsibility fulfillment capability · Reduce construction costs, improve the domestic production rate and the independent design level · Enhance cooperation with foreign countries on clean energy and develop overseas markets
People-centric Workplace	· CNNP officially implemented the first plan for equity-based incentives. · CNNP issued the *Guidelines for Cultivating Technical and Skilled Personnel*, which opened a top talent channel for those with strong capabilities and good performance at different levels. · CNNP established internal archives for 62 needy employees, raised more than RMB 700,000, provided special financial assistance for eight impoverished employees, and provided care and solicitude for 110 sick employees.	· Provide employees with equal and stable employment and career development opportunities · Select and cultivate brilliant young officials · Implement the talent priority principle and enhance the building of three teams (technical talents, skilled workers, and management personnel) · Implement the *Guidelines on Caring for the Mental Health of Employees* and continue to conduct the EAP project
Sharing Prosperity with Local Communities	· CNNP held the 7th "Appealing Nuclear Power" Cup National Nuclear Power Knowledge Contest for Middle School Student, which attracted 640,000 students in China. · CNNP paid taxes of RMB 5.873 billion. · CNNP carried out 56 projects in ten provinces and municipalities to combat poverty through supporting local industry. The total investment in poverty alleviation reached RMB 6.85 million.	· Enhance nuclear power science popularization and publicity and continue to carry out brand activities of nuclear power science popularization · Respond to the national call to actively promote targeted poverty alleviation · Drive the development of local clean energy sector and further combine corporate business development with local development

CSR Honors and Awards

Recipient	Honor/Award	Award Issuer
CNNP	Nuclear Excellence Award	World Association of Nuclear Operators (WANO)
	Golden Bauhinia Award of China's Securities	Hong Kong Dagong Wenhui Media Group, Listed Companies Association of Beijing, Hong Kong Chinese Enterprises Association, Chinese Financial Association of Hong Kong, Chinese Securities Association of Hong Kong, Hong Kong Institute of Chartered Secretaries, and Hong Kong Securities Professionals Association
	Golden Round Table Award	China Association for Public Companies, and *Board of Directors* (journal of Phoenix Publishing & Media Group)
	Selected as one of the top 100 Companies in "China Brand Development Index"	*People's Daily*
	GoldenBee Excellent CSR Report 2019 · Evergreen Award	*China Sustainability Tribune* directly supervised by Ministry of Commerce
Qinshan Nuclear Power Plant	Enterprise with Best Corporate Culture Practices in China	China Enterprise Confederation / China Enterprise Directors Association
Fuqing Nuclear Power Plant	Golden Award - National Quality Engineering Award	China Association of Construction Enterprise Management

Appendix

Terminology

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 $E=mc^2$, 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 reactors.
Pressurized water reactor	A nuclear reactor in which water is not boiling, with pressurized light water (ordinary water) as coolant and moderator without boiling
Heavy water reactor	A nuclear reactor that uses tritium as moderator and can be directly fueled by natural uranium. It may use water or tritium water as the coolant, and includes two types: the pressure vessel type and the pressurepipe type.
Reactor year	One reactor year equals to one year of operation for one reactor in nuclear power plant.
WANO	The World Association of Nuclear Operators, which was founded in 1989 in Moscow.
WANO performance indicators	Indicators WANO develops and uses to evaluate member power nuclear power plants. The ranking results can be used to compare surveyed power plants.
Capacity factor	It is the ratio between the power capacity actually generated by a unit within a certain period and the power capacity calculated by nameplate capacity, and it reflects the safety operation and management level of a unit.
INPO	The Institute of Nuclear Power Operations which was founded in 1979 after the Three Mile Island accident to promote the information exchange and experience sharing between nuclear power plants, periodically assess nuclear power plants, establish performance goals and help train personnel for nuclear power plants.
IAEA	The International Atomic Energy Agency. It was founded in 1957 and is headquartered in Vienna, Austria. IAEA keeps a close relationship with the United Nations, and serves as a platform for research and technological 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	An international unit used to measure the effective dose of radiation and reflecting 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 generated 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.
Environmental background	Environmental factors in unpolluted natural environment, which includes original basic chemical composition and energy distribution of environmental factors such as atmosphere, water, soil and biology during their natural formation and development before the disturbance from human activities.
Bq	Standing for "Becquerel" in French. It is an SI derived unit of radioactivity, used to measure radioactive materials or radioactive sources. GBq is equivalent to 10^9 Bq; TBq is equivalent to 10^{12} Bq.

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Expert Opinion

The *2019 Social Responsibility Report of China National Nuclear Power Co., Ltd.* is the eighth issue of the CNNP CSR report. With a pithy style, full and accurate information as well as abundant cases, the report discloses CSR management, practices and achievements of CNNP from six aspects including safety, green development, innovation, cooperation, development and harmony, showing CNNP's commitment to the mission of "developing the nuclear industry to strengthen the country and serve the society".

CNNP has promoted CSR management with a global perspective. The report systematically shows the opportunities and challenges for sustainable development facing CNNP in current external environment and industry trends. Benchmarking against the United Nations Sustainable Development Goals (SDGs), the report introduces CNNP's CSR management strategies by focusing on six topics: "ensuring safety to lay a solid foundation for corporate development", "promoting green development to protect our beautiful home", igniting the development engine through innovation, "strengthening coordination to creating values", "supporting employee development to make progress together" and "pursuing harmony and contributing to a better life". By presenting its contribution of wisdom and strengths to the society and environment, the report shows the CSR performance of CNNP.

CNNP has responded to social concerns, showing its sense of responsibility. The report focuses on information disclosure of the issues that stakeholders are mostly concerned with, such as nuclear safety management, clean energy development and utilization, and transparent communication. The report gives full play to its role as a communication channel by actively responding to the concerns of stakeholders. The report includes a feature themed "celebrating the 70th founding anniversary of the PRC, CNNP writes a magnificent chapter of nuclear development", which systematically summarizes the outstanding practices and achievements of CNNP in the past 70 years, and demonstrates its great contribution to nuclear power safety, technological innovation, communication with the public.

While presenting comprehensive and multiple cases, the report also highlights key performance. The report comprehensively and systematically shows CNNP's CSR practices. By disclosing multiple CSR cases of CNNP and its subsidiaries, the report shows the value created by CNNP for sustainable development. Each chapter of the report starts with key performance indicators to help readers get information quickly and provide good reading experience.

The year 2020 is the year to achieve the goal of building a moderately prosperous society in all respects and the last year of the 13th Five-Year Plan. I hope that CNNP will continue to make use of its advantages, and lead sustainable development of the industry with the quality embodied in the "Two Bombs, One Satellite" project and the spirit of the nuclear industry emphasizing the cause, responsibility, preciseness and endeavor. Also, I hope CNNP will continue to create value for the enterprise, make profits for shareholders, bring happiness to employees and create wealth for the society.

Cheng Duosheng

Director of the Enterprise Innovation Department, China Enterprise Confederation

Related Reports and Publications

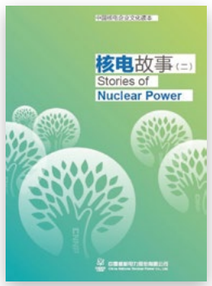
CNNP System of Culture Excellence

CNNP Employee Code of Conduct

CNNP Training Material on Culture Excellence

Redefining Safety

CNNP's 10 Principles of Excellent Nuclear Safety Culture



Stories of Nuclear Power

CNNP Visual Identification Standard Handbook

Appealing Nuclear Power, Beautiful China – A publicity album of CNNP

Nuclear Power Tide

Ideals and Culture

Tianwan Nuclear Power Plant

Youth of Hainan Nuclear Power Co., Ltd.

Feedback from Readers

Dear readers,

Thank you for reading our report!

This is the eighth issue of our social responsibility report. We look forward to your opinions and recommendations to help us improve in the future.

Please answer the following questions and fax the form to 010-81920369 or mail it to us.

Please tick √ the appropriate the answer.

Do you think the report highlights our economic, social and environmental work and our significant impacts?

☐ Yes ☐ Partially ☐ No

Do you think the information and indicators provided in the report is clear, accurate and complete?

☐ Yes ☐ Partially ☐ No

Do you think the arrangement of the content and style of the report is clear and helpful with your reading and understanding of the report?

☐ Yes ☐ Partially ☐ No

Open questions:

Which part of the report are you most interested in?

_____

What information needs to be provided about CNNP that is not provided herein?

_____

What suggestions do you have for our future issues?

_____

Please provide your contact information if that's ok with you:

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