



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

601985.SH

2023

Corporate Social Responsibility Report & Environmental, Social and Governance Report

China National Nuclear Power Co., Ltd.

Delivering Sustainable
Development for
a Nuclear-Powered Future



About This Report

Reporting period

The report covers our business activities from January 1, 2023 to December 31, 2023, and also includes additional information beyond the stated reporting period.

Reporting cycle

This is an annual report.

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 relevant ESG requirements of listed companies stipulated in the *Guidelines on Listed Companies' Environmental Information Disclosure* released by the Shanghai Stock Exchange. During the reporting preparation, the report also refers to relevant standards or principles such as *IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information* and *IFRS S2: Climate-related Disclosures* issued by International Sustainability Standards Board (ISSB), the *GRI Sustainability Reporting Standards* (GRI Standards) issued by the *Global Sustainability Standards Board* (GSSB), the *Ten Principles of the UN Global Compact* (UNGCC), *Guidance on Social Responsibility (ISO 26000:2010)* issued by International Organization for Standardization (ISO) and *Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities* released by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC).

Reliability assurance

The Company assures that the report is free of fictitious record, misleading statement, or material omission, and will hold 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.

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Letter to Shareholders

2023 was the first year to fully implement the guiding principles of the 20th National Congress of the Communist Party of China (CPC), achieving significant milestones in CNNP's high-quality development. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we have thoroughly embraced the guiding principles of the 20th CPC National Congress and conducted thematic education on this ideology. We have fully implemented the major decisions and directives of the Party Central Committee and adhered to the work requirements of the State-owned Assets Supervision and Administration Commission of the State Council, steadfastly striving toward the goals outlined in the "14th Five-Year Plan." With unity and dedication, we embody the spirit of "strengthening the nation through nuclear power and contributing through innovation" in the new era of the nuclear industry. We have firmly established our professional identity of "being CNNC employees, being employees in the Chinese nuclear power industry." Through our tenacity and courage, we have successfully met all our annual goals. As we embark on a new journey to build a powerful and rejuvenated nation through Chinese modernization, we have made a strong start in accelerating the development of a world-class clean energy enterprise.

In the past year, we have improved governance efficiency and established a rational and efficient governance system.

We uphold our corporate mission of "developing the nuclear industry to strengthen the country and serve society," guided by our core values of "responsibility, safety, innovation, and collaboration." We have proactively enhanced the scientific level of our board of directors through an integrated approach, considering economic, social, and environmental factors in our business decisions. ESG factors are now an essential part of our risk management and internal control. We continuously deepen our commitment to legal and compliant corporate governance, adhere to business ethics, and strive to create a rational and efficient corporate governance system. In 2023, CNNP was recognized among the "Top 100 China Listed Companies for ESG Best Practice" and received the Golden Bauhinia Award for "Outstanding Listed Company for High-Quality Development."

In the past year, we have actively assumed safety responsibilities, ensuring absolute nuclear safety.

We implement the overall national security concept, balancing development and safety, and strengthening the nuclear safety guarantee system. We have deepened our nuclear safety culture, improved our safety management systems, and enhanced comprehensive safety supervision across all operations. We have steadily, safely, and efficiently advanced the construction of China National Nuclear Power projects, ensuring high-quality development in the nuclear industry. In 2023, we achieved significant milestones in safety supply, the mass construction of the "Hualong One" project, and the advancement of both nuclear and non-nuclear clean energy projects. Our 25 nuclear power units continued to operate safely and stably, with cumulative safe electricity generation exceeding 260 reactor years. This achievement underscores our world-leading safety standards and our role in securing national energy security.

In the past year, we have effectively harnessed clean energy, providing "nuclear wisdom" and "nuclear power" to contribute to the vision of a Beautiful China.

Adhering to the environmental concept of "nuclear energy for a better home, harmonious coexistence between humans and nature," we have integrated environmental management into our development strategy. We effectively address pollution prevention, risk identification, and control, holding onto our bottom-line of ecological conservation. Leveraging our strengths, we promote low-carbon energy technologies and advance the comprehensive utilization of "nuclear power + strategic emerging industries" in various applications, including heating, industrial steam supply, and isotope production. We also integrate biodiversity protection into our project management processes, setting an example for clean energy projects that harmonize with nature. This approach contributes new clean nuclear energy to the creation of a Beautiful China, characterized by blue skies, green lands, clear waters, and fresh air. In 2023, CNNP generated 186.48 TWh of nuclear energy, a year-on-year increase of 0.67%, and 23.38 TWh of non-nuclear clean energy, a year-on-year increase of 66.44%.

In the past year, we have remained committed to our mission and responsibilities, contributing significantly to the advancement of a strong nation and national rejuvenation.

We maximize our role as a national team and main force, to continually engage in rural vitalization, support employees in need, and ensure overall employee well-being, thus becoming a key force in promoting common prosperity. We strongly believe that science and technology are the primary productive forces, talent is the primary resource, and innovation is the primary driving force. Therefore, we vigorously promote comprehensive innovation centered on scientific and technological advancement. We deepen reform and innovation, implement accountability to drive intensive management reform, and consistently pursue independent innovation to master key core technologies, achieving high-level technological self-reliance and strength in the nuclear industry.

The role of nuclear energy in realizing energy security, building a new energy system, and supporting the the goals of carbon peak and carbon neutrality is increasingly important. In the future, CNNP will continue to uphold the spirit of "strengthening the nation with nuclear power and contributing through innovation" in the new era of the nuclear industry. We will remain committed to our mission and responsibilities, persistently advancing our goals. We will seek progress while maintaining stability and promote development to ensure stability. Our approach is to first establish a solid foundation before making breakthroughs, driving the successful implementation of the "14th Five-Year Plan." We will make unremitting efforts to accelerate our progress towards becoming a world-class enterprise, achieve high-quality development, and contribute to the building of a strong nation and national rejuvenation.



Chairman and Party Secretary

General Manager and Deputy Party Secretary

About Us

Company Profile

China National Nuclear Power Co., Ltd. (Stock Code: 601985.SH, "CNNP" for short) is jointly invested by its controlling shareholder China National Nuclear Corporation (CNNC), China Three Gorges Corporation (CTG), China COSCO SHIPPING Corporation Limited, and China Aerospace Investment Holdings Ltd. The Company's business scope covers the development, investment, construction, operation, and management of nuclear power projects; investment and development of clean energy projects, investment, and investment management of power transmission and distribution projects; research on nuclear power operation safety technology and related technical services and consulting services; electricity sales and other fields.

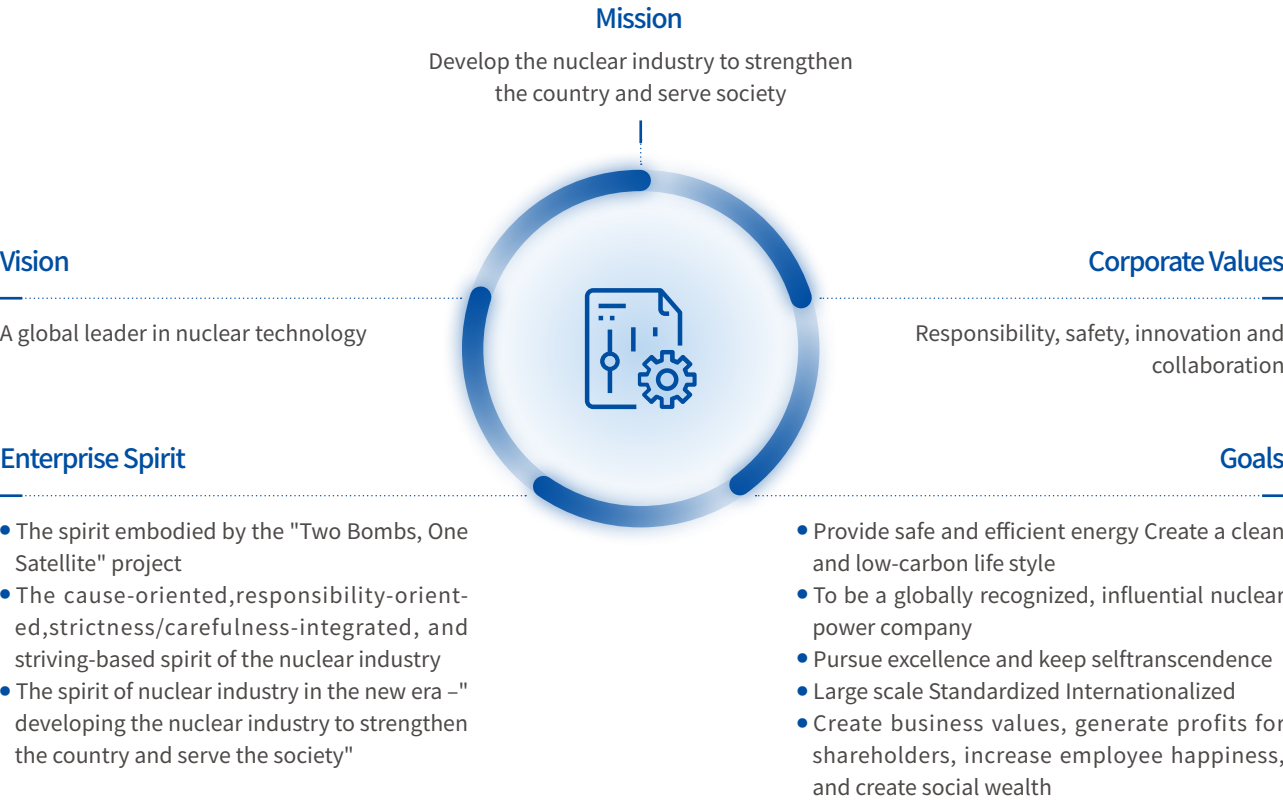
As of December 31, 2023, CNNP had controlled 25 nuclear power units in operation, with an installed capacity of 23.75 GW, and 15 units under construction and to be built after approval, with an installed capacity of 17.57 GW. The total installed capacity of nuclear power is 41.32 GW. The Company has an installed capacity of 18.52 GW in non-nuclear clean energy. Additionally, we hold stakes in independent energy storage power plants with a total capacity of 651 MW. The Company's non-nuclear clean energy under construction has an installed capacity of 9.73 GW, and it also holds the stake of independent energy storage power plants under construction with an installed capacity of 650 MW.

Qinshan Nuclear Power Plant No.1	Type of reactor: PWR CNP 300	Rated power: 1X350MWe	First nuclear power plant ever built in the Chinese mainland, hailed as the "Pride of the nation"
Qinshan Nuclear Power Plant No.2	Type of reactor: PWR CNP 600	Rated power: 4X670MWe	First large commercial nuclear power plant independently designed, built, operated and managed by a Chinese company
Qinshan Nuclear Power Plant No.3	Type of reactor: HWR CANDU 6	Rated power: 2X728MWe	The only commercial HWR nuclear power plant in China
Fangjiashan Nuclear Power Plant	Type of reactor: PWR CNP1000	Rated power: 2X1089MWe	One of the first 1 GW reactors independently designed, manufactured, constructed, and operated by a Chinese company
Jiangsu Nuclear Power Plant	Type of reactor: PWR VVER1000	Rated power: 2X1060MWe 2X1126MWe	A model project of China -Russia nuclear energy cooperation
	Type of reactor: Improved PWR M310	Rated power: 2X1118MWe	Final nuclear power project that started construction during the 12th Five-Year Plan Period (2011-2015)
Fuqing Nuclear Power Plant	Type of reactor: PWR CNP1000	Rated power: 4X1089MWe	One of the first 1 GW reactors independently designed, manufactured, constructed and operated by a Chinese company
	Type of reactor: HPR 1000	Rated power: 2X1161MWe	The world's first Hualong One nuclear reactor (a third-generation reactor model independently developed by a Chinese company), hailed as a project of "advanced equipment for the country"
Hainan Nuclear Power Plant	Type of reactor: PWR CNP 600	Rated power: 2X650MWe	The southernmost and the first nuclear power plant to be built in the minority-inhabited areas in China
Sanmen Nuclear Power Plant	Type of reactor: PWR AP1000	Rated power: 2X1250MWe	The world's first AP1000 (the world's first proven Generation III+ pressurized water reactor) nuclear power plant
Sanmen Nuclear Power Plant Unit 3 and Unit 4	Type of reactor: PWR CAP1000	Rated power: 2X1251MWe	Domestic advanced third-generation PWR nuclear power
Zhangzhou Nuclear Power Plant Unit 1, 2, 3, 4	Type of reactor: HPR1000	Rated power: 4X1212MWe	One of the first projects after the bulk production of the "national business card" Hualong One reactor
Tianwan Nuclear Power Plant Unit 7 and Unit 8	Type of reactor: PWR VVER1200	Rated power: 2X1265MWe	The heads of state of China and Russia witnessed the commencement of the project
Xudabao Nuclear Power Plant Units 1, 2, 3, 4 in Liaoning	Type of reactor: CAP1000	Rated power: 2X1291MWe	Homegrown advanced third-generation PWR nuclear power
	Type of reactor: PWR VVER1200	Rated power: 2X1274MWe	The heads of state of China and Russia witnessed the commencement of the project
Jinqimen Nuclear Power Plant Unit 1 and Unit 2	Type of reactor: HPR1000	Rated power: 2X1215MWe	Batch construction project of "HPR1000"
Small modular reactor, Hainan Nuclear Power Plant	Type of reactor: Small Reactor "Linglong One"	Rated power: 1X125 MWe	Global first multipurpose modular small reactor technology demonstration project

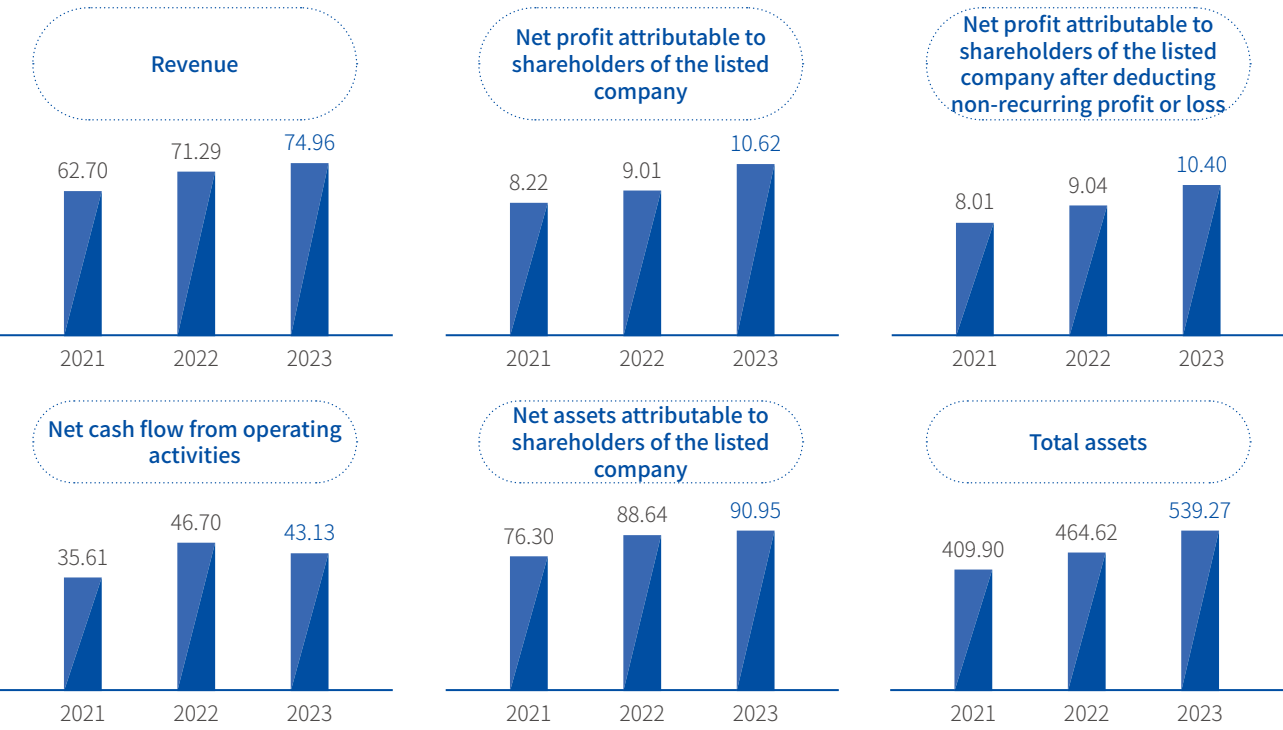
Statistics up to December 31, 2023

● Units in operation ● Units under construction and to be built after approval

Company Culture



Key Financial Indicators (Unit: billion yuan, Currency: RMB)



Development Strategy

Strategic Positioning

CNNP is the main arm of CNNC to develop its nuclear power business and the main channel to transform the advanced scientific and technological achievements. 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 high-quality supply of clean and low-carbon energy, and is tasked with contributing to a country with strong nuclear power and a modern energy system.

Strategic Goals

By 2050, to become a world-class clean energy provider with global competitiveness.

Now -2025

Progress

2025-2035

Ensuring 100% nuclear safety

The installed capacity for operating units reach 56 GW by 2025

The total installed capacity of projects in operation and under construction remains the first in the country, the nuclear energy can be utilized for multiple purposes and the output value of nuclear power technology services will be doubled; the value of the non-nuclear clean energy industry will reach 10 billion yuan, and new breakthroughs will be made in the agile clean technology industry.

To become a global leader in nuclear power operation performance

Substantive results will be achieved in intensive management reform, leading to integrated operations in the non-nuclear clean energy industry and accelerating our progress toward becoming a world-class, leading demonstration enterprise

- The year 2023 was featured **zero serious injuries and zero work-related fatalities**, and no radiation accidents, occupational hazard accidents, or various environmental incidents
- Safe nuclear power operation for over **260** reactor years with zero accidents
- Continuous work safety without accidents for over **1,000** days

- **23.75** GW of total installed capacity of nuclear power units in operation controlled by CNNP
- **18.52** GW of installed capacity of non-nuclear clean energy in operation controlled by CNNP

- **41.32** GW of installed capacity of nuclear power units in operation and under construction controlled by CNNP
- **28.24** GW of installed capacity of non-nuclear clean energy in operation and under construction controlled by CNNP
- **49.58%** of year-on-year revenue growth of nuclear power technology service business

- 18 units achieve **full marks** in WANO composite index, with the average mark of **98.22**, and advanced indicators accounting for over **75%** of the total. The level of safe operation ranks first in the world

- **The physical operation of six intensive centers**
- CNNP Rich Energy Co., Ltd. constructs the Provincial Centralized Control Center, Maintenance Intensive Center, and Unmanned Stations to promote integrated operation of non-nuclear clean energy

Achieve the goal of becoming a world-class clean energy service provider



The Company aims to significantly improve profitability, and rank among the top 500 companies in the world.



Our nuclear power operation indicators will continue to rank top-class globally, with our non-nuclear clean energy operations also leading the industry.



Nuclear energy will be commercialized and industrialized in various fields, including power generation, heating, aerospace, deep-sea exploration, seawater desalination, hydrogen production, etc.



The nuclear power industry standards mainly compiled by CNNP will be widely adopted and CNNP will be able to provide a package of solutions to the world.



Strategic emerging industries will be effectively expanded.

Strategic Guidelines



Scale-up

Coordinating efforts on business development, asset management, marketing, talent development and value creation, and enhancing the capacity of energy supply to build a bigger, better, stronger company.



Standardization

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



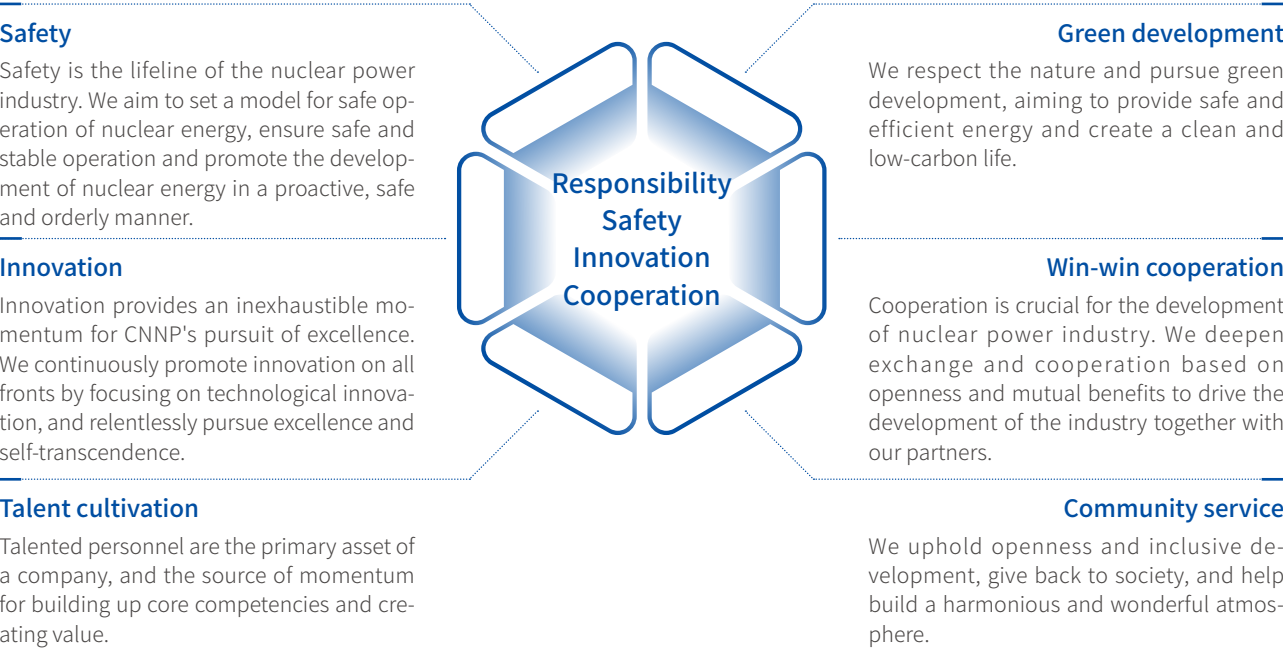
Internationalization

Expanding global presence, fostering global business operations, improving international management capability and gaining a greater say to build a world-class nuclear energy company.

ESG Management

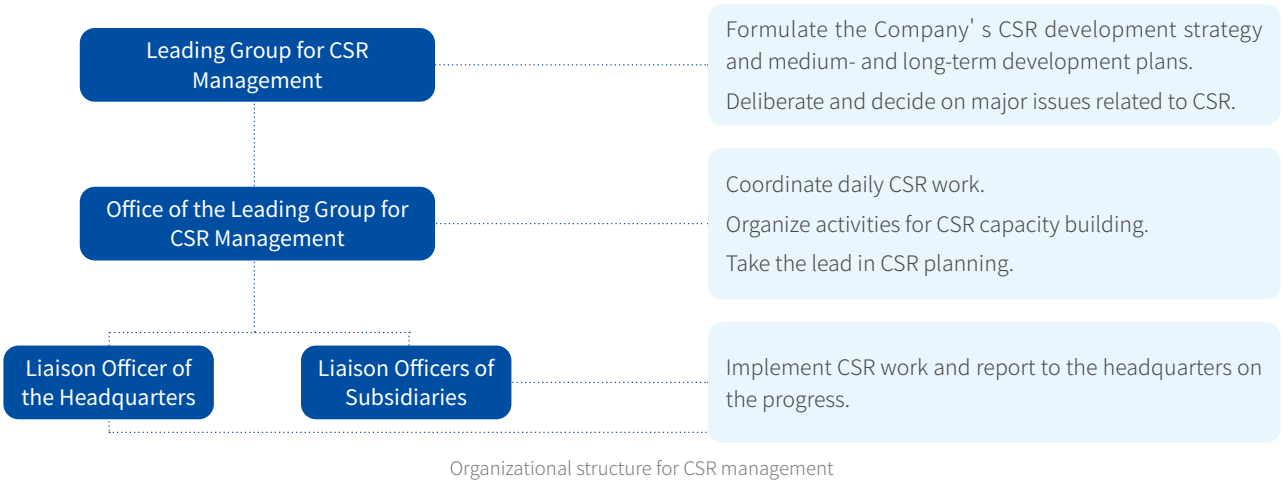
ESG Philosophy

Committed to the core values of "responsibility, safety, innovation and collaboration," CNNP integrates the sustainability philosophy into our production, operation and decision-making. We fulfill our responsibility to our stakeholders such as government, regulators, customers, employees, partners and environment. Together, we strive to create a better future.



ESG Governance Mechanism

CNNP attaches great importance to ESG-related initiatives. To strengthen our sustainability efforts, we have established a robust organizational structure dedicated to ESG management and related practices. This structure ensures the effective planning and execution of our ESG goals and promotes the integration of ESG requirements into the job descriptions of all employees.



Case | **Qinshan Nuclear Power Co., Ltd. becomes the first in the industry to be certified in CSR and ESG management systems**

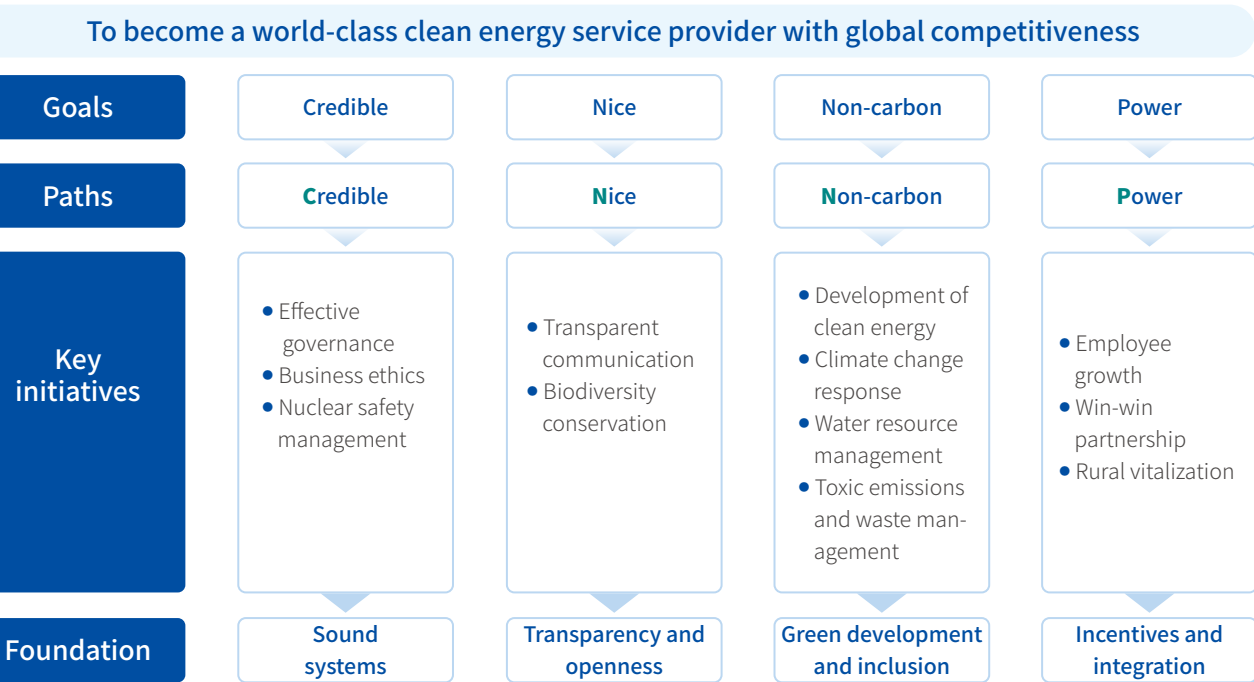
Qinshan Nuclear Power Co., Ltd., a subsidiary of CNNP, achieved a significant milestone on January 9, 2024, by becoming the first entity in China's nuclear industry and related organizations to be certified under the Social Responsibility Management Systems – Requirements with Guidance for Use (GB/T39604-2020), the only national standard for CSR management systems for companies in China. The certification ceremony was held in Haiyan, Zhejiang.

CNNP has long been active in promoting CSR and ESG management, forging a unique path to integrate "Corporate Culture, CSR Concept and Corporate Value," cultivating a brand image of "Credible, Nice, Non-Carbon and Power." In 2023, Qinshan Nuclear Power Co., Ltd., as CNNP's first pilot organization, took proactive steps to advance the CSR management system. With "integration" at the core of the strategy, the CSR management system was built upon the robust foundation of our existing multi-system management framework. To ensure full integration of CSR into our existing management systems, the company enhanced management mechanisms and bolstered the capabilities and awareness of all employees. Additionally, it made sustained efforts to obtain certification, innovating in dual standards that merge CSR and ESG. By effectively integrating CSR into the existing management systems and fully incorporating dual standards into daily operations, the company successfully obtained the certification. As a pace-setter, Qinshan Nuclear Power Co., Ltd. led the way in implementing CSR and ESG management systems in the nuclear power industry, setting a high standard for Chinese nuclear power and nuclear-related companies to embrace CSR and ESG management practices.

ESG Strategic Planning

CNNP has formulated the *Three-Year Action Plan for CNNP Delicacy Management in ESG*, outlining detailed schemes and action plans for delicacy management in ESG. This plan is designed to enhance our ESG management practices, strengthen competitiveness, drive innovation, increase influence, and enhance resilience to risks. It is aligned with our vision of becoming a "global leader in nuclear technology."

With the mission of "building a country with strong nuclear power" and "developing a modern energy system," we have developed a unique approach at CNNP to promote ESG management, tailored to the characteristics of our industry and our development status. Our ESG management goals are centered around being "Credible, Nice, Non-carbon and Power." We have launched 12 key initiatives accordingly to drive us towards "becoming a world-class clean energy service provider with global competitiveness"



Materiality Management

CNNP closely monitors the macro environment of sustainable development and our own development. To stay informed about global macro policies, sustainability trends and major strategic direction and effectively respond to stakeholders' demands, we conducted a comprehensive analysis and identified ESG material topics for CNNP in 2023.



01 Fortifying Compliance Governance for Stable Operation

Governance

At CNNP, the Board of Directors has long championed the systematic modernization of our governance framework and capabilities. It has been instrumental in driving the effective implementation of our strategic plan set for the "14th Five-Year Plan" period and maximizing the functions of risk control and internal auditing for oversight. The Risk and Audit Committee presents regular reports on ESG-related matters, including corporate governance, to the Board. The Board actively raises issues and requirements related to corporate governance at conferences. The Leading Group for CSR Management of CNNP has set up liaison officers in the Party-Mass Work Department (Publicity Department of the Party) to execute corporate governance and report on work progress. In 2023, the Board reviewed, voted on, and approved the governance documents such as the *Proposal on Revision of the Development Plan Set for the 14th Five-Year Plan Period*, the *Proposal to Amend the Independent Director Work Regulations*, the annual internal control report, and the proposal for enterprise risk management (ERM) report. This effectively improved the governance mechanism.

Strategy

At CNNP, corporate governance is embedded in our management, deliberations, and decision-making processes. We understand the significant impact of governance-related risks, especially those related to power sales and investment decision-making, on our business operations. To address these risks, we develop preemptive risk control strategies based on forecasts of potential financial impacts. These strategies include keeping abreast of regulatory changes and market shifts, conducting risk assessments and procedural reviews for projects, and establishing communication channels with in-house subject matter experts.

Risks	Potential impacts	Countermeasures
Power sales risk	• The possibility of a decrease in the on-grid electricity price may result in lower-than-expected electricity trading.	• We actively engage in electricity trading when the market price of electricity exceeds the on-grid electricity price for our generating units. • We offer a mix of power options, combining nuclear power with other sources to enhance overall profitability. • We strive for better pricing by intensifying research on nuclear power pricing mechanisms, as well as policies and regulations related to electricity trading.
Risk in investment decision-making	• There is a potential risk associated with investments in new reactor types and emerging industries.	• Before making investment decisions, we conduct project justifications, risk assessments, and third-party reviews. We utilize the Investment Advisory Committee and the Board's Strategy and Investment Committee for review and deliberation to inform our investment decisions.
Operational risk	• Dependence on a single industry or product makes the Company more vulnerable to risks. • The asset-intensive nature may lead to poor liquidity, high financing pressure, and difficulty in transformation.	• In response to the requirement of the Chinese government to implement "the three new and one high" (i.e. a new development philosophy and a new development paradigm in the new development stage for high-quality development) and China's 30·60 Decarbonization Goal (to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060), we launch the "industrial and economic upgrading initiative." This initiative includes the vigorous development of three core industries: nuclear energy, non-nuclear clean energy, and new agile industries. We are focusing on five key business areas: nuclear power generation, multi-purpose utilization of nuclear energy, nuclear power technology services, non-nuclear clean energy, and agile cleaning technology.

Risk Management

At CNNP, governance-related risk management is included in the ERM system. We identify governance-related risks through questionnaire surveys and on-site interviews with the Securities Department (Board Office) and other relevant departments. These risks are then evaluated for their likelihood and impacts according to the *Implementation Guidelines for Enterprise Risk Management*. Based on factors such as risk levels and urgency for management and improvement, the risks are prioritized. Risks that affect power sales and investment decision-making are considered major governance risks at the Company level and are submitted to the Party Committee for deliberation and the Board of Directors for approval. Information related to major governance risks is monitored and updated monthly, including control status, possible developments, countermeasures, and progress toward goals. Progress on major risks is reported quarterly to the Party Committee, the Board of Directors, and the meetings of General Manager's office.

Metrics and Targets



Medium and long-term goals

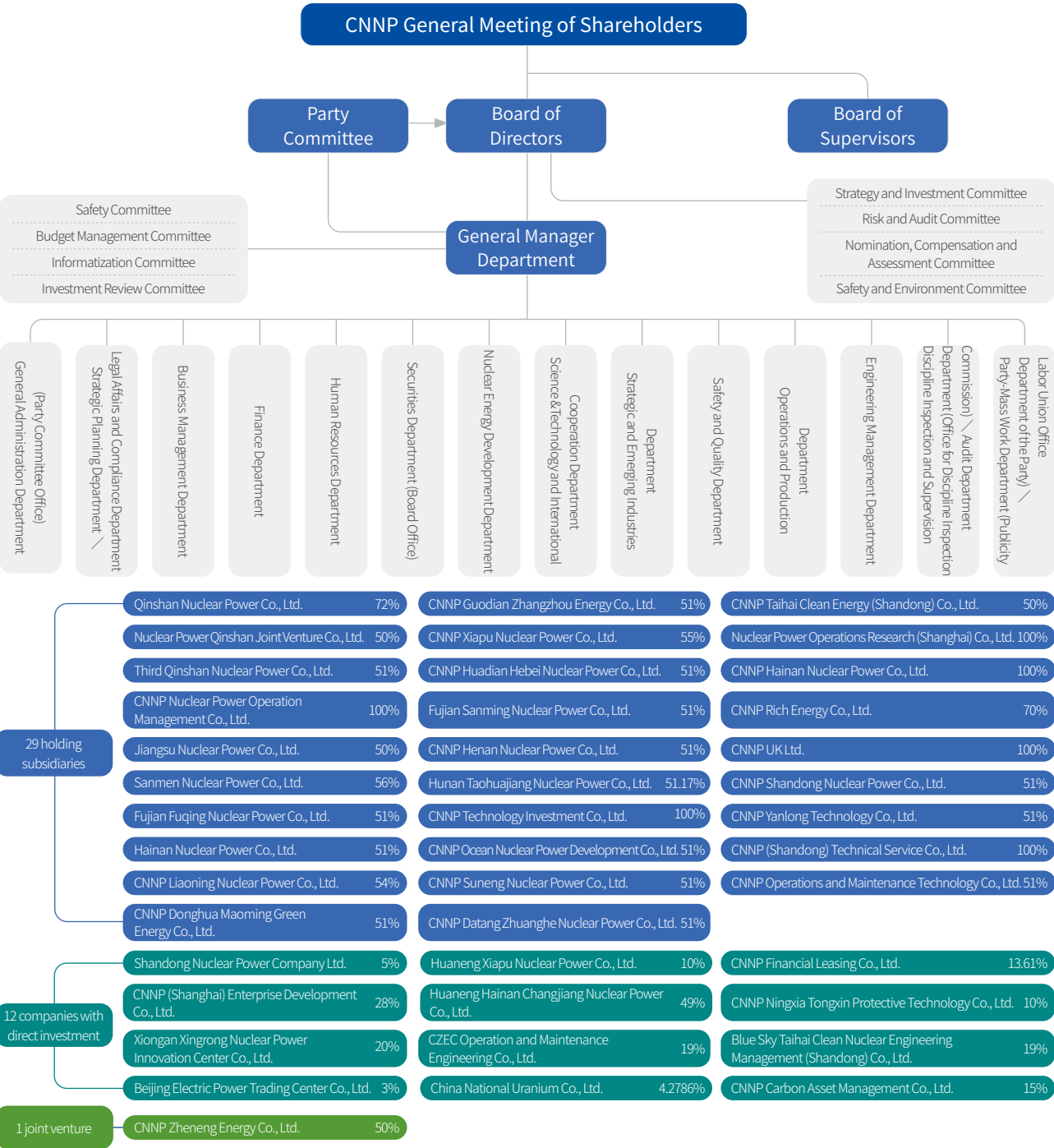
- To achieve the set goals for revenue, total profit, and market value.

Progress in 2023

- The stock price went up by 28.65% from the end of 2022. The market value rose from 113.10 billion yuan to 141.63 billion yuan, with an increase of 28.52 billion yuan. Revenue and total profit both grew steadily according to the set goals.

Governance Structure

At CNNP, the sustainability philosophy is embedded in our corporate governance structure. We strictly follow Chinese laws and regulations related to corporate governance, including the *Company Law* and the *Securities Law*, the *Code of Corporate Governance for Listed Companies*, and the *Measures for the Administration of Independent Directors of Listed Companies* by the China Securities Regulatory Commission (CSRC), and the *Rules Governing the Listing of Stocks on Shanghai Stock Exchange*. In strict compliance with these laws and regulations, we have put in place our corporate governance policies such as the *Articles of Association* and the *Work System of Independent Directors*. Our governance and internal control structure is composed of the General Meeting of Shareholders, the Board of Directors and its specialized committees, the Board of Supervisors, and the senior management. This structure, characterized by a clear division of labor, well-defined responsibilities, and balanced power dynamics, safeguards the interests of shareholders and other stakeholders, creating long-term value for shareholders. Additionally, we engage independent audit institutions to conduct annual external audits of our financial and tax records, as well as the fulfillment of economic responsibilities by former legal representatives and senior executives. These audits help optimize internal governance and inform investment decisions, thereby promoting corporate sustainability.



Board of Directors

The company directors are elected by the General Meeting of Shareholders, with a term of three years, and can stand for re-election. The candidate list for directors is submitted to the Meeting for discussion and decision through a proposal. There are four committees under the Board, namely the Strategy and Investment Committee, Risk and Audit Committee, Nomination, Compensation and Assessment Committee, and Safety and Environment Committee. Highly responsible for shareholders, each specialized committee gives full professional advantages in development strategies, major investments, financial audits, and assessment of compensation and performance for the senior management to strongly support scientific decision-making for the Board. In 2023, 7 Board meetings were held, with 64 proposals deliberated. The specialized committees held 18 meetings, with 56 proposals deliberated.

The Company is committed to building a diverse and complementary board structure. We reasonably determine the size of the Board based on the development stage, business scale, functional types, management complexity, nature and quantity of major issues of our subsidiaries, and scientifically recommend and select external directors. The Board members include members with expertise in electricity, aviation, construction, finance, law, finance, and more than 20 years of work experience. The diversification is shown from professional skills, industry experience, gender, and qualifications. As of December 31, 2023, the Board had a total of 12 directors, including 4 independent directors, accounting for 33.33% of the total, 1 employee director, and 2 female directors, accounting for 16.67% of the total.

The Company keeps improving the independence of Board decision-making and governance. The nomination and election of independent directors comply with relevant laws, regulations, and the *Articles of Association*. Independent directors shall not held any position in the Company other than an independent director, nor has he held any position in the Company's shareholders or related parties, and there is no relationship that may hinder his/her independent and objective judgment. Independent directors conscientiously fulfill their responsibilities and obligations, exploit their expertise to the full, and strictly maintain independence. They also actively participate in corporate governance and major decisions and give independent opinions on matters such as the Company's regular reports, profit distribution, director replacement, non-public offerings, and related-party transactions to ensure corporate safe and stable operation. The chairmen of the Risk and Audit Committee and the Nomination, Compensation and Assessment Committee are independent directors, while the chairmen of the Strategy and Investment Committee and the Safety and Environment Committee are non-independent directors. In 2023, the Board reviewed and approved the revised *Work Rules for Independent Directors*, by which, we strive to establish a specialized meeting mechanism for independent directors from a systemic perspective to effectively safeguard their independence.



Board members and their professional functions

Lu Tiezhong	Male	Chairman, Internal Director, Chairman of the Strategy and Investment Committee	Researcher-level senior engineer with 27 years of experience in the nuclear power industry
Zou Zhengyu	Male	General Manager, Internal Director, Chairman of the Safety and Environment Committee, Member of the Strategy and Investment Committee	Researcher-level senior engineer with 34 years of experience in the nuclear power industry
Ma Hengru	Male	Independent Director, Chairman the of Nomination, Compensation and Assessment Committee, Member of the Risk and Audit Committee, Member of the Safety and Environment Committee	Researcher-level senior engineer with 54 years of experience in aviation, technology and quality industries
Lu Daen	Male	Independent Director, Chairman of the Risk and Audit Committee, Member the of Nomination, Compensation and Assessment Committee, Member of the Strategy and Investment Committee	Researcher-level Senior accountant with 43 years of experience in aviation, industrial investment, and other industries
Qin Yuxiu	Female	Independent Director, Member of the Risk and Audit Committee, Member of the Nomination, Compensation and Assessment Committee	Senior economist, qualified as a lawyer and with 37 years experience in scientific research, law, marketing, and project management
Huang Xianpei	Male	Independent Director, Member of the Risk and Audit Committee, Member of the Nomination, Compensation and Assessment Committee	Senior engineer with 49 years of experience in the power industry
Zhang Guo-hua	Male	Internal Director, Member of the Risk and Audit Committee	Senior economist with 32 years of experience in the nuclear power industry
Wuhan Jing	Male	External director, Member of the Strategy and Investment Committee, Member of the Safety and Environment Committee	Senior engineer with 34 years of experience in the nuclear power industry
Yu Guoping	Male	External director, Member of the Strategy and Investment Committee, Member of the Safety and Environment Committee	Senior engineer with 38 years of experience in the energy industry
Guan Jielin	Male	External director, Member of the Strategy and Investment Committee, Member of the Safety and Environment Committee	Researcher-level senior engineer with 40 years of experience in the energy industry
Wu Yining	Female	External director, Member of the Strategy and Investment Committee, Member of the Nomination, Compensation and Assessment Committee	With accounting professional qualifications and 21 years of financial experience
Zhan Ying-wu	Male	Internal Director, Employee Director	With 19 years of experience in human resources in nuclear power enterprises

Board of Supervisors

The Board of Supervisors carries out its supervisory duties in accordance with laws and regulations to protect the lawful rights of the Company, shareholders, and creditors, ensuring the stable operation of the Company. In 2023, in accordance with provisions such as the *Company Law* and the *Articles of Association*, Mr. Luan Tao was elected as the chairman of the Board of Supervisors, serving from the date of approval by the Board of Supervisors to the expiration date of the fourth term of the Board of Supervisors. Mr. Luan Tao does not hold any shares in the Company and has no affiliations with the Company's directors, supervisors, senior executives, actual controllers, or shareholders who hold more than 5% of the shares. The 4th Board of Supervisors consists of 5 supervisors, including two employee supervisors, accounting for 40% of the total, and one female supervisor, also an employee supervisor, accounting for 20% of the total.

Governance Mechanism

Corporate governance system

The Company constantly improves its bylaws to establish a well-defined and robust system. We have implemented a corporate governance framework centered around "the Articles of Association, Three Regulations, and Four Rules," with a focus on Board development and listing management. We have published the checklist for the "Three Major and One Large" (comprising major matters, significant appointments/dismissals, major project arrangements, and the use of substantial funds) issues, as well as the pre-decision checklist for the Party Committee. These documents clarify the rights and responsibilities of decision-making bodies, including the General Meeting of Shareholders, the Board of Directors, the Party Committee, and the management. Additionally, we have reviewed and refined the 227 business matters across 28 categories to provide clearer guidance for decision-making bodies and procedures. In 2023, all matters falling under the "Three Major and One Large" checklist underwent pre-review or pre-decision by the Party Committee. Matters requiring the Board's deliberation were discussed by the relevant board committees in accordance with regulations. Drawing extensive insights from directors, we conducted brainstorming sessions to enhance proposals and ensure alignment. These efforts enabled us to make major decisions in accordance with regulations and streamlined processes, thereby enhancing business decision-making and facilitating more efficient Company operations.

General Meeting of Shareholders

Members at the General Meeting of Shareholders, as stipulated by laws, regulations, and our *Articles of Association*, have the right to vote on significant resolutions such as the Company's business policies, financing, investments, and profit distribution. At CNNP, the Board of Directors is responsible for convening the General Meeting of Shareholders and legally exercising the powers of corporate management and decision-making. In 2023, the Board of Directors convened three General Meetings of Shareholders, including one annual meeting and two extraordinary meetings. All meetings were held in compliance with the Company Law, the *Securities Law*, the *Rules and Procedures of the General Meeting of Shareholders*, and the *Articles of Association*. The qualifications of the attendees and conveners were legal and valid, and so were the procedures, methods, and results of voting at the meetings. All proposals were successfully voted through.

Enterprise Risk Management

According to applicable laws and regulations such as the *Guidelines on the Operation of Audit Committees Under the Board of Directors of Companies Listed on the Shanghai Stock Exchange*, *Articles of Association*, *Internal Control Management*, *Enterprise Risk Management(ERM)*, and the *Implementation Rules for the Risk and Audit Committee of Board of Directors*, we have developed ERM and internal control procedures that encompass all subsidiaries. We have established a comprehensive organizational system for risk management, comprising decision-making and executive levels. The decision-making body, consisting of the Board of Directors and the Risk and Audit Committee, is responsible for ensuring the effectiveness of ERM, making decisions on major risk matters, developing and evaluating the internal control system, and analyzing risks and issuing warnings for major projects and significant investment matters. The executive body includes business divisions, the centralized risk management department, and the Discipline Inspection and Supervision (Audit Department), creating a three-line defense for ERM nt. In 2023, the Board of Directors reviewed 24 risk-related proposals, while the Risk and Audit Committee studied 26 risk-related proposals.

The Board of Directors serves as the highest decision-making body for internal control and is responsible for establishing and effectively implementing our internal control system. We have established an effective and reliable internal control system to manage risks efficiently. It is mandated by the government that all state-owned enterprises shall conduct internal control assessments at least once every three years. In compliance with this requirement, our Audit Department, authorized by the Board of Directors, conducts internal audits and assessments on our functional departments and subsidiaries, as well as 14 major business areas, including corporate governance, strategic planning, human resources, finances and funds, asset management, and Party building supervision.

We integrate ERM deeply into our development strategies, closely monitoring complex situations both in China and abroad. For major risks, we conduct annual assessments and issue monthly monitoring warnings. This approach allows us to manage risks in an orderly manner and maintain general control over major risks.





Compliance operation

The Company remains steadfast in law-based corporate governance and compliance management practices. In strict adherence to Chinese laws and regulations such as the *Company Law*, we continuously enhance our organizational structure and institutional system. We have also heightened compliance awareness among all employees and integrated compliance into business operations to effectively prevent operational risks. Furthermore, we aim to establish a comprehensive compliance management system characterized by well-defined responsibilities, cross-functional coordination, and effective execution. These efforts ensure our operations are conducted in compliance with regulations. In 2023, CNNP became the first enterprise under the China National Nuclear Corporation (CNNC) to be certified by the compliance management system.

Strengthening top leadership

- We have improved the accountability mechanism to ensure that the chief leaders of the organization fulfill their primary responsibilities in promoting the rule of law. The Party Secretary, chairman, and general manager each carry out their designated duties, personally conducting research, coordinating efforts, and facilitating the resolution of major legal issues
- Law-based governance has been incorporated into the work reports presented to the Board of Directors, the Party Committee, and the general manager to enhance awareness and competency in law-based governance
- The chief legal officer (chief compliance officer) has attended major decision-making meetings to provide legal opinions

Improving the institutional system

- We have revised and released the *Legal Affairs Management Regulations* and the *Compliance Management Regulations*. By refining management requirements and quantifying assessment standards, we keep improving our legal and compliance management system
- We have categorized over 1,000 compliance obligations and responsibilities for key positions and key areas. Additionally, we have developed and implemented the retrieval system "Two Databases and Three Lists" to assist business departments in working legally and compliantly

Preventing and controlling compliance risks

- We have formulated more than 10 guidelines, including the *Cross-Border (Russia) Compliance Risk Management Guideline*, *Nuclear Power Steam Supply Project Compliance Guideline*, and *Compliance Management Guideline for Contractors*. In response to adjustments in the United States' nuclear-related export control policies and pre-construction land use issues, we have prepared legal risk notification letters outlining the legal and compliance risks, highlighting key points, and providing legal recommendations

Organizing compliance training

- To enhance the competence of outside directors and supervisors, we have organized external director training sessions focusing on information disclosure, insider information, and related-party transactions of the listed company
- To enhance the competency of our legal and compliance personnel, we have consistently selected and supported employees in taking the National Unified Legal Professional Qualification Examination. Additionally, we provide pre-exam and on-the-job training for legal and compliance personnel
- To promptly communicate our philosophy of law-based governance and cultivate a culture of compliance, we have implemented various measures to promote legal knowledge among regular employees. These measures include organizing legal- and compliance-themed educational activities focusing on topics such as confidentiality, anti-fraud measures, and business integrity. Additionally, we have provided legal and compliance training for new recruits for five consecutive years

In 2023

240
Legal and compliance training sessions conducted in CNNP and subsidiaries

84,480
Participants

Major legal and compliance risk events

0

Remuneration Management

CNNP continuously improves the remuneration system. Upholding the management philosophy of "strategic orientation, risk and re- turn trade-off, and more pay for more work", we have refined the performance-based remuneration system and integrated ESG metrics into executive remuneration. These measures are designed to incentivize all employees to embody the Company's values and promote the mutual sustainable development of employees and the Company.

Remuneration management system

The Company has strengthened the link between performance and remuneration by establishing an all-encompassing performance appraisal mechanism for all employees. This mechanism is continuously improved based on regulations such as the *Regulations on Overall Performance Management* and the *Cadre Assessment System*. We have also enhanced the remuneration system by im- plementing management systems such as the *Payroll Management Plan*, *Employee Remuneration Regulations*, and *Incentive Man- agement Measures of Dividends for Sci-Tech Results*. Additionally, we follow legal and regulatory requirements for deliberation and decision-making procedures to continuously refine our payment distribution mechanism. These efforts optimize our incentive and discipline mechanisms, effectively safeguarding the rights and interests of both employees and shareholders. This lays the groundwork for building a stable workforce, as well as core management and specialized teams.



Executive equity and other compensation

Management body

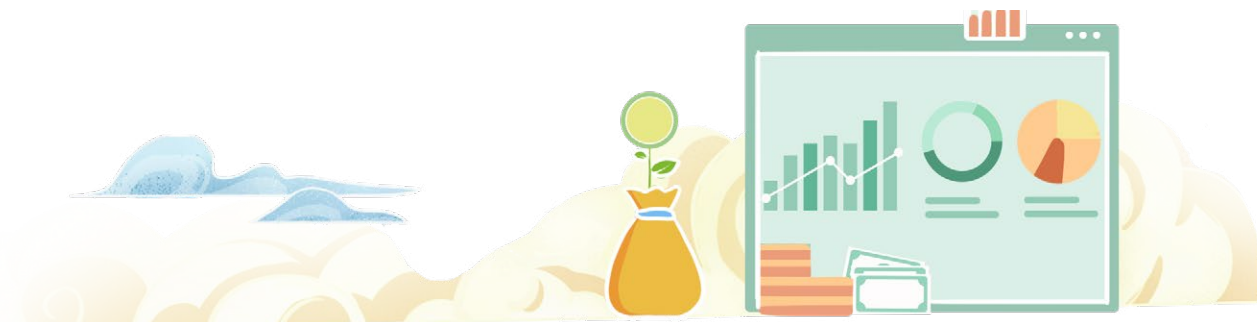
- The Nomination, Compensation, and Evaluation Committee is composed of five external directors, including the chairman and three independent directors, ensuring the committee's independence
- The committee is responsible for formulating assessment criteria for directors and executives, as well as developing and verifying remuneration policies. Annual performance assessments and remuneration policies can only be implemented after review and approval by the General Manager's Office, the Board of Directors, and the General Meeting of Shareholders

Management mechanism

- The committee improves the incentive and constraint mechanism for the income distribution of company leaders. All sub- sidiary heads sign performance responsibility agreements and are subject to annual and term performance assessments. Under the *CNNP Equity Incentive Plan Assessment Measures*, certain directors and senior management are selected for equity incentives. In 2023, the Company successfully completed its first equity incentive plan
- The committee oversees the Company's shares held by senior management personnel, including directors, supervisors, and the CEO, and monitors any changes in these holdings annually, in accordance with the *CG-AB-440 Management of the Shares of Directors, Supervisors, and Senior Management in the Company and Their Changes* issued by the Company
- According to the *Implementation Rules for the Nomination, Compensation and Assessment Committee under the Board of Directors of CNNP*, independent directors receive allowances as determined by the General Meeting of Shareholders. Addi- tionally, the results of executives' annual performance assessments are linked to the compensation scheme

Remuneration linked with ESG-related performance

- We have revised the accounting rules for the annual remuneration of leaders in nuclear power enterprises, market-oriented enterprises, and research institutes. This adjustment aims to strengthen the connection between remuneration and busi- ness performance in areas such as work safety and the development of the non-nuclear clean energy market. The changes are based on the *Management Measures for Annual Remuneration of Directors* and incorporate the tenure system and con- tractual management requirements for directors, along with precision management and classified assessments
- We have established mandatory indicators for safety, environmental protection, and energy conservation and emission reduction to evaluate management performance. These results are directly linked to their compensation. In the event of safety or environmental incidents, responsible management personnel will face proportional reductions in their perfor- mance-based and annual pay



Anti-bribery in Business

CNNP maintains a zero-tolerance policy towards bribery, embezzlement, and unfair competition. We continuously enhance the relevant management systems in strict adherence to applicable laws and regulations, including Chinese *Criminal Law*, *Anti-Unfair Competition Law*, and *Anti-Money Laundering Law*, as well as the regulatory documents such as the *Opinions of the Supreme People's Court and the Supreme People's Procuratorate on Several Issues Concerning the Application of Law in Handling Criminal Cases of Commercial Bribery*. We have instituted the *CNNP Compliance Manual*, which applies to employees, contractors, customers, and other stakeholders, to comprehensively regulate the conduct of all parties involved. Simultaneously, we have established clear whistleblowing channels for reporting violations to prevent and mitigate incidents of commercial bribery and unfair competition.

The Risk and Audit Committee under the Board of Directors is responsible for communicating with external auditors, overseeing and reviewing their work, and regulating internal auditors. In collaboration with the audit, finance, and discipline inspection departments, the Committee conducts regular audits of all business operations, encompassing finance, sourcing, and engineering construction. From a risk management perspective, the Committee evaluates the Company's operational performance and identifies risks related to corruption, bribery, and unfair competition. Based on these evaluations, we formulate action plans and implement special rectification measures to eliminate corruption and other illegal activities.



Qinshan Nuclear Power Co., Ltd. organizes the first "Nuclear (New Clean) for You" storytelling competition

Optimizing policies and systems



- We have improved the business ethics system. In alignment with the CPC Central Committee's Eight Rules on improving Party and government conduct, all the business lines are rigorously regulated for ethical practices, and severe punishments are imposed for bribery and corruption. Besides, we have formulated and updated more than 360 related documents, such as the *Party Conduct and Business Integrity System*. We have also revised the standardized supervision manuals for 10 key areas, including major projects, procurement, and supervision of the top management and leadership team
- We have developed the *Supplier Management Regulations* and signed integrity agreements and anti-corruption provisions with all suppliers. In 2023, no corruption occurred during procurement

Improving the supervision mechanism



- We have optimized our top-level design by systematically formulating the *Implementation Opinions on "Integrated Supervision"* to enhance coordination in supervision. Additionally, we have issued the Five-Year Plan for the Party Committee's Inspection at CNNP. In 2023, we continued to supervise subsidiaries to ensure completion of inspections and "looking back" activities
- We have innovated in our supervision mechanism by dispatching discipline and supervision personnel to our subsidiaries to ensure the independence of supervision. Additionally, we are promoting intelligent supervision. The first edition of our "Integrated Supervision" digital platform has been fully implemented, facilitating efficient exchange and seamless sharing of supervision information and outputs
- Each year, joining forces with the State Administration of Science, Technology and Industry for National Defense (SAS-TIND) and CNNC, we execute high-quality audits that encompass business ethics, and take corrective actions radically regarding relevant issues

Fostering a culture of integrity



- We have developed the *CNNP Standardized Manual on Fostering a Pro-Integrity Culture in the New Era*. Each year, we conduct a monthly anti-corruption and pro-integrity campaign involving all employees and contractors. We have developed educational warning videos to share cautionary tales in key areas. Furthermore, we have instructed our subsidiaries to conduct a series of featured activities, such as the storytelling event "Nuclear (New Clean) for You." Through these efforts, we aim to cultivate a pro-integrity environment

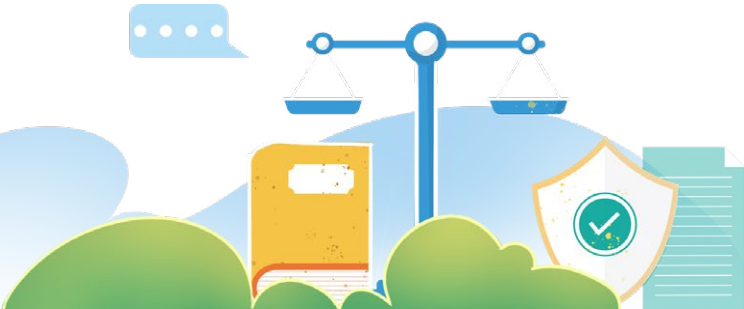


Whistleblower protection

The Discipline Inspection and Supervision Department (Office for Discipline Inspection Commission) or the Audit Department is responsible for managing reports related to anti-commercial bribery, unfair competition, and business ethics. Our bylaws, such as the *Discipline Inspection and Supervision - Complaint Management Guide*, and the *CNNP Compliance Manual*, inform employees, clients, business partners, and other stakeholders of our whistleblower protection policies and the various safe and secure reporting channels available. Individuals who report in good faith or participate in investigations will be protected by the Company to prevent retaliation, and any violation of this policy will be investigated or addressed.

At CNNP, employees are encouraged to report any suspected illegal or non-compliant behavior. We provide whistleblowing tools and methods, including phone calls, emails, faxes, and correspondence, allowing reports to be made either in real name

or anonymously, to eliminate fear of retaliation. Stakeholders can report any misconduct and criminal acts to the Discipline Inspection and Supervision Department, helping the Company effectively prevent risks such as accounting fraud, internal auditing issues, money laundering, bribery, and environmental crimes. The Department will investigate all whistleblower allegations and keep relevant materials and personal information confidential. Breach of the whistleblower's confidentiality is prohibited to adequately protect both real-name and anonymous whistleblowers. The Board of Directors and senior management receive regular statistical reports on misconduct, as well as detailed information on key investigations, to monitor the Company's ethical and compliant operations. In 2023, the Company was not involved in any lawsuits related to commercial bribery, embezzlement, and unfair competition against the Company or our employees.



Investor Relations

Effective management of investor relations can create a positive brand image in investors' minds and enhance the Company's competitive edge in the market. CNNP earnestly safeguards the legitimate rights and interests of shareholders. We have established comprehensive, interactive, and multi-channel communication with investors. By continuously listening to shareholders' and investors' feedback and sincerely addressing their concerns, we maintain and enhance their trust and satisfaction, thereby increasing corporate value.

Transparent communication

- We communicate with stakeholders online through such channels as live video, telephone, email and interactive Q&A on SSE E-interactive platform, and hold offline activities such as performance briefings and field visits to nuclear power plants to communicate with investors the investment value of the Company. In 2023, the Company held three performance exchange meetings and three online performance briefings, and organized 18 targeted door-to-door roadshows and special roadshows for cornerstone shareholders, significant shareholders, and active shareholders in Beijing, Shanghai, Guangzhou, and Shenzhen. Throughout the year, the Company received 1,403 institutional investors and analysts in 98 batches, continuously expanding the communication circle with core investors and further enhancing investor confidence

Information disclosure

- By releasing periodic or ad hoc announcements, CNNP discloses its operating performances and highlights to the capital market in an authentic, accurate, complete, timely and fair manner, conveying the Company's value during its response to the requirements of investors on information disclosure. CNNP issued 79 high-quality announcements and 47 attachments in 2023, with over three million words, which was highly recognized by regulatory authorities



2023 Honors & Awards

- Awarded with the **highest Level-A for Information Disclosure by the Shanghai Stock Exchange** for the 7th time
- Honored with the **Golden Bauhinia Award for "Outstanding Listed Company of High-quality Development"**
- Chairman of CNNP, Lu Tiezhong, was honored with the **China Securities Golden Bauhinia Award for "Top Ten Economic Figures of the Year"**
- Ranked among the **top 100 listed companies in Beijing for the year 2023**
- Won the 17th Awards of the Value of Listed Companies in China for **"Outstanding Management Team of the Year"**

02 Making Concerted Efforts for Safety Net

Governance

At CNNP, the Safety and Quality Department is responsible for overseeing safety practices across the Company. It also promotes the Board's Safety and Environment Committee to oversee safety-related matters and discuss issues related to safety risks. During the reporting period, the Board's Safety and Environment Committee discussed, reviewed, and approved important matters, including the Three-Year Action Plan for Nuclear Safety Culture Improvement, the Annual Work Plan for Safety Management Enhancement, the *CNNP Work Plan to Enhance Nuclear Safety Oversight Capabilities*, and the *Peer Assessment Five-Year Plan (2023-2027)*. The Leading Group for CSR Management has set up ESG liaison officers in the Safety and Quality Department to implement the safety policies and report on work progress.

Strategy

We are committed to the principle of "safety and quality first". Keeping pace with the latest trends in global nuclear safety development and aligning with national nuclear safety regulations, we are implementing our plan set for the "14th Five-Year Plan" period. We have identified major safety risks, including those in industrial safety, nuclear safety, engineering construction, and nuclear power unit stability. To address these risks, we have established quantifiable key risk indicators and control objectives for major risks. We assess risk levels and potential changes, and develop preemptive risk control strategies. These strategies include improving the safety management system, enhancing safety risk control, promoting the development of a nuclear safety culture, and systematically advancing the development of homegrown nuclear power plants.

Risks	Potential impacts	Countermeasures
Industrial safety risk	• The potential for personal injuries and economic losses may affect the Company's reputation and have a negative impact on the nuclear power industry and public opinion.	• We maximize our safety management, safety supervision, and experience feedback systems, which cover the entire production and operation processes. This allows us to comprehensively identify, assess, and control safety risks, as well as seek out potential safety hazards. • We promote the building of a nuclear safety culture and bolster employees' awareness of safety and quality.
Nuclear safety risk	• The potential for nuclear safety accidents.	• Special campaigns for nuclear safety management are launched to thoroughly investigate and radically rectify the weak links and safety hazards in the implementation of nuclear safety responsibilities across the headquarters and subsidiaries. These campaigns also comprehensively review the implementation of nuclear safety management and full-process safety and quality management.
Engineering construction risk	• Delays in progress may affect investment and the economic performance of the units after operation. • There is a likelihood of quality incidents.	• We implement the "Six Controls and Seven Noes" (control of progress, investment, quality, safety, environmental protection, and confidentiality; no delay, overbudget, quality incident, safety accident, environmental protection violation, information leak, and integrity problem). Upholding systematic thinking, we promote nuclear power engineering construction with high quality and high standards. • We intensify efforts in the construction and increase support and full-process quality oversight of major projects and key construction projects, such as the Hualong One nuclear reactor. Simultaneously, we collect feedback regarding exemplary experiences from internal and external parties.
Risk in nuclear power unit stability	• The safe and stable operation of the units and their economic performance may be affected.	• We cement the groundwork of work safety from aspects such as the safety management system, safety risk prevention and control, and enhancement of employee safety awareness. • To reduce unplanned automatic shutdowns and outages, we intensify efforts in the prevention of human errors, the management of equipment reliability, maintenance and defects, and the control of operational risks. • We systematically promote the building of homegrown nuclear power plants, and enhance the resilience of the supply chain.

Risk Management

At CNNP, safety risk management is integrated into the ERM system. We keep abreast of trends and policy shifts in domestic and international nuclear safety development. Safety risks are identified comprehensively through questionnaire surveys and on-site interviews with departments such as the Safety and Quality Department and the Engineering Management Department. Subsequently, risks are evaluated for their likelihood and impacts according to the *Implementation Guidelines for Enterprise Risk Management*. They are then prioritized based on factors such as risk levels and urgency for management and improvement. Risks impacting industrial safety and nuclear safety are rated as major safety risks at the Company level and should be submitted to the Party Committee for deliberation and to the Board of Directors for approval. Relevant information about major safety risks is monitored and updated on a monthly basis, including control status, possible developments, countermeasures, and goal progress. The progress of major risks is reported to the Party Committee, the Board of Directors, and the General Manager Manager's Office on a quarterly basis.

Metrics and Targets



Medium and long-term goals

- Ensure 100% nuclear safety.
- No less than 75% of the units earn full marks in the WANO composite index, and the rate of unplanned shutdowns is no higher than 0.3 per reactor year.

Progress in 2023

- "Zero serious injuries, zero work-related fatalities", no radiation accidents, occupational diseases and hazards, or environmental incidents occurred.
- 72% of the units earned full marks in the WANO composite index, and the rate of unplanned shutdowns was 0.16 per reactor year.

Consolidation of the Foundation of Safety

Sticking to the bottom line, CNNP maintains that safety is the lifeline of the nuclear industry. We intensify our endeavors to cultivate a robust nuclear safety culture, enhance the nuclear safety management system, and bolster nuclear emergency response capabilities. Our relentless pursuit is to establish a global standard in nuclear safety.

Fostering a safety culture

CNNP has initiated a three-year action plan on the nuclear safety culture, working to foster a company-wide ethos of "prioritizing safety, pursuing excellence". By ingraining a robust nuclear safety culture into every facet of our production and management processes, we strive to cultivate an environment where "everyone acts as the last safety defense". In 2023, two of CNNP's achievements in nuclear safety culture were recognized and presented at the National Energy Administration's Electric Power Safety Management and Culture Forum.



CNNP's executives give a safety lecture

Optimizing top-level design

We benchmark ourselves against industry peers and actively engage in exchanges and seminars on human factor management to glean insights from best practices within the field

Conducting assessments

We administer questionnaires to all employees, facilitating the assessment of nuclear safety culture within key units. This process enables us to accurately pinpoint areas requiring improvement in nuclear safety culture

Strengthening special publicity

We roll out a series of training and publicity activities, such as special activities for nuclear safety culture practice, workshop for nuclear safety culture evaluators, and special lectures on nuclear safety culture by industry experts. These efforts are aimed at instilling the concept of nuclear safety culture deeply within our workforce

Improving leadership

We harness the influential role of company leaders in enhancing nuclear safety culture, as they spearhead safety promotion initiatives. Additionally, we actively engage in experience exchanges with CNNC under the theme of "Leading Culture, Safe Nuclear Energy", fostering mutual learning and collaboration

Improving human factor management

We have successfully conducted the first assessment of the effectiveness of CNNP's observation and guidance practices. Furthermore, we have established regular technical seminars focused on CNNP's human factor management, where we consolidate and analyze human factor management approaches across various nuclear power plants under CNNP. Through a thorough examination and discussion of existing challenges, we formulate and implement improvement strategies accordingly

43 actions
completed to
improve nuclear
safety culture

Building a safety management system

With work safety as our foremost priority, we persistently enhance our management system and ensure that work safety responsibilities are diligently fulfilled. By reinforcing safety supervision, mitigating safety risks, and enhancing standardized work safety management, we propel the nuclear power industry toward positive, safe, and orderly development. In recognition of our commitment to safety excellence, Qinshan Nuclear Power Co., Ltd. was honored with the Outstanding Organization Award and the Special Prize for the Essay Collection on Central SOEs' Safety Management in 2023.

Improving the established safety responsibility system

- We have compiled the *Guidelines for the Management of the Whole-Employee Work Safety Responsibility System*, aligning with the management requirements outlined in the *Rules for One List of Work Safety Responsibilities for One Post at Nuclear Power Plants*. This framework clearly delineates the responsibilities of each individual and outlines the assessment criteria. These requirements are inclusive of all employees and span across all research, production, operation, and management processes, ensuring comprehensive and systematic work safety responsibility management in both horizontal and vertical dimensions
- We have formulated 316 actions from six aspects to promote the annual campaign of strengthening safety management and creating a good safety environment

Enhancing nuclear safety supervision and management

- We have undertaken initiatives to enhance the capacity of nuclear safety supervision, in line with the implementation of *CNNP Work Plan for Improving the Capacity of Nuclear Safety Supervision*. These efforts include regular exchanges on nuclear safety supervision among multiple nuclear power plants and the establishment of information exchange mechanisms for internal and external nuclear safety supervision
- We fulfill the responsibilities of independent supervision and coordinate nine inspections led by safety and quality directors from major subsidiaries. Through these inspections, we identify and rectify typical problems to ensure continuous improvement in safety and quality standards
- We conduct inspections to improve the implementation of nuclear safety responsibilities across all business segments and ensure comprehensive safety and quality management throughout the entire process

Bettering the mechanism for risk management and control and hazard investigation

- We rigorously adhere to the TOP10 management mechanism for safety and environmental protection risks or hazards. This involves clearly identifying the individuals or leaders responsible for risk or hazard control and response measures, which are updated in real time to ensure effective risk mitigation
- We have strengthened the management and control of key risks and hazards, providing regular reports to the Party Committee, the Work Safety and Operation Analysis Committee, and the Work Safety Committee. This ensures that risks and hazards are effectively monitored and brought under control
- We have released the *2023 Action Plan for Special Investigation and Rectification of Major Hazards*, initiating targeted actions for the special investigation and rectification of significant hazards. We are also implementing a monthly tracking and phased reporting mechanism to ensure effective progress monitoring
- In 2023, 99.96% of CNNP's work safety hazards were addressed, and no major accidents were found

Standardizing work safety

- We convene meetings to standardize safety management within the realms of industrial safety and radiation protection. During these meetings, we define standardization objectives and plans while also streamlining safety supervision and management procedures and policies
- We convene a special meeting to focus on work safety standardization at CNNP Rich Energy Co., Ltd. During this session, we standardize work safety indicators and team building practices, establish a standardized list of replicable work processes, and enhance safety management within the realm of non-nuclear clean energy
- We have developed a safety management information platform and a CNNP "smart safety" system to improve overall safety management
- We hold four workshops on work safety standardization and two workshops on safety management for 695 work safety standardization experts and key business personnel of subsidiaries to improve the professionalism of work safety management personnel

Improving work safety

The Company identifies, analyzes, and solves problems through peer evaluation and experience sharing. We draw insights from the best practices of global and domestic industry leaders and actively share our own best practices to enhance safety management standards. Furthermore, we systematically summarize and apply these best practices to bolster intrinsic safety across all facets of our operations, thereby supporting high-quality development through the implementation of stringent safety standards.

Peer evaluations

In 2023, the Company released and implemented the *Peer Assessment Five-Year Plan (2023-2027)*. This plan involved five assessments conducted by external organizations including the World Association of Nuclear Operators (WANO), the International Atomic Energy Agency (IAEA), and other international institutions, alongside 12 internal assessments conducted by CNNP. These evaluations scrutinized the Company's safety and quality management system, focusing on production personnel behavior and the effectiveness of operational management. The findings from these assessments provided valuable insights and directions for targeted and evidence-based enhancements in safety and quality management practices.

 **2023 Honors & Awards**

- Tianwan Nuclear Power Base received the **WANO 1 Assessment rating, the highest rating in the WANO Corporate Peer Review (CPR)**

Experience sharing system

The Company strictly implements the A/B event management mechanism and implements closed-loop management for significant events, with a focus on key aspects. We efficiently operate CNNP's nuclear power reactors' experience sharing system. In the 2023 WANO Corporate Peer Review (CPR), CNNP's experience sharing mechanism was recognized as a strength. Additionally, Sanmen Nuclear Power Co., Ltd. received the prestigious "Top WANO Annual WER Reporter" award from the WANO Tokyo Center for the third consecutive year.

Expanding the experience sharing network

We continue to improve the three-dimensional experience sharing system and expand the corresponding network. In 2023, we signed a cooperation agreement with similar power plants and established a bi-monthly communication and experience sharing mechanism with China Nuclear Power Engineering Co., Ltd. to promote information and experience sharing

Establishing an experience sharing mechanism

We convene both regular and ad hoc meetings to foster in-depth interaction and thorough discussion of important practices, thereby enhancing the effectiveness of our actions. In 2023, we conducted seven A-type event reporting meetings, 12 monthly experience sharing meetings, and two special experience sharing meetings to facilitate comprehensive dialogue and exchange of insights

Summarizing and applying practices

We have established an important experience sharing system to ensure that best practices are learned by others. In 2023, four special experience sharing reports, two standardized evaluation guidelines, 112 safety learning materials, and 110 translated industry documents were produced



Bettering emergency management

The Company remains committed to constructing a nuclear safety and nuclear emergency management base, and reinforcing emergency preparedness and supervision. This ensures the implementation of science-based, professional, precise, and intelligent emergency response protocols, thus establishing a robust foundation for nuclear power safety and stability. In 2023, the Company conducted 2,433 individual item drills and 16 comprehensive emergency drills.

Improving the emergency response system

- All subsidiaries have optimized their emergency response systems and efficiently coordinated nuclear emergency shifts. In 2023, nuclear emergency shifts did not encounter any issues
- We have improved the "thoroughly horizontal and vertical" emergency plan system, formulated corporate standards such as *Nuclear and Radiation Emergency Preparedness and Response* and *Guidelines for Building a Work Safety Emergency Response Team*, and standardized the management of emergency plans



Getting emergency equipment and supplies in place

- We regularly upgrade and maintain the equipment of the emergency command center to ensure its effective operation all year round
- We have built a multi-functional intelligent and IT-based nuclear emergency support system and a rapid, efficient, and safe emergency response system
- We have formed a dedicated group to oversee the operations of the CNNC nuclear safety and nuclear emergency response base. This group is responsible for developing operation plans and pursuing approval for the establishment of the sole national nuclear emergency material support and reserve base in China

Conducting emergency drills and training

- We require all subsidiaries to conduct unplanned on-site emergency drills, professional group joint drills, and similar activities. These exercises are designed to test and enhance the emergency response capabilities of nuclear power plants in managing both nuclear accidents and non-nuclear emergencies. Through these drills, we thoroughly verify the effectiveness of emergency documents, facilities, equipment, and materials at nuclear power plants
- We have improved emergency response capabilities on all fronts by preparing standardized teaching materials and videos for emergency training, collecting questions for emergency response, and developing a response capability assessment model for emergency personnel

Case | CNNP's subsidiaries in Fujian win a victory against Typhoon Doksuri



When Typhoon Doksuri, the fifth typhoon in 2023 and the second-strongest typhoon in Fujian's recorded history, made land-fall along the coast, CNNP immediately recognized the urgency of the situation. A special meeting on typhoon prevention in the Fujian area was promptly convened. Subsidiaries including Fujian Fuqing Nuclear Power Co., Ltd., CNNP Xiapu Nuclear Power Co., Ltd., Zhangzhou Nuclear Power Plant, and CNNP Rich Energy Co., Ltd. closely monitored the typhoon's movement, swiftly established natural disaster command centers, and organized special coordination meetings on typhoon and flood prevention. These subsidiaries implemented comprehensive typhoon and flood prevention measures, including increased inspections, hazard removal, and readiness for severe weather conditions. With unwavering determination, they ensured on-site safety and power supply, effectively mitigating the typhoon's impact. As a result, nuclear power units in operation or under construction maintained stable operation, personnel remained safe, and equipment and power plants remained intact.

Excellent Quality

Engineering quality serves as the bedrock of safety, as construction quality directly influences nuclear safety during operation. CNNP remains dedicated to enhancing the engineering safety and quality management system. We achieve this by bolstering project quality supervision and fostering a culture of quality awareness and responsibility among stakeholders. Our unwavering commitment is to construct high-quality projects that are free from concerns, thereby fortifying the quality foundation for a robust nuclear industry. In 2023, CNNP recorded zero major equipment accidents, major quality accidents caused by human factors, loss or theft of hazardous items, and fires.

In 2023

100% certified special operation personnel

23 subsidiaries passed ISO 9001 quality management system certification

0 major safety and quality incidents



2023 Honors & Awards

- Qinshan Nuclear Power Co., Ltd. was honored with the **20th National Quality Management Award and nominated for the China Quality Award**
- 14 QC achievements won **the gold medal at the International Convention on Quality Control Circles (ICQCC)**
- Fuqing Nuclear Power Plant Unit 5 and Unit 6 won the **China Quality Award for Excellent Project**
- 10 teams were recognized as the **National Quality Trustworthy Team**

1 Improving the quality management system

- We have standardized quality guarantees, formulated work plans, and developed standard guidelines
- We have enhanced the research on quality management theories, the quality risk system of engineering, and the necessity and standardization of recording
- We have employed advanced quality management methods and introduced the performance excellence model
- We have implemented the action plan for improving the quality of nuclear power and developed 306 action plans from five aspects such as the implementation of nuclear power safety and quality responsibilities, the safety upgrade of nuclear power plants, and the external safety guarantee of nuclear power plants, of which 153 plans have been completed

2 Elevating quality supervision and management

- We have compiled the *Guidelines for Quality Supervision of Nuclear Power Engineering Projects* to ensure the quality of project construction. We enhance quality control of important partners, and organized joint quality inspections with units such as China Nuclear Power Engineering Co., Ltd. and China Nuclear Power Operation Technology Corporation Ltd., Wuhan, to ensure the effective operation of partners' quality guarantee systems
- Through inspections conducted by the director of safety and quality, on-site inspections of non-nuclear clean energy projects, and bi-monthly on-site inspections of nuclear power facilities, we diligently identify any shortcomings in on-site safety and quality management. Upon identification, we promptly rectify these issues. Our emphasis lies on addressing major concerns and common problems in engineering, while simultaneously enhancing experience sharing and exchanges within the nuclear power engineering domain

3 Heightening the quality awareness of employees

- We have improved safety management rules and regulations for construction site operations, ensuring that work safety responsibilities are allocated at each level of the organization. Additionally, we utilize tools such as safety and quality red and yellow lines, safety and quality blacklists, and safety incentives to uphold the safety bottom line
- We have conducted special seminars on safety and quality management improvement at each nuclear power plant and developed training courses for quality guarantee personnel (93 standard teaching materials) to improve the safety and quality awareness of all employees

The Company practices the lean management system featuring "six controls and seven noes" and applies high -quality standards in building 18 nuclear power units with objectives in six controls generally achieved.



In May 2023, CNNP successfully completed the world's first reactor demonstration project of China's independent third-generation nuclear power technology, Hualong One. Unit 5 and Unit 6 of the Fuqing Nuclear Power Plant passed evaluations upon completion, marking a significant milestone. This achievement not only demonstrates China's leadership in nuclear power technology but also sets a high standard for future Hualong One projects, showcasing our commitment to excellence in the industry.



In August 2023, CNNP reached a groundbreaking milestone with the installation of the core module of Linglong One, the world's first onshore small modular reactor. This achievement underscores China's leading position in small reactor development globally. Linglong One incorporates cutting-edge technologies for small modular integration, offering exceptional safety, flexibility, and diverse applications.



Case

Fujian Fuqing Nuclear Power Co., Ltd. is nominated for the 7th China Grand Awards for Industry

In 2023, Fujian Fuqing Nuclear Power Co., Ltd. was nominated for the China Grand Awards for Industry, the first subsidiary of CNNP to be nominated for an authoritative industrial award. This nomination highlights the acknowledgment of CNNP's commercial and industrial prowess by key stakeholders in China's industrial landscape. With a total installed capacity of 6.68 GW, Units 1 to 4 utilize second-generation fully-fledged technology, while Units 5 and 6 are powered by the third-generation nuclear power technology Hualong One. These six units operate safely, reliably, and efficiently, consistently supplying clean electricity for daily needs and contributing to a balanced approach to social, economic, and environmental development.

Units 1 to 6 of Fujian Fuqing Nuclear Power Co., Ltd.

Case

Qinshan Nuclear Power Co., Ltd. wins the title of "2023 National Power Industry Equipment Management Benchmark Project"

In December 2023, Qinshan Nuclear Power Co., Ltd. 's project "Qinshan Nuclear Power Co., Ltd. 320MW Nuclear Power Unit License Extension and Capacity Additions" was awarded the title of "2023 National Power Industry Equipment Management Benchmark Project". This accolade distinguishes it as the sole nuclear power unit in China recognized in 2023.

The license extension of Qinshan Nuclear Power Co., Ltd. sets the first example in China. This project not only sets a precedent but also leads the way in capacity additions for nuclear power units. With a capacity increase exceeding 8.80%, surpassing the global average of 2% to 7%, it represents a breakthrough in technically preparing and executing license extension projects at Chinese nuclear power plants. This achievement serves as a model for similar endeavors elsewhere. As of the end of 2023, Qinshan Nuclear Power Co., Ltd. achieved continuous growth in annual power generation for nine consecutive years since its full completion and operation. With over 800 TWh of electricity generated safely, the equivalent of reducing emissions by 740 million tons of carbon dioxide and 3.70 million tons of sulfur dioxide, this milestone is similar to planting trees across an area equivalent to 500 West Lake Parks, (covering an area of 6.50 square kilometers).

Operational Safety

Inspired by our mission of "striving to be a leader in the high-quality development of the global nuclear energy industry", CNNP has intensified its focus on the operation and management of nuclear power, aiming to enhance the safe operation of nuclear power equipment with zero errors. In 2023, all 25 of our units operated safely and reliably, with no incidents rated INES1 or higher registered.



In 2023

18 nuclear power units achieved **full marks**, in the 100-point evaluation of the WANO, with a composite index of **98.22** and advanced index accounting for more than **75%**
260+ reactor years of safe power generation



Overhaul management

The success of a nuclear power plant overhaul is paramount for ensuring safe operations. CNNP has established an overhaul optimization special team to effectively manage the process. We enhance overhaul safety and quality management methods to elevate performance standards. Tailored overhaul safety and quality systems, along with robust risk control and responsibility frameworks, are implemented to reinforce our commitment to safety.

Overhaul risk control



We actively pursue solutions for major special projects, foreign body prevention and control, and high-risk management. This involves formulating tailored control measures and plans, along with conducting standardized sand table exercises. To enhance oversight of overhaul risks and accountability, we utilize digital tools such as iDaxiu's special manager, foreign body prevention module, and high-risk control scenarios. This enables us to predict and manage risks associated with major overhaul projects effectively

Overhaul management improvement

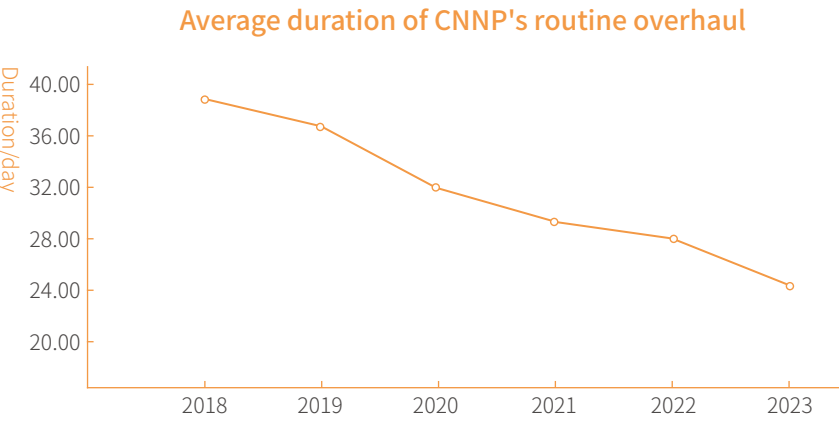


By benchmarking against best overhaul practices of similar nuclear power units in China and aligning with our company's context, we introduce the iterative concept of performance excellence. This approach offers crucial support in enhancing the accuracy, safety, and efficiency of overhaul plans. We establish reasonable critical paths for overhauling management and control, focusing on detailed granularity. Additionally, we enhance critical path management and control using digital systems to ensure optimal performance

Optimizing overhaul techniques



Drawing inspiration from top-tier practices, we cultivate a culture of innovation and excellence to enhance overhaul key processes. Through continuous learning and improvement, we have explored numerous innovations and optimizations. Examples include the application of reactor dynamic control rod reactivity measurement and the enhancement of loading and unloading machine reliability. These initiatives lay the groundwork for improved overhaul performance



In 2023

Major overhauls completed

17

Equipment reliability management

The Company operates an equipment reliability management committee, dedicated to achieving the objectives of "reducing unplanned plant shutdowns" and "enhancing equipment management performance". We bolster the equipment reliability management mechanism and prioritize equipment stability and digital management to improve overall reliability. In 2023, our 25 nuclear power units experienced only four unplanned shutdowns, resulting in an annual unplanned shutdown rate of 0.16 times per reactor year, reflecting a commendably low level of disruption.

Improving the equipment management mechanism

- We have released and implemented the 2023 equipment reliability work plan and improved equipment reliability management through conference exchanges, special seminars, special assessments, and world-class idea and practice benchmarking
- We put in place a "quantifiable, divisible, and evaluable" equipment reliability performance index system to improve equipment management performance

Deepening the management of equipment maintenance and upgrade

- We spearhead the exploration of innovative equipment management methodologies, including piloting equipment life-cycle management (LCM) and extending the application of maintenance rules (MR)
- We optimize preventive maintenance and focus on the preventive maintenance of overhaul critical paths
- We pay attention to single point vulnerability (SPV) equipment and sort out desensitization practices of each power plant, which are applied in multiple power plants

Digitalizing equipment management

- We have digitalized equipment management, improved the equipment reliability management system (ERMS), and employed the SPV intelligent management system (ASP-2). China's first nuclear power equipment reliability management platform whose independent intellectual property rights are owned by the Company has been applied to all operating units



CNNP organizes a special assessment of SPV equipment for Qinshan Nuclear Power Co., Ltd.

Prevention of human errors

In 2023, CNNP improved human factor management. We refined our management mechanisms and intensified efforts to raise safety awareness and enhance the skills of operators. These measures aim to prevent unplanned automatic shutdowns caused by human errors, thereby safeguarding both personnel safety and equipment integrity.

Improving the human error prevention mechanism

- We have released the 2023 Work Plan for Improving Nuclear Safety Culture and Human Factor Management, which outlines clear management objectives and strategies. Additionally, we have instituted quarterly human factor management meetings to establish standardized criteria for identifying human factor incidents
- With the excellent human factor performance improvement model and multiple power plant human factor control, we improve human factor management performance and reduce the risks of human errors
- We have implemented a mechanism to enhance the effectiveness of observation and guidance, including conducting special improvement campaigns and organizing two sessions focused on enhancing observation and guidance skills. These initiatives are part of our ongoing efforts to continually enhance human factor management

Innovating human error prevention methods

- We cooperate with Tsinghua University on researching the mechanism of human errors under the distributed control system (DCS) model, aiming to establish methods of assessing human errors for typical tasks under complex working conditions
- We are experimenting with building a human factor reliability database and using empirical data to enhance our human factor data standard system and index monitoring system

Promoting human error prevention tools

- We conduct various activities to promote human error prevention tools, including collecting CNNP's best practices in human factor management, releasing standardized videos on human error prevention tools, and organizing training sessions and skill competitions for employees and contractors to enhance operational proficiency
- We hosted our inaugural workshop on human factor theory, led by a team of experts from Tsinghua University. The course included ten sessions and was attended by 40 engineers specializing in operations, maintenance, equipment management, and human factors, aiming to enhance their understanding of human factors



Read more: The manipulator of security - the "golden man"

Reactors are the "heart" of the nuclear power plants while the main control room and the distributed control system are the "brain" and "nervous system". Nuclear power plant operators, often esteemed as "golden personnel", bear the responsibility for the safe operation of nuclear power units. This designation underscores the rigorous and demanding nature of their training, which spans five to ten years and entails completing hundreds of courses and thousands of exams before attaining certification.



On-site observation of operator training

03 Contributing to Ecological Protection for a Beautiful China

Governance

CNNP maintains overall planning and management for environmental protection. The Chairman heads the Work Safety Committee and makes decisions on crucial environmental protection matters, ensuring the allocation of necessary resources for environmental management. The General Manager leads the establishment of environmental management systems and approves relevant annual targets. The Company issues the formulated *Management Measures for Ecological and Environmental Protection*, specifying the requirements and responsibilities of different departments and subsidiaries. With an established environmental protection mechanism, we regularly convene special meetings to develop tailored work plans for enhancing environmental protection. We institute a follow-up mechanism to monitor and encourage implementation by subsidiaries, ensuring the delivery of our environmental protection agenda. Within the Safety and Quality Department, CNNP's Leading Group for CSR Management designates ESG liaison officers responsible for handling safety matters and reporting on work progress.

Strategy

Guided by Xi Jinping's thought on ecological progress in environmental protection, CNNP adheres to the principles of protection and prevention first, comprehensive management, public engagement, and accountability for damage. We align with China's policies and measures for ecological protection and pollution prevention and control, ensuring compatibility with CNNP's business development. We conduct thorough assessments of environmental risks, including climate risks and resource shortages, evaluating their potential financial impacts on our operations. We devise risk control and response strategies, including measures to address extreme weather events, enhance water-saving technologies, and implement ecological compensation initiatives.

Risks

Potential impacts

Countermeasures

Climate risks

- Climate change induces extreme weather events and natural disasters, directly impacting project construction timelines and the reliability of equipment.

- We proactively identify climate change-induced risks and consistently refine the design concepts of nuclear power technology.
- We formulate sound measures for the prevention and mitigation of serious accidents.
- We continue to bolster our resilience against external incidents and enhance our emergency response capabilities.

Resource short-age risks

- Water is an important element in ensuring the normal operation of nuclear power plants, but water scarcity remains a significant challenge
- China's uranium resources are limited and highly dependent on imports, which affects energy security and cost control

- We take holistic approaches to conserve and optimize the utilization of water resources. We actively promote water-saving technologies and the recycling of reclaimed water to minimize water consumption and waste.
- We adopt the three-step nuclear energy development strategy of "thermal reactor-fast reactor-fusion reactor" and vigorously promote integral fast reactors. We will standardize the management of nuclear fuel and improve uranium utilization.

Management risks of three types of waste

- Inadequate management of radioactive and non-radioactive waste from nuclear power plants can adversely affect both people and the environment

- We comply with relevant laws and regulations, toughen effluent management, and study relevant technology to minimize waste.
- We enhance our capability to monitor effluents and the surrounding environment, establish a robust environmental quality forecasting and early warning mechanism, and reinforce monitoring and supervision of emissions.

Ecological damage risks

- The construction and operation of nuclear power plants may disrupt the habitat and reproduction of nearby animals

- We monitor indicator organisms, carry out remote sensing measurements of thermal discharge, and bypass protected areas in construction plans to protect the surrounding environment.
- We implement restocking and ecological compensation, introduce species compatible with local ecology, breed *Pinctada maxima*, and continue to improve the surrounding waters and land environment.

Risk Management

CNNP incorporates environmental risk management into the enterprise risk management (ERM) system. Through surveys and on-site interviews conducted by the Safety and Quality Department and the Operation and Production Department, we identify environmental risks across all facets of operations. Utilizing the *Implementation Guidelines for Enterprise Risk Management*, we assess the possibility and impact of these risks. Subsequently, risks are prioritized based on their level and the urgency for improvement. The results are then deliberated by the Company's Party Committee and approved by the Board of Directors. We maintain ongoing monitoring and control of environmental risks, promptly reporting any incidents to prevent risks and mitigate environmental impacts. Progress in risk management is regularly communicated to the Party Committee, the Board of Directors, and the General Manager's Office on a quarterly basis.

Metrics and Targets



Medium and long-term goals

- To reach 10 billion yuan in the non-nuclear clean energy business
- To ensure the overall radiation safety of nuclear power plants
- To safely store and dispose of solid waste and hazardous waste

Progress in 2023

- We achieved an installed capacity of 18.52 GW of non-nuclear clean energy (wind and solar). The power generated from these sources amounted to 23.38 TWh, marking a year-on-year increase of 66.44%
- In 2023, there were no incidents of excessive discharge of radioactive materials, and the amount of radioactive solid waste generated was maintained within the designated management target value
- In 2023, there were no incidents of excessive wastewater discharge, and the treatment and disposal of non-radioactive solid waste adhered to legal requirements

Climate Change Response

Climate change is one of the major concerns shared globally. The introduction of China's 30•60 Decarbonization Goal presents significant opportunities for the advancement of nuclear energy and its diverse applications, while also setting elevated standards for the high-quality development of the nuclear energy industry. Recognizing the evolving challenges posed by climate change, CNNP harnesses the strengths of nuclear energy as a clean, efficient, safe, and reliable energy source. With a keen awareness of the emerging challenges, we explore the breadth and depth of our business potential. Through innovative business development strategies, we aim to mitigate the adverse impacts of climate change and enhance ecosystem services.

Climate change management

We have implemented a climate change management framework encompassing four key dimensions: governance, strategy, risk management, and metrics and targets. Through this framework, we have reinforced our climate change risk management efforts to effectively address the ongoing challenges posed by climate change.

Governance

The Board of Directors oversees matters concerning the Company's climate change risks and discusses and reviews climate change-related risks. The Company has formulated the *Management Measures for Energy Conservation, Consumption Reduction, and Emission Reduction*, accompanied by a corresponding responsibility system at all levels. Under the leadership of the General Manager, we establish energy conservation, consumption reduction, and emission reduction systems, integrating them into the Company's medium and long-term planning. The General Manager also approves relevant annual targets and ensures the provision of necessary resources for their implementation.



Strategy

The Company identifies physical risks and transition risks caused by climate change to its business. As a new-type power system and China's 30•60 Decarbonization Goal are advancing, nuclear energy will be a crucial part in the future energy mix. In the context of China's 30•60 Decarbonization Goal, the clean energy industry is embracing new opportunities for high-quality development, and in particular, the nuclear power industry looks promising.

Risk type	Climate risks					
	Physical		Transition			
	Acute	Chronic	Policy and Legal	Technology	Market	Reputation
Examples	Sudden extreme weather events such as typhoons and floods may have an impact on the reliability of equipment operation	Global warming will lead to an increase in the temperature of cooling water, thereby increasing the demand for cooling water. Drought can affect the water levels of rivers and lakes, and directly affect the extraction of cooling water	The increasingly stringent regulatory requirements on carbon emission pose greater challenges to climate change management for the Company	Failure to timely identify and apply low-carbon technologies could result in a failure to meet carbon emission targets on schedule	The market's appetite for low-carbon products and services, results in a failure to meet the expectation for market transaction volume	Poor performance on climate change will lead to reputational risks
Measures	Adopting advanced nuclear power technology design concepts, equipping with serious accident prevention and mitigation measures, strengthening protection from external events, and enhancing emergency response	Promoting the comprehensive utilization of nuclear energy and expanding the use of nuclear energy from single power generation to a variety of applications such as heating and steam supply	Strictly abiding by laws and regulations, improving CNNP's policies on environmental protection, energy conservation, consumption reduction, and emission reduction	Implementing several energy conservation and emission reduction projects and gradually reducing carbon emissions generated by purchased energy through continuous improvement in management and technology	Accelerating the development of non-nuclear clean energy industries such as wind and photovoltaic, promoting clean energy substitution, and improving the local energy mix	Implementing the strategy of carbon peaking and carbon neutrality, promoting the green and low-carbon development of CNNP, and educating the public about the green value of nuclear energy

Risk management

By integrating environmental risk management into our ERM approach, the Company collects real-time data on climate change risks. Through thorough analysis and assessment of these impacts, we implement effective control and response measures. This proactive approach aims to mitigate the escalation of environmental risk events into more significant risks, such as credit and reputation risks.

Sticking to the ecological protection and environmental quality bottom lines, all subsidiaries are intensifying their efforts to prevent environmental risks. They are implementing graded management and control measures for environmental pollution sources, vulnerabilities, and risks. Furthermore, all nuclear power plants have obtained certification from the ISO 14001 environmental management system. As a result, each plant effectively manages the entire production process, proposing targets, indicators, and management plans to address critical environmental factors such as carbon emissions and waste discharge.

Metrics and targets

As we contribute to China's 30•60 Decarbonization Goal, we have established a sound accounting and information disclosure system for carbon dioxide emissions. We have also adopted effective measures to control carbon emissions. In 2023, our comprehensive energy consumption index per 10,000 yuan of industrial output value decreased compared to 2022.

Developing nuclear power in a safe and orderly manner

Peaking carbon dioxide emissions and achieving carbon neutrality requires extensive and profound societal and economic transformations. To support China in realizing the 30•60 Decarbonization Goal, nuclear energy companies must take decisive actions to position nuclear energy as a key driver in the global effort to achieve carbon peaking and carbon neutrality. This entails promoting energy transition and fostering green development. In line with our core business objectives, we remain committed to the broader strategic vision and implement the action plan of "developing nuclear power in a safe and orderly manner." In 2023, CNNP's 25 operating units maintained safe and stable operation, generating 186.48 TWh of electricity for commercial purposes, a year-on-year increase of 0.67%. There are 15 units under construction or approved for construction, with an installed capacity of 17.57GW.

Year	Power generation by nuclear power units (TWh)	Reduction of standard coal burned(tons)	Reduction of CO ₂ emissions (tons)
2021	173.12	52,369,700	137,208,600
2022	185.24	56,201,500	147,248,000
2023	186.48	56,222,800	147,303,800

Notes: 1. Based on the coal consumption of 303.4 g/kWh for power supply in 2023 (data source: national power industry statistics from January to November 2023 released by National Energy Administration)
2. Emission reductions are calculated based on the prevailing standard of China's thermal power industry, that is, 2,620 kg of CO₂, 8.5 kg of SO₂, and 7.4 kg of NO_x generated by per ton of standard coal burned by industrial boilers.

In 2023, CNNP's projects progressed safely and efficiently



Projects approved

- On September 13, 2022, Unit 3 and Unit 4 of the Zhangzhou Nuclear Power Plant were approved by the state
- On July 31, 2023, Unit 1 and Unit 2 of the Xudabao Nuclear Power Plant were approved by the state
- On December 29, 2023, Unit 1 and Unit 2 of the Jinqimen Nuclear Power Plant were approved by the state



Units under construction and approved for construction

- Units 1, 2, 3, 4 of the Xudabao Nuclear Power Plant
- Unit 7 and Unit 8 of the Tianwan Nuclear Power Plant
- Units 3 and Unit 4 of the Sanmen Nuclear Power Plant
- Unit 1, 2, 3, 4 of the Zhangzhou Nuclear Power Plant
- Unit 1 and Unit 2 of the Jinqimen Nuclear Power Plant
- Small modular reactor, Hainan Nuclear Power Plant



On November 15, 2023, the groundbreaking ceremony of Unit 1 of the Liaoning Xudabao Nuclear Power Plant was held in Xingcheng, Huludao City. This project stands as one of the largest clean energy initiatives in Liaoning province during the 14th Five-Year Plan period. The Xudabao nuclear power project is poised to become a core support for Huludao City's efforts to establish a clean energy industrial cluster and contribute to the comprehensive revitalization of Northeast China by injecting clean energy into the region.

Exploring the multi-purpose use of nuclear energy

Capitalizing on our strengths, we promote the comprehensive utilization of "nuclear power + strategic emerging industries." By expanding the application of nuclear energy beyond its traditional scope to encompass multi-purpose uses, we contribute significantly to green and low-carbon development efforts.

Case | The first isotope R&D platform in China in a commercial reactor inaugurated in Qinshan

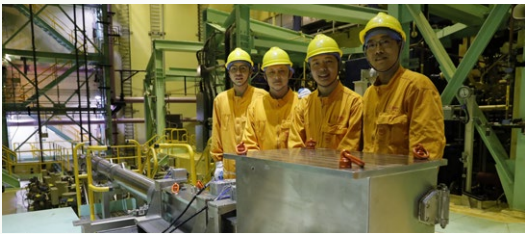


On April 23, 2023, Qinshan Nuclear Power Co., Ltd. achieved a significant milestone with the completion of the installation and cold commissioning of the commercial reactor isotope R&D platform during the 12th overhaul of Qinshan Unit 1. This platform is the first of its kind in China and is capable of remotely loading and unloading carbon-14 targets. Leveraging the high neutron flux and long-term operational stability of heavy water reactors, the platform enables the development and stable, flexible production of medical isotopes in small batches over extended periods. The inauguration of this platform marks the commencement of short-half-life medical isotope production in China's commercial reactors and signals a breakthrough in the development of radiopharmaceuticals. Following the irradiation-based production of cobalt-60 and carbon-14 by commercial heavy water reactors, the commissioning of the isotope R&D platform represents another milestone in the multi-purpose comprehensive utilization of nuclear energy by Qinshan Nuclear Power Co., Ltd. This achievement heralds a new phase in the development of the Qinshan Nuclear Power Co., Ltd. isotope production base.



Read more

Qinshan Nuclear Power Co., Ltd. explores how to blaze a trail in isotope production – promoting the coordinated and integrated development of China's nuclear power and nuclear technology applications

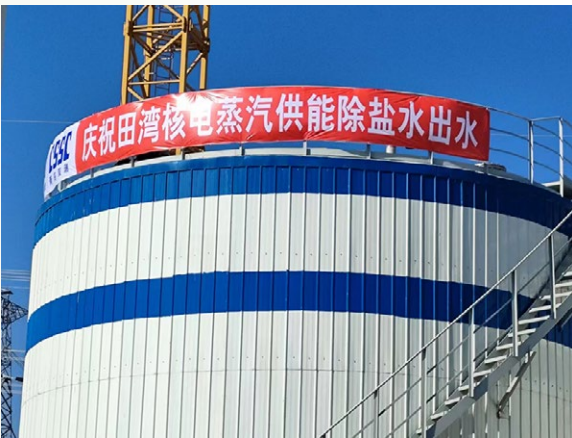


The first isotope R&D platform in China in a commercial reactor is inaugurated in Qinshan

Case | Tianwan Nuclear Power Plant seawater desalination project meets the goal of producing a stable stream of desalinated water



On November 17, 2023, the successfully initiated the operation of its seawater desalination project, delivering a consistent flow of desalinated water. The overall indicators of the desalinated water met the quality requirements of the desalination water system. Leveraging the seawater desalination process system and the desalinated water production system, seawater undergoes purification, filtration, infiltration, mineralization, and disinfection processes. This transformation allows seawater to be converted into industrial water for production purposes and desalinated water, with a designed daily capacity of 36,500 tons. The project will facilitate the full utilization of unconventional water sources and desalinated seawater. It serves as a valuable demonstration of practical application for the subsequent development of the nuclear power industry and desalination projects in China.



Tianwan Nuclear Power Plant seawater desalination project meets the goal of producing a stable stream of desalinated water

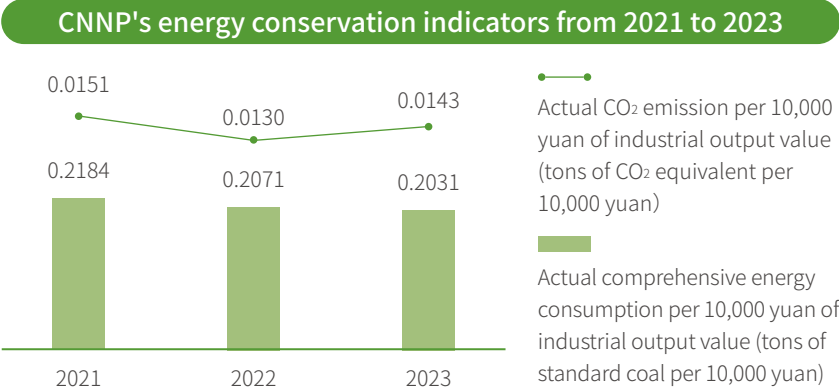
Case | Qinshan Nuclear Power Co., Ltd. produces green nuclear energy for household heating

In 2023, the nuclear energy heating project of Qinshan Nuclear Power Co., Ltd. was recognized as an outstanding contribution case of "double carbon" at the 2023 Carbon Peaking and Carbon Neutrality Innovation Forum. This project, one of the pioneering providers of pilot nuclear energy integrated heating in China, commenced with the establishment of the Zhejiang Haiyan Nuclear Energy Heating Demonstration Project in 2021, the first of its kind in southern China, in collaboration with Haiyan County. Over the last three years, Qinshan Nuclear Power Co., Ltd. has successfully demonstrated central heating solutions for residential, industrial, and commercial buildings, as well as public infrastructure. This initiative has created a new win-win scenario for local communities, governments, and nuclear power enterprises alike. Moreover, it serves as a demonstration model for the construction of large-scale central heating projects in southern China.

To accelerate the development of the nuclear energy heating market, Zhejiang Zero Carbon Thermal Power Co., Ltd., a joint venture between Qinshan Nuclear Power Co., Ltd. and Haiyan County state-owned enterprises, collaborated with relevant departments of Haiyan County to finalize China's inaugural local nuclear energy heating special plan in 2022 - the *Haiyan County Nuclear Energy Central Heating Pipeline and Facilities Special Plan (2022-2030)*. Subsequently, in 2023, they released the Nuclear Energy Heating Pipe Network Construction and Management Standards. These documents serve as crucial references for government supervision and engineering construction guidance, laying the groundwork for the industry's sustainable development.

Promoting energy conservation and carbon reduction

In this new stage of development, the Company remains steadfast in the full, accurate, and comprehensive implementation of the new development philosophy. We actively promote green production and construction practices, striving to utilize energy and resources efficiently. Additionally, we accelerate technological innovation efforts, steadfastly following the path of green, low-carbon, and high-quality development. Through these initiatives, we aim to set an example in achieving the goal of "carbon peaking and carbon neutrality."



Note: Nuclear power plants do not emit pollutants such as SO₂ and NO_x, and CO₂ emissions are mainly converted from the amount of purchased energy. CO₂ emissions are calculated according to the purchased electricity calculation coefficient specified in the *Notice on Strictly Submitting Relevant Energy Conservation and Emission Reduction Data to CNNC's Statistical Annual Reports and Regular Reporting*.

In 2023

Investment in environmental protection and energy conservation

147.74 million yuan

CO₂ emissions

101,600 tons*

Year-on-year decrease of comprehensive energy consumption index per 10,000 yuan of industrial output value

1.90%

Note: The increase in carbon dioxide emissions in 2023 compared to 2022 can be attributed to several factors. These include the rise in the number of overhauls of nuclear power units, the increased purchase of electricity, the higher proportion of installed capacity of non-nuclear clean energy sources, and the heightened demand for winter heating associated with nuclear power unit construction projects in northern China.

Sound management mechanism

- We organized CNNP's first annual work exchange meeting on energy conservation and consumption reduction, released the *Management Measures for Energy Conservation, Consumption Reduction, and Emission Reduction*, and required subsidiaries to establish supporting management procedures
- We studied how to build an energy conservation indicator system and formulated over 60 indicators spanning five dimensions, including main comprehensive economic and technical indicators, reactor economic and technical indicators, steam turbine economic and technical indicators, etc

Special action

- We issued the *CNNP 2023 Special Inspection Plan for Environmental Protection, Emergency Response, Energy Conservation, and Consumption Reduction* and assembled a team comprising external experts and internal staff to conduct inspections on energy conservation, consumption reduction, and environmental protection at five operating power plants, including Qinshan Nuclear Power Co., Ltd. and Jiangsu Nuclear Power Co., Ltd. Key work plans for the next year are formulated according to the installation of measuring equipment for power generation, operation optimization, and system building

Technology and equipment upgrades

- All power plants continue to optimize the operation mode of air conditioning and ventilation systems and equipment, promote the energy-saving transformation of condensers' vacuum pumps, and apply pump frequency converters and smart energy monitoring systems
- To conserve energy, we conduct regular equipment and system checks, adjust operations in different seasons, optimize the equipment operation mode of units when they are not in service or during overhauls, adjust the number of operating high-power equipment, and improve unit power output

Case | The distributed solar PV project (phase I) in the Fuqing Nuclear Power Plant is put into operation to generate power

In 2023, the distributed solar PV project (phase I) at the Fuqing Nuclear Power Plant commenced power generation operations. With an installed capacity of approximately 1,000 kW, the project generates an average of about 1 GWh of electricity annually. Utilizing the "self-generation for on-site consumption" approach, the project maximizes the use of rooftop space at the plant to establish a distributed solar PV system. All electricity generated is utilized for daily office operations in the front area of the plant, thereby enhancing energy utilization efficiency. This initiative serves as another prominent example of the ongoing efforts to establish a "green Fuqing Nuclear Power Plant."

Developing non-nuclear clean energy

The Company places significant emphasis on the advancement of non-nuclear clean energy, coordinating the development of "nuclear energy + non-nuclear clean energy" to foster clean development. We actively pursue the development of non-nuclear clean energy sources such as wind and photovoltaic, aligning with China's efforts to transform and upgrade its energy mix.

As of the end of December 31, 2023

- The Company's operational wind and photovoltaic capacity totaled **18.52** GW. This includes **5.95** GW of wind power and **12.56** GW of photovoltaic. Additionally, the Company had a stake in independent energy storage power stations with a combined installed capacity of **651** MW. Furthermore, the Company controlled new energy projects under construction with a total installed capacity of **9.73** GW. This includes **2.75** GW of wind power and **6.97** GW of photovoltaic. Additionally, the Company had a stake in independent energy storage power stations under construction with an installed capacity of **650** MW.
- The Company's non-nuclear clean energy generated **23.38** TWh of electricity, a year-on-year increase of **66.44**%, of which **12.48** TWh was from photovoltaic, a year-on-year increase of **66.14**%, and **10.90** TWh was from wind power, a year-on-year increase of **66.78**%.

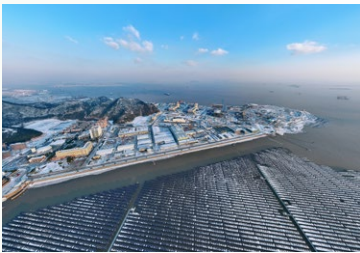


Case

China's first intertidal "nuclear-solar-storage multi-energy coupling" photovoltaic project connected to the grid



On November 30, 2023, CNNP's Sanmen 200MW intertidal photovoltaic project achieved the significant milestone of connecting the first 100MWp to the grid. This project marked the first attempt in China to achieve "nuclear-solar-storage multi-energy coupling" and represented the inaugural intertidal photovoltaic project independently developed and constructed by CNNP Rich Energy Co., Ltd. to be connected to the grid for power generation. As the first demonstration project for the integrated development of "nuclear power + non-nuclear clean energy" in China, it was recognized and included in the list of major energy construction projects in Zhejiang Province for 2023. Utilizing space above the thermal discharge area of Sanmen Nuclear Power Plant, the project established a photovoltaic facility, setting a precedent for subsequent "nuclear energy +" development models. The project facilitated a transition in sea area management from "two-dimensional" to "three-dimensional," signifying a significant step towards the effective utilization and protection of marine resources and the high-quality development of the marine economy. Upon achieving a full-capacity grid connection, the project is estimated to send an average annual electricity output of 210 GW to the grid, contributing to the saving of 69,500 tons of standard coal and reducing carbon dioxide emissions by 145,600 tons annually. This initiative is expected to provide stable and reliable energy to support the healthy, green, and sustainable development of Zhejiang's economy.



CNNP's Sanmen 200MW intertidal photovoltaic project achieves the first 100MWp grid connection

Improving Resource Efficiency

Resource conservation is China's basic national policy. CNNP takes a holistic approach to resource conservation and efficient utilization, focusing on enhancing the efficiency of water resources and nuclear fuel. Through our efforts, we contribute to safeguarding China's resource security, promoting ecological civilization, and advancing high-quality development initiatives.

Addressing water stress

Water serves as an important carrier for the energy transmission and conversion of nuclear power plant units. Water is indispensable throughout the entire process of nuclear power generation and operation. With a commitment to prioritizing the conservation and protection of water resources, the Company endeavors to minimize water consumption and waste by strictly controlling key water-saving links, adopting advanced water-saving technologies, and promoting the reuse of reclaimed water.

Exploring smart water management

- Together with CEPC, we build China's first demonstration project of smart water ecology at Fujian Fuqing Nuclear Power Co., Ltd. Leveraging advanced AI equipment and a dedicated water operation team, we aim to optimize the value of water treatment through dynamic prediction, intelligent decision-making, and automatic execution processes. This initiative is pivotal in ensuring water safety, compliance with discharge regulations, and robust ecological protection measures

Strictly controlling key water-saving links

- During operation, the cooling water of the nuclear island equipment and the conventional island adopts a closed recirculating water system to provide recycled cooling water for equipment and recirculating water motors
- During system isolation and maintenance, the isolation boundary is carefully reviewed and made as feasible and limited as possible to minimize water discharge during system maintenance



Improving water efficiency

- The reclaimed water produced by the wastewater treatment station in the plant area meets the standard of *The Reuse of Urban Recycling Water—Water Quality Standard for Urban Miscellaneous Use (GB/T18920-2020)*. The water is recycled for dust removal or landscaping in the plant area
- We upgrade the technology of the chlorine production station in an orderly manner, recycle the supernatant of the wastewater produced by electrolysis of seawater after precipitation, and remove the residue regularly
- We transform the desalinated water production system and adopt the process of "ultrafiltration + reverse osmosis + first-stage desalination + mixed bed" to improve water utilization

In 2023

The Company purchased

20.99 million m³ of water

Water consumption per 10,000 kWh of power generated was

95.87 m³

The industrial water recycling rate stood at

98.95%



Case

Qinshan Nuclear Power Co., Ltd. awarded the title of "Zhejiang Water-saving Enterprise"



As a major water consumer, Qinshan Nuclear Power Co., Ltd. actively responds to the water conservation directives of Zhejiang Province. The Company has established a dedicated task force, led by the general manager, focused on fostering a water-saving enterprise culture. Initiatives include implementing water-saving system enhancements, conducting water-saving awareness campaigns, conducting on-site water balance testing, seeking expert consultations, and conducting on-site evaluations. These efforts bolster the management and efficient utilization of water resources. In 2023, Qinshan Nuclear Power Plant No.2 upgraded the auxiliary feeding water system (ASG) steam-driven pump to achieve water savings. Following the upgrade, water from the ASG steam-driven pump is discharged to the SEK pit of the conventional island after natural cooling, eliminating the need for SEP water. This modification results in an estimated annual water saving of approximately 200,000 tons of SEP water. In December 2023, Qinshan Nuclear Power Co., Ltd. was awarded the title of "Water-saving Enterprise in Zhejiang Province".



Case

Jiangsu Nuclear Power Co., Ltd. wins the title of "Water Efficiency Leader" in Lianyungang City



In response to national environmental protection policies, Jiangsu Nuclear Power Co., Ltd. remains committed to identifying areas where emissions or consumption can be minimized. The Company conducts various research projects focused on emission reduction, leading to a reduction in power station wastewater. In comparison to the same period in 2022, Jiangsu Nuclear Power Co., Ltd. successfully reduced non-radioactive production wastewater by 160,000 tons and low-radioactive wastewater by approximately 2,300 tons in 2023. In addition, the Company reused around 80,000 tons of reclaimed water sourced from domestic wastewater stations for landscaping purposes, further contributing to water conservation efforts. Moreover, the Company implemented measures to reduce the purchase of fresh water, resulting in both economic and environmental benefits. For expansion construction areas, Jiangsu Nuclear Power Co., Ltd. mandated contractors to adopt water-saving measures. These measures included enhanced supervision and inspection, installation of water-saving devices, and implementation of water recycling systems for shield machines. These initiatives not only conserved water but also facilitated efficient water consumption practices.

Following its recognition as one of the first green development leaders in Jiangsu Province, a provincial water-saving enterprise, and a Jiangsu green factory, Jiangsu Nuclear Power Co., Ltd. achieved yet another milestone by being awarded the title of "Water Efficiency Leader" in Lianyungang City in 2023.

Improving nuclear fuel efficiency

The Company has improved the *Guidelines for Nuclear Fuel Management* and other policies to standardize nuclear fuel management and adopted advanced management solutions to enhance nuclear fuel efficiency. According to the technical specifications for nuclear power plant operations, we have formulated effective measures to monitor the operation of the reactor core and nuclear fuel to ensure on-site operations consistent with the refueling design of nuclear power plants. We have also increased the monitoring level and the frequency of sampling analysis, and indexed fuel integrity against the fuel reliability indicators of WANO with indicator performance tracked.

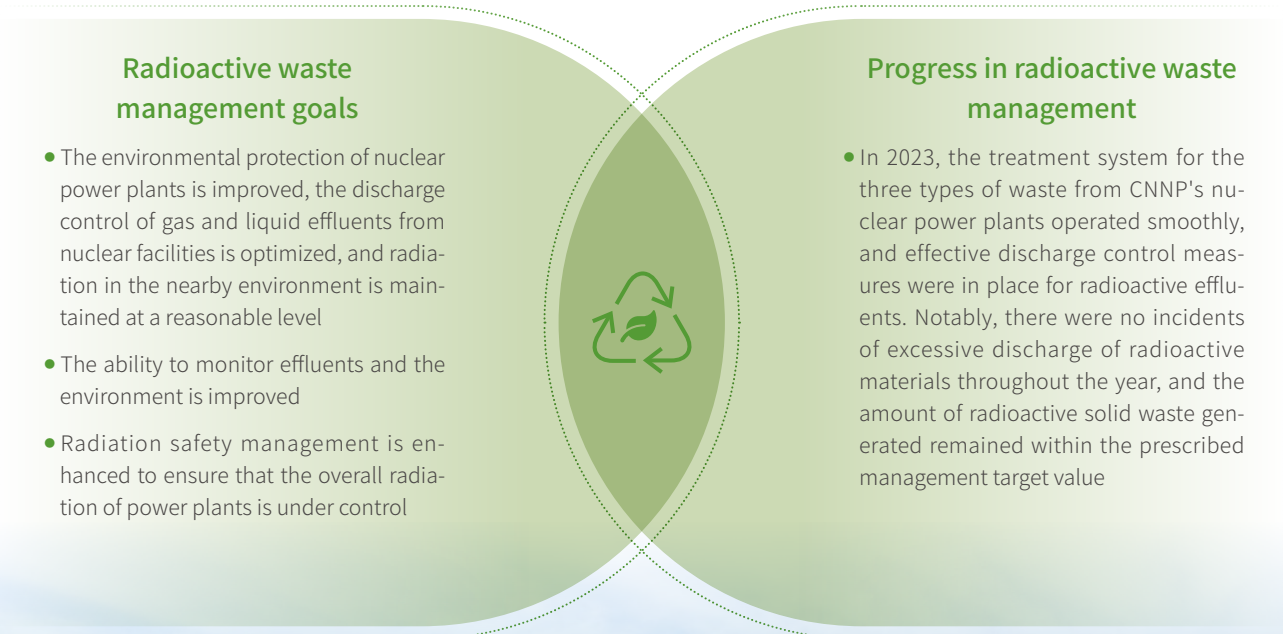


Controlling the Discharge of Pollutants

CNNP strictly complies with Chinese laws and regulations such as the *Environmental Protection Law*, *Law on the Prevention and Control of Atmospheric Pollution*, *Law on Prevention and Control of Environmental Pollution by Solid Waste*, and *Circular Economy Promotion Law*. We are committed to practicing the principles of green, low-carbon, and sustainable development. In 2023, the Company continued to prioritize environmental protection through special initiatives. These efforts focused on various aspects, including radioactive effluent management, radioactive solid waste management, non-radioactive wastewater management, general solid waste management, hazardous waste management, environment and effluent monitoring, and environmental protection publicity. By advancing these endeavors, we laid a solid foundation for green and low-carbon development, contributing to the realization of high-quality development and ecological civilization.

Radioactive waste

The Company strictly abides by Chinese laws and regulations such as the *Law on the Prevention and Control of Radioactive Pollution*, *Regulation on the Safety Management of Radioactive Waste*, *Regulation on the Safe Transport of Radioactive Material*, and *Nuclear Safety Law*. We have established a systematic and efficient mechanism for the control and treatment of radioactive waste, emphasizing the strengthening of safety management protocols and efforts to minimize the environmental impact of radioactive waste.



Improving the radioactive waste management mechanism

- We supervise and guide the operators of nuclear power plants to establish or improve the radioactive effluent and environmental monitoring management system and quality guarantee system
- We publish monthly and annual performance evaluation reports on CNNP's radiation protection, regularly evaluate the radiation safety management of each unit, summarize good practices, and identify weaknesses promptly

- We urge all subsidiaries to pass the accreditation and regular review by the China National Accreditation Service for Conformity Assessment (CNAS) for environmental laboratories and effluent laboratories
- All nuclear power plant effluent and environmental monitoring laboratories undergo capacity testing conducted by the China Institute of Radiation Protection, Nuclear and Radiation Safety Center, and the Radiation Monitoring Technical Center, which includes inter-laboratory comparisons and quality assessments. All projects have passed verifications or assessments
- All nuclear power plants are subject to the radiation monitoring capacity assessment organized by the regional offices for nuclear and radiation safety inspection of the Ministry of Ecology and Environment and solve problems as planned

Improving the ability to monitor effluents and the environment

Minimizing radioactive waste

- We improve our abilities to minimize waste by transferring combustible waste, promoting the clean and timely disposal of waste, formulating waste disposal plans, researching advanced technology to minimize waste, and sharing relevant practices

In 2023

Nuclear power plants carried out **4** projects to optimize the technology of radioactive waste and **12** research projects for waste disposal, and produced **13** good practices



Non-radioactive waste

In strict accordance with relevant laws and regulations, we conduct comprehensive monitoring of non-radioactive waste throughout the entire process. We continuously optimize our control and treatment mechanisms and prioritize digitalized management and meticulous waste management practices to mitigate any negative environmental impact.

Non-radioactive waste management goals

- Air pollution control facilities and wastewater treatment facilities run well, and solid waste and hazardous waste are safely stored and handled
- The temporary storage of solid waste is better managed and special actions to minimize waste are taken to ensure the safe storage of solid waste



Progress in non-radioactive waste management

- In 2023, the waste treatment system for the three types of waste from CNNP's nuclear power plants operated efficiently, and the management of non-radioactive waste proved effective. Notably, there were no instances of excessive discharge of wastewater throughout the year, and non-radioactive solid waste was handled in accordance with legal regulations



Hazardous waste	General industrial solid waste	Wastewater from businesses and homes
• We maintain strict control over the procurement, utilization, and disposal processes that lead to the generation of hazardous waste, formulate hazardous waste management plans, establish hazardous waste management records, and register hazardous waste with the local environmental authorities. Hazardous waste is transferred and handled by qualified operators	• We systematically collect general industrial solid waste, categorizing it accordingly, and provide designated temporary storage sites that adhere to prescribed storage conditions, with detailed records maintained. Subsequently, the general industrial solid waste is transferred to specialized units for proper handling, in which recycling is prioritized	• We regularly monitor water pollutants to ensure that discharge complies with standards and dispose of sludge generated by wastewater treatment facilities following EIA requirements and local standards

Case

"Intelligent +" environmental protection advances the delicacy management of waste



In 2023, as part of our commitment to high-level environmental protection and support for high-quality development, CNNP experimented with a digital management model. We diligently improved our waste management practices to enhance precision and efficiency, thereby fortifying our environmental safety measures.

Jiangsu Nuclear Power Co., Ltd. installed an intelligent weighing system for hazardous waste within its hazardous waste storage area. This innovative system streamlines various processes, including weighing, reporting, label printing and posting, physical waste transfer and receipt, and data generation. By automating these steps, hazardous waste management is expedited, contributing to overall operational efficiency. In response to the challenge of managing extensive waste lists and records, CNNP Guodian Zhangzhou Energy Co., Ltd. has adopted a coordinated approach across different office platforms. The Company has developed digital forms specifically for hazardous waste management, streamlining processes to conserve labor while ensuring the safe and efficient management of hazardous waste. Fujian Fuqing Nuclear Power Co., Ltd. introduced a specialized management improvement platform supported by automated information systems. This platform assists in decision-making processes, leading to significant advancements in environmental risk control, particularly in managing effluents, hazardous waste, and non-radioactive wastewater. These efforts have effectively mitigated potential hazards associated with pollutant discharge, ultimately enhancing the intrinsic environmental safety of Fujian Fuqing Nuclear Power Co., Ltd.

Case

Qinshan Nuclear Power Co., Ltd.'s project to improve wastewater discharge into the sea and river put into trial operation



Qinshan Nuclear Power Co., Ltd.'s project to improve wastewater discharge into the sea and river entered trial operations in January 2023. Online monitoring devices were strategically installed at each discharge outlet to oversee various parameters, including COD, ammonia nitrogen, total phosphorus, total nitrogen, pH levels, and flow rate. The collected data, along with comprehensive analysis results, were promptly uploaded to the provincial environmental protection platform. During trial operations, daily average data consistently adhered to regulatory standards, affirming the successful completion of the commissioning process. Concurrently, the domestic sewage and nuclear plant wastewater treatment facilities across the three plants of Qinshan Nuclear Power Co., Ltd. maintained normal operations. Notably, the project achieved its targeted objectives, including rain and wastewater separation, rain and sewage diversion, compliance with discharge standards, and reduction in sewage outlet volume.

Protecting the Ecology and Environment

Upholding the concept of unity between humans and nature, CNNP prioritizes environmental protection and green development, focuses on the environmental impact of corporate operations, and strengthens biodiversity conservation to realize the vision of harmonious coexistence between humans and nature.

Reducing environmental impact

With a sound environmental monitoring system, the Company meticulously monitors environmental impacts at every stage of a project's lifecycle. From initial planning and design to construction, operation, and maintenance, we conscientiously evaluate potential environmental ramifications and take proactive measures to prevent ecosystem damage.



Carrying out environmental monitoring

- We improve the existing non-radioactive environmental monitoring and management system, reinforcing surveillance of non-radioactive industrial wastewater, domestic sewage, thermal discharge, marine ecology, noise levels at nuclear plants, power frequency electric fields, magnetic field strength, meteorological conditions, and other non-radioactive aspects



Bypassing ecological red lines

- We commit to refraining from conducting business activities within protected areas and ensuring that new projects are not situated in nature reserves. All nuclear power plants strictly adhere to ecological protection guidelines, guaranteeing that power unit operations do not encroach upon protected areas. Prior to the approval of an environmental impact report for a new project site, the original landscape remains untouched, with no preparatory activities such as water and electricity connection, road construction, or site leveling



Practicing green construction

- During construction, we strictly abide by environmental protection laws and standards, implementing scientifically grounded environmental management practices to mitigate the adverse effects of construction activities on soil, water sources, air quality, and biodiversity. We conduct thorough environmental monitoring and assessments, promptly addressing any identified environmental issues to ensure that ongoing nuclear power projects do not pose threats to the environment



Sanmen Nuclear Power Co.,Ltd. 's Unit 3 and Unit 4 developed smart construction practices, with automated monitoring systems in place to track PM2.5 levels at the construction site. Noise levels and dust pollutants in environmentally sensitive areas adhere to standards



CNNP Liaoning Nuclear Power Co., Ltd. requested CNPE and CNCC to conduct thorough inspections of construction sites, identifying environmental issues and recording them meticulously. Through dedicated special meetings focused on environmental management at construction sites, the Company closely monitors the rectification of identified problems, ensuring a closed-loop management approach to environmental concerns



CNNP Xiapu Nuclear Power Co., Ltd. adopts measures to minimize dust levels at construction sites, conducts regular inspections to verify the implementation of crucial environmental factor identification and control measures by primary contractors, updates the *Emergency Plan for Environmental Incidents*, and conducts environmental emergency training sessions

Conserving biodiversity

Biodiversity is fundamental to human well-being and essential for our continued survival and development. At CNNP, we deeply respect and prioritize the protection of nature. By integrating biodiversity conservation into our development strategies, we aim to foster a community where nuclear power coexists harmoniously with biodiversity, ensuring a sustainable and prosperous future for all.



Ecological compensation

- We implement nuclear power plant landscaping projects aimed at creating a garden-styled factory environment. Through woodland transformation and ecological restoration efforts, we strive to maintain the original ecology surrounding our nuclear power plants
- We continue to carry out fish restocking activities to enrich local fish resources and restore the environment where our nuclear power plants are located



Aquatic animal protection

- We normalize marine ecological surveys of nearby waters, assess the ecological impact of project operation on surrounding sea areas, and protect their marine ecology
- We conduct studies on the genetic diversity of marine organisms, analyze the living conditions of dominant species, and take corresponding conservation measures to ensure sustainable marine resource utilization and improve marine biodiversity conservation



Terrestrial animal protection

- We conduct regular visit project site visits to document their ecological conditions and make comprehensive assessments on the impact of project construction plans and construction technology on the nearby ecology, bypass natural habitats, wetlands, forests, wildlife corridors and agricultural land, and avoid damage to the environment

Case | "Solar PV + mine waste rock field" transform Mars-like mountain surfaces



The deep copper open-pit mine in Baiyin City, Gansu Province is renowned for its abundant non-ferrous metal resources in China. However, extensive open-pit mining activities since the 1950s have resulted in ecological damage. In December 2019, CNNP Rich Energy Co., Ltd. and China Silver Group entered into a cooperation framework agreement to establish a 100MW solar PV power generation project within the waste rock field of the deep copper mine. This initiative seamlessly integrated environmental governance with business development tailored to local conditions, effectively addressing lingering ecological concerns in the Baiyin mine area. Consequently, on February 7, 2023, the 100MW solar PV power generation project in the waste rock field of the deep copper mine was successfully connected to the grid for power generation.

In early July 2023, Prof. Wang Shengli from the College of Earth and Environmental Sciences at Lanzhou University marveled at the rapid transformation of the waste rock field at the Baiyin deep copper mine. He remarked, "Previously, this area resembled the surface of Mars, with waste slag piled up to dozens of meters everywhere. Despite only five months passing since the solar PV power plant was connected to the grid, we can already see the growth of vegetation, including tamarisk and moss beneath the solar panels." After four decades of neglect, satellite imagery vividly portrays its evolution from a "scar" in Baiyin City to a "blue ocean" of solar panels.



Original waste rock field surface



Panorama of the solar PV project to treat tailings in the waste rock field of the Baiyin deep copper mine



Case | CNNP releases a promotional video on the theme of "Developing Environmentally-friendly Nuclear Energy for a Better Home"



On September 17, 2023, as part of the celebrations for National Science Popularization Day, CNNP organized the inaugural "Nuclear Energy for a Better Home" art exhibition at the 20th China-ASEAN Expo. During the event, we premiered the promotional video titled "Developing Environmentally-friendly Nuclear Energy for a Better Home.". Following the theme of "Nuclear Energy for a Better Home", the video illustrates that "nuclear-human-nature harmony" lies in the white wings in the vast sky, is like a splendid pearl amidst a vast ocean, brings happiness to all, and is like an ecological painting amidst the picturesque landscape. Upholding the biodiversity conservation principle of co-governance, co-existence, and co-prosperity, CNNP actively engages in initiatives such as egret protection, white-lipped pearl oyster breeding through thermal discharge, and collaborative efforts to establish "zero-carbon demonstration villages" as exemplars of sustainability. Through these endeavors, we showcase the harmonious relationship between nuclear energy and nature, and the fusion of culture and modernity.



Releasing the promotional video on the theme of "Developing Environmentally-friendly Nuclear Energy for a Better Home"

Scan the QR code

Scan the QR code to appreciate the harmony between nuclear energy and nature



2023 Honors & Awards

CNNP's "Practicing Biodiversity Conservation and Developing Nuclear Energy for a Better Home" won the **18th People's Corporate Social Responsibility Award for "Green Development"**, which was organized by People's Daily and hosted by People.cn.



Fujian Fuqing Nuclear Power Co., Ltd. was recognized as the 2023 Fujian Provincial Green Factory



Wetland animals in the Hainan Nuclear Power Plant



Lotus flowers at Sanhe Village



Fujian Fuqing Nuclear Power Co., Ltd. launches a science popularization activity with the theme of "Nuclear Energy Empowers a Better Life and Harmonious Coexistence between Humans and Nature" on World Environment Day



04

Fostering Community
Harmony for a Better Future

Governance

The Strategy and Investment Committee and the Nomination, Compensation, and Assessment Committee of CNNP's Board of Directors oversee important social issues, while decision-making responsibilities are delegated to various business departments. Focusing on key initiatives such as rural vitalization, sci-tech innovation, supply chain management, and talent cultivation, we have developed corporate regulations such as the *Remuneration Regulations* and *Supplier Management Regulations* in compliance with legal requirements. These regulations, approved by the Board, ensure a fair division of labor among departments and subsidiaries, with clearly defined responsibilities. The Leading Group for CSR Management has appointed ESG liaison officers within relevant business departments to address social issues, supervise their implementation, and provide progress reports.

Strategy

CNNP is fully aware of the potential risks associated with core technologies, talent and technology shortages, and public communication that could impact our operations. We anticipate potential financial ramifications and have devised risk management and response strategies accordingly. These strategies entail bolstering our sci-tech innovation system and platform, intensifying research and development in critical technologies, nurturing talent for emerging businesses and technologies, and enhancing public awareness and promotion of nuclear energy. Our goal is to promote inclusion, collaboration, co-creation and shared benefits through these efforts.

Risks

Potential impacts

Countermeasures

Core technologies

- The progress of nuclear power development is hindered by limited research and development of key equipment and technology for nuclear power.

• Our goal is to strengthen the sci-tech innovation system, refine scientific research management mechanisms and processes, establish a strategic think tank for sci-tech innovation, conduct research, and enhance equipment localization. Through these initiatives, we aim to overcome technological barriers and position ourselves as a global leader.

Talent and technology shortages

- The development of new industries and innovative business models is hindered by a shortage of talent, technical expertise, and hands-on experience in new technologies, emerging business models, and innovative areas such as multi-purpose nuclear energy, hydrogen and energy storage, and energy services.

• We plan to establish a strategic think tank for sci-tech innovation, facilitate the growth of internal research platforms, establish external high-level scientific research platforms, and enhance incentive mechanisms. These efforts aim to fortify our reservoir of talent, technology, and hands-on experience in new technologies, business models, and innovative business forms.

Public communication

- The development of nuclear energy development still faces challenges regarding public acceptance, exacerbated by the demands of the multimedia era for the safe advancement of the nuclear energy industry.

• We will intensify efforts to promote nuclear energy, refine our public communication mechanisms, and diversify new media communication methods to cultivate a more accurate public perception of nuclear power.

Risk Management

CNNP has integrated social issue-related risks into its enterprise risk management (ERM) system. We conduct questionnaires and on-site interviews with relevant departments such as the Science & Technology and International Cooperation Department, as well as the Human Resources Department, to comprehensively identify risks associated with social issues. Subsequently, we assess the likelihood and impact of these risks in accordance with the *Implementation Guidelines for Enterprise Risk Management*. Based on this assessment, we prioritize the risks according to their level and the urgency of management improvement, presenting them to the Party Committee for deliberation and the Board for approval. We ensure timely follow-up and updates on the management and control of social issue-related risks, reporting progress quarterly to the Party Committee, the Board, and the General Manager's Office.

We conduct a comprehensive identification and assessment of risks related to core technologies, public communication, and other areas. We develop specific programs for preventing compliance risks and enhancing governance in procurement, bidding, and rural vitalization. Through rigorous inspections, corrective actions, and graded supervision, we identify and rectify issues to minimize the societal impact resulting from operational activities.

Metrics and Targets



Medium and long-term goals

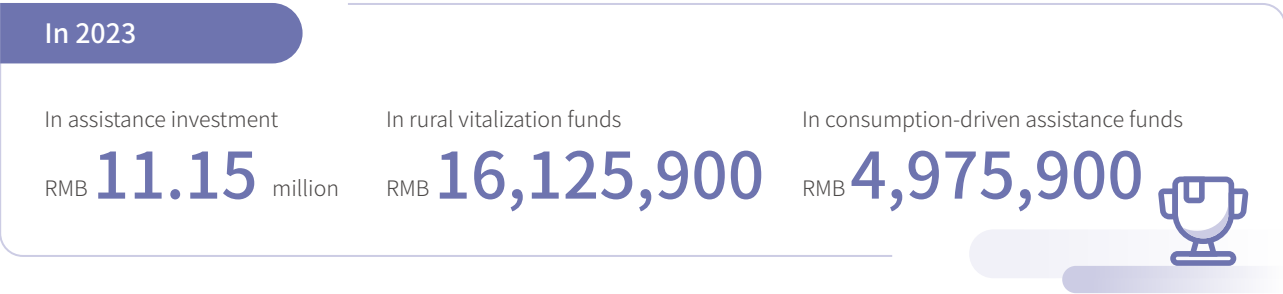
- To promote our rural vitalization efforts through strengthening IP branding and improving brand attributes.
- To obtain authorization for 1,000 invention patents.
- To organize and promote applied research on the marketization of nuclear power reactor types, focus on the economics of commercial large reactors and establish a mechanism for continuous design optimization based on market demand.
- To conduct research on enhancing nuclear power unit capacity factors, improve equipment reliability, quality and efficiency, and advance intelligent nuclear power in China to ensure the safe, stable and efficient operation of nuclear power units.

Progress in 2023

- We promoted our rural vitalization brand through promotional videos, seminars, initiatives and projects such as Xunyang spring water and the "zero-carbon model village" to provide special assistance.
- We obtained over 850 invention patents.
- We successfully completed the standard preliminary design study for the multi-module high-temperature gas-cooled reactor supercritical power generation program of a technology research project. Our innovative technologies achieved significant breakthroughs, with the establishment of engineering landing technical conditions, further enhancing our technical capabilities.
- We also successfully promoted smart nuclear power projects, including the Work Safety Management System for Nuclear Power and the Intelligent Management System for Key/Sensitive Equipment in Nuclear Power Plants.

Rural Vitalization

Adhering to the overall principle of "led by Party building, providing industrial assistance, attracting investment and adopting targeted strategies", CNNP leverages its strengths to study the principles of targeted assistance and industrial development and include the efficacy of assistance efforts in its annual evaluation system. We have established a model of "internal and external interaction for holistic advancement" to assist the four designated counties in elevating the outcomes of poverty alleviation and promoting rural vitalization on all fronts.



Industrial development

We prioritize leveraging local resource endowments and geographical advantages, actively nurturing clean energy sectors like wind power and energy storage as key areas for driving industrial growth in the supported regions. This strategy is designed to attract investments, catalyze progress across the entire industrial value chain, and seamlessly integrate primary, secondary and tertiary sectors within rural areas. Our overarching objective is to facilitate the high-quality development of agriculture in rural regions.

CNNP Liaoning Nuclear Power Co., Ltd.

- Using a donation of RMB 150,000 and collaborating with special funds dedicated to rural vitalization, the company effectively constructed a high-quality cold chain storage center for agricultural products in Zhujiatun Village, Xincheng, Liaoning Province

CNNP Xiapu Nuclear Power Co., Ltd.

- The company carried out a farming activity titled "I Have a Mu of Land in the Countryside", committing to cultivate 20 mu of abandoned farmland in Dajing Village, Xiapu, Fujian Province to support food security and rural vitalization

Qinshan Nuclear Power Co., Ltd.

- Collaborating with the Haiyan Nuclear Power Related Industry Development Service Bureau, the company launched the "Qinshan Nuclear Farm" project in Beituan Village, Jiaxing, Zhejiang Province, establishing a modern agricultural and vegetable base. Furthermore, it entered into an agreement for the purchase and sale of agricultural products to tackle land use challenges and enhance local farmers' incomes
- The company signed a strategic cooperation agreement with the People's Government of Haiyan County to jointly develop a national demonstration base for the nuclear technology application industry

CNNP Rich Energy Co., Ltd.

- The company has actively contributed to the advancement of clean energy sectors, including wind power, photovoltaic, heating, energy storage, and charging. It has pioneered an innovative "industry-leading and cooperative model" known as the "Tongxin Model" in Tongxin County, Ningxia Province. Under this model, the company has invested over RMB 3 billion in Tongxin, implementing projects such as a 100MW photovoltaic hybrid power generation project, a 100MW wind power project, a 100MW/200MWh energy storage power station, and a 170MW agricultural light complementary power generation project. Leveraging the strengths of the primary industry and local conditions, the company has successfully integrated the development of non-nuclear clean energy sectors into the local development framework



CNNP Liaoning Nuclear Power Co., Ltd. builds a cold chain storage center for agricultural products in Sunbaitun Village



CNNP Rich Energy Co., Ltd. constructed a energy storage power station in Tongxin County



CNNP Xiapu Nuclear Power Co., Ltd. organizes a farming activity titled "I Have a Mu of Land in the Countryside"



Clean energy industrial park of CNNP Rich Energy Co., Ltd.

Case

CNNP Rich Energy Co., Ltd. organizes 2023 Strategic Partner Conference and Investment Promotion Conference in Tongxin County

In March 2023, CNNP Rich Energy Co., Ltd. organized the 2023 Strategic Partner Conference and Investment Promotion Conference in Tongxin County, drawing over 300 leaders and guests from more than 130 partner companies and regional entities. During the conference, the Company and the regional government inked the 2023 Strategic Cooperation Framework Agreement. Moreover, the government entered into a RMB 1.20 billion investment intent agreement with the Company's collaborative enterprises, thereby extending the clean energy industry chain in Tongxin County and propelling the growth of non-nuclear clean energy sectors throughout the region.

Strategic Partner Conference

Ecological conservation

We strongly believe that preserving and enhancing the ecological environment is paramount for safeguarding and improving our productive forces. Therefore, we place great emphasis on ecological protection by embedding environmental considerations into our various initiatives aimed at supporting assistance efforts and rural revitalization. Through a steadfast commitment to green development, our objective is to modernize agriculture, drive rural advancement, and ultimately foster prosperity among our farming communities.



Copper and mine waste quarry tailings treatment photovoltaic project in Baiyin, Gansu Province- Post-treatment geomorphic vegetation



Signing ceremony of "zero-carbon model village" between Sanmen Nuclear Power Co., Ltd. and the Party Committee of Sanhe Village, Sanmen, Zhejiang Province

CNNP Rich Energy Co., Ltd.

- The company cooperated with Baiyin Nonferrous Group Co.,Ltd., Lanzhou University, and Gansu Academy of Sciences to advance the ecological environment management demonstration project in Baiyin, Gansu Province. This initiative also encompasses the copper and mine waste quarry tailings treatment photovoltaic project, equipped with a grid-connected system, which is now operational and generating electricity. The successful completion and operation of this project hold immense significance for Baiyin's ecological environment enhancement, economic development, and improvement of environmental protection standards, ultimately contributing to the well-being of the local population

Sanmen Nuclear Power Co., Ltd.

- The company assisted Sanhe Village in establishing the second batch of zero-carbon model villages in Zhejiang Province. Leveraging the region's ecological advantages and climate characteristics, the company implemented measures aimed at enhancing the living environment for residents. This included addressing transportation challenges, streamlining the operations of the Rural Party Branch Committee and Village Committee, and advancing vital projects such as reservoir rehabilitation, road upgrades, and the establishment of a village service center. The goal is to transform the village into a zero-carbon model village, thereby fostering shared prosperity within the community

CNNP Liaoning Nuclear Power Co., Ltd.

- The company pioneered the "Performance Supermarket for Integrated Rural Governance" project. This project has led to the gradual implementation of the "Performance Supermarket" concept, effectively strengthening the capacity and quality of rural governance and enhancing the local rural living environment
- The company took proactive steps to enhance living conditions and the environment. Collaborating with officials, the Rural Party Branch Committee, and the Village Committee in Zhujiatun Village, the company spearheaded environmental enhancement projects, notably the construction of the main thoroughfare known as the "Street of Flowers". Consequently, the village was designated as the Most Beautiful Courtyard Model Village, with the street earning recognition as the Most Beautiful Courtyard Model Street in Xingcheng, Liaoning Province. This initiative has established a new benchmark for environmental enhancement and governance in the area

Cultural advancement

We prioritize Party building and ideological and political development in accordance with the guidelines of the CPC. Tailoring policies to stimulate collective economic growth across diverse villages is a key focus. Furthermore, we advocate for the establishment of cultural amenities, such as the cultural hall at the party service center and cultural plaza dedicated to the history of the CPC in villages. By integrating the Party's philosophy, culture and values into the landscape of streets, alleys and lanes, we aim to deepen villagers' appreciation for the Party's longstanding commitment to serving the people.



Qinshan Nuclear Power Co., Ltd. constructed a Cultural Hall in Jinshi Village, Jiaxing, Zhejiang Province, dedicated to the history of the CPC. Additionally, it has established educational and training centers for Party members, along with social practice centers for young employees. Delving into the historical resources of the area associated with the CPC revolution, the company has organized educational programs, extended household assistance, and facilitated various activities in collaboration with the local community. Since the commencement of these initiatives, 41 Party branches have been dispatched by the Company, with nearly 1,000 party members and young members of the Communist Youth League of China (CYLC) actively participating in education and training activities within the village.



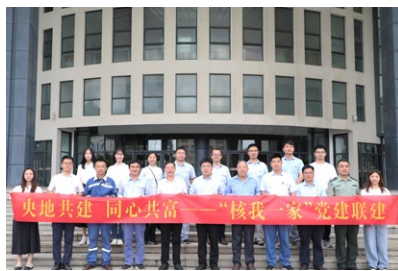
CNNP Liaoning Nuclear Power Co., Ltd. integrated nuclear power culture with the industrial development of Zhujiatun Village and rural cultural tourism planning. By introducing nuclear power culture, disseminating nuclear knowledge, and introducing the nuclear power mascot, Xu Dabao, a distinctive cultural landscape has been crafted for villagers to delve into the realm of nuclear energy and immerse themselves in cutting-edge science and technology. To further promote cultural enrichment, cultural promotion panels, cultural parks, science bases and a designated area for the nuclear power mascot have been established along the main street, fostering cultural advancement within the village.

Organization guarantee

We continue to deploy talents to support areas in need and advocate for the development of a long-term paired assistance mechanism. Through these endeavors, we aim to bolster the quality of rural grassroots organizations and elevate our rural vitalization efforts to unprecedented heights.



Fuqing Nuclear Power Co., Ltd. dispatches the First Secretary to support the rural vitalization of Zhuling Village in Mingqing, Fujian Province



Sanmen Nuclear Power Co., Ltd. carries out a joint party-building activity with the Party Committee

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Over the past two years, Pei Haiyong, a central enterprise employee, has served as the first secretary at the grassroots level in Zhujiatun Village. With the steadfast support of CNNC, he spearheaded an innovative 'government-enterprise-people' industrial development model. Under his leadership, the villagers embarked on the establishment of a collective oil pressing mill, an agricultural products cold chain storage and transportation center, an ecological mineral water plant, and other industrial projects aimed at fostering village development. These initiatives have not only bolstered income levels for the villagers but also transformed a geographically remote and economically underdeveloped village into a thriving community with a robust collective economy. As a result, villagers now enjoy a more prosperous standard of living, and the village has witnessed a notable elevation in its overall level of civilization. Pei's unwavering dedication and hard work have garnered him the respect and trust of the local populace, epitomizing the qualities of an outstanding first secretary.

”

--Qi Wei, Standing Committee of Xingcheng Municipal Party Committee and Secretary of the Political and Legal Affairs Commission

Talent cultivation

We provide strong financial support to outstanding students in disadvantaged regions, augmenting their educational surroundings and enriching teaching materials. Moreover, our science outreach initiatives, such as the "Appealing Nuclear Power" activity, are designed to cultivate talent in science and technology, while concurrently fostering the dissemination of scientific and cultural knowledge. Through the introduction of scientific principles to young individuals in impoverished and remote areas, we endeavor to broaden their horizons and facilitate rural talent development.



Fuqing Nuclear Power Co., Ltd. carries out parent-child reading activities in Zhuling Village



CNNP Xiapu Nuclear Power Co., Ltd. organizes a Children's Day event on June 1st in Dajing Village among paired assistance areas



Jiangsu Nuclear Power Co., Ltd. helps left-behind children build dream houses and improved their living conditions

Community Contribution and Development

As a safe, clean and efficient energy source, nuclear power not only offers energy support for social and economic progress, but also plays a significant role in boosting regional economic growth and fostering a harmonious community. CNNP is dedicated to driving community development, ensuring the welfare of individuals, and promoting local economic growth through the provision of a dependable power supply. We actively participate in nuclear power education and public outreach initiatives, fostering strong bonds between project development and the surrounding community. Through the dissemination of knowledge about nuclear power, our objective is to cultivate a harmonious and mutually beneficial community environment.

Electricity supply

We optimize resource allocation and bolster power load management to promptly address natural disasters. Furthermore, we exert maximum effort to ensure a steadfast and dependable power supply, safeguarding the wellbeing of individuals and fostering local economic progress.

Strengthening organizational leadership

- During major holidays, natural disasters and adverse weather conditions, we promptly set up a power protection leading group, develop and release work plans, and strictly enforce detailed implementation plans
- We conduct grid forecasting and analysis, prepare tangible emergency plans, and refine power protection measures to ensure a reliable power supply
- We have employed a production leadership management approach as a standard procedure, with senior personnel overseeing on-site operations to identify critical and recurring issues and facilitate effective resolutions

Ensuring work safety

- We conduct regular inspections and special inspections at various frequencies for key lines and equipment to ensure maintenance and rectification of hidden issues, striving to improve equipment safety by enhancing hazard detection
- We identify and manage the recurring risks related to production activities, eliminate critical defects, and closely monitor operational risks during the defect elimination process to reduce the risk of defect accumulation





Transparent public communication

We adhere to the "3C" (Confidence, Connection and Coordination) public communication concept, rooted in principles of transparency, openness, equality, extensiveness and convenience. Continuously innovating in both the form and content of public communication, we diversify the communication channels available to stakeholders, cultivate a proficient public communication team, and actively forge harmonious partnerships in public communication. Our objective is to engage the public, fostering understanding and garnering support for nuclear power initiatives.

2023 Honors & Awards

- The Publicity and Exhibition Center of CNNP Xiapu Nuclear Power Co., Ltd. was awarded with **the National Nuclear Science Popularization Education Base**
- China Nuclear Science and Technology Museum (Fujian) was successfully selected as **one of the second batch of national spiritual education bases for scientists**, making it the **first** subsidiary of CNNP to receive such honor

Public awareness

- We continuously expand our communication channels and creatively employ expert lectures, nuclear power exhibitions, on-site visits, and science outreach initiatives tailored for various segments of the public. These methods enable us to promptly address and engage with public inquiries regarding nuclear power, while also bolstering public understanding and awareness of nuclear energy

Information disclosure

- Strictly following the *Interim Measures for Public Participation in Environmental Impact Assessment*, the *Notice on Strengthening the Disclosure of Nuclear and Radiation Safety Information of Nuclear Power Plants*, the *Notice on Strengthening Publicity and Disclosure of Information on Nuclear and Radiation Safety* and other regulations and policies, we timely disclose information related to the safe operation of nuclear power units. Our aim is to uphold the public's rights to access information, participate in discussions, express opinions, and engage in oversight. Furthermore, we aim to guide the public toward a more rational and scientifically informed perspective on nuclear power development

Public sentiment management

- We manage public sentiment decently and handle public opinion on nuclear-related events properly and timely to ensure the smooth development of nuclear power projects and the nuclear power industry
- We view public opinion events as opportunities to engage with the public, provide responses to inquiries, address concerns, and offer comprehensive analysis in our public communications. Through this engagement, we aim to enhance public understanding of nuclear power, foster greater acceptance of our initiatives, and cultivate a positive image for CNNP within the nuclear power industry

Collection of CNNP's National Science Popularization Day activities

Scan the QR code to watch the collection of CNNP's National Science Popularization Day activities in 2023

CNNP's first art exhibition: Nuclear Home

Fuqing Nuclear Power Co., Ltd. carries out science popularization activity

Qinshan Nuclear Power Co., Ltd. holds a launching ceremony for National Science Popularization Day and a science popularization activity

Jiangsu Nuclear Power Co., Ltd. organizes a volunteer camp for nuclear science popularization

Case | CNNP has organized an "Appealing Nuclear Power" science popularization activity for eleven consecutive years

The eleventh "Appealing Nuclear Power" science popularization activity

Focusing on public communication, CNNP has organized several nuclear science popularization activities, with the "Appealing Nuclear Power" activity serving as a key bridge. This nationwide event is designed to educate the public about nuclear science, enhance public scientific literacy regarding nuclear power, and promote the overall development of nuclear energy. As of the end of 2023, the "Appealing Nuclear Power" activity had been running for 11 consecutive years, drawing over 5 million participants from 34 provinces, autonomous regions, and municipalities across the nation. This initiative has been instrumental in fostering a positive societal attitude towards nuclear power, facilitating knowledge dissemination, garnering support, and advocating for the continued development of nuclear energy. It stands as a benchmark for the effective dissemination of scientific knowledge related to nuclear power.

Community contribution

Striving to be a role model in practicing corporate social responsibility, we actively participate in a diverse array of volunteer service initiatives, aiming to cultivate robust partnerships with the community for shared development and mutual benefits.

Community relations management

We adhere to national laws, international labor standards, and regulations in our operations. We prioritize transparent and open communication with residents living near nuclear power project sites, ensuring their legitimate rights and interests are protected and respected.

Adhering to the *UN Guiding Principles on Business and Human Rights*, we collect and analyze public feedback to gain insights into community perspectives regarding nuclear power projects. This practice enables us to identify potential issues and enhance the scientific rigor and relevance of environmental and stability assessments. Before initiating the construction or relocation of a nuclear power plant, we prioritize ensuring that indigenous peoples and communities have full autonomy to prevent any undue interference. Through thorough due diligence, we safeguard the right to information of indigenous peoples and communities, respect their decisions, and seek their permission before implementing any project that may have a direct impact on them. To encourage public engagement, we actively invite representatives from diverse backgrounds to oversee and participate in discussions concerning nuclear power projects. This inclusive approach serves to dispel misconceptions, foster favorable public sentiment, and ensure the rigorous implementation of nuclear safety measures.

CNNP's principles of public participation

The principle of transparency

We conduct prior disclosure of information before engaging the public in participation to ensure their insightful and informed feedback

The principle of openness

Throughout the public participation process, we ensure that the public receives timely, comprehensive and truthful information regarding the construction project

The principle of equality

We openly address conflicts, engage in communication on an equal basis, and strive to understand diverse perspectives to avoid bias and foster mutual trust among stakeholders

The principle of extensiveness

We aim to engage with members of the public from diverse social and cultural backgrounds. While prioritizing the input of those directly affected by the construction project, we also provide opportunities for others, including those with differing viewpoints and disadvantaged groups, to express their perspectives. Additionally, we actively enlist individuals who are respected by all parties to facilitate specialized communications

The principle of convenience

We have selected a survey method that enables public participation based on the nature of the construction project and the characteristics of the local community

Public welfare

We prioritize the needs of the community and the public by organizing various public welfare activities. These initiatives include urban environmental improvement projects, support for special groups, blood drives, and charitable donations. Through these efforts, we aim to contribute to the creation of a more harmonious society.

In 2023

In volunteer activities

4,478 participants

Volunteer hours

39,698

Volunteer activities

629



Innovation-driven Development

In our pursuit of innovation-driven high-quality development, CNNP promotes intensive, digitized and efficient management. Through scientific and technological innovation, we aim to unlock our full potential and lead nuclear power development in this new era.

Reform innovation

The Company precisely identifies, responds appropriately to challenges, and proactively seeks change. To deepen reform and innovation, CNNP enhances its operational efficiency and infuses new vitality into development through intensive management reform and SOE reform. Our aim is to establish a model of intensive management and become a world-class enterprise.

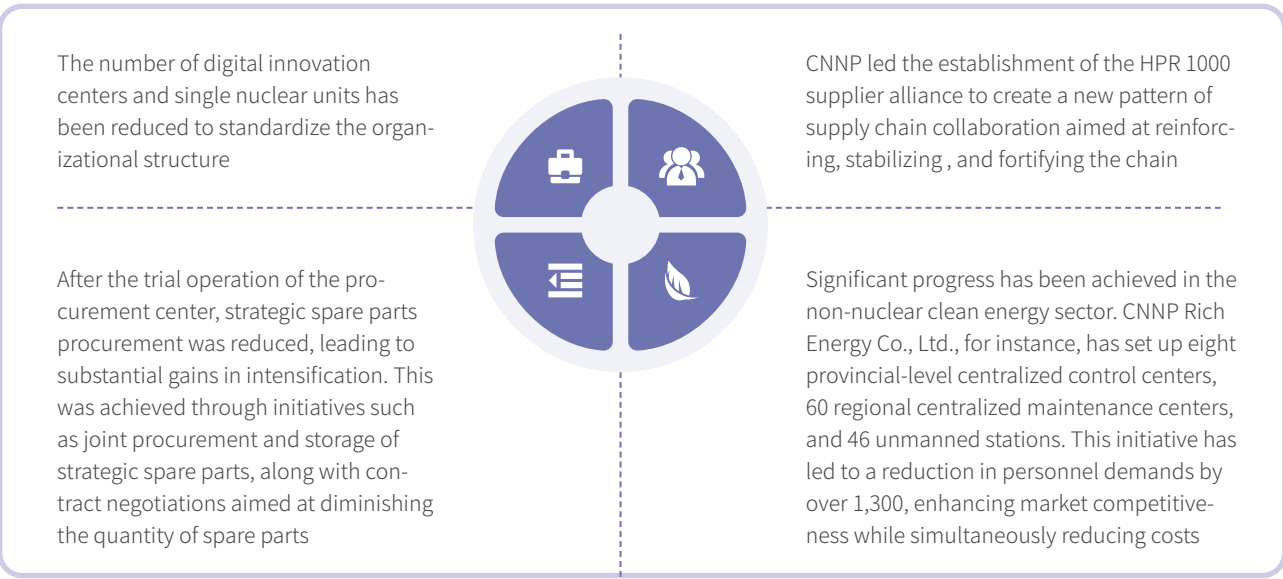
Intensive management reform

In 2023, CNNP fully implemented intensive management reform, aiming to transform the management and control model towards intensification. We centralized and allocated shared functions across the entire system, ensuring standardized and high-quality services to subsidiaries via specialized service platforms in common areas. Through resource integration and continuous optimization, we enhanced our expertise and strength in various professional fields. We have established six centers, including a procurement center, outage center, technical support center, equipment management center, digital innovation center, and training center, to efficiently support subsidiaries' production, operation, and high-quality development.



CNNP held a meeting at the Tianwan Nuclear Power Base for the first discussion on promoting the intensive management reform plan. Opinions and suggestions were actively sought from leaders and employees, establishing a solid communication foundation for the smooth implementation of the intensive management reform.

The benefits of intensification emerged at the end of 2023.



SOE reform

In 2023, the Company was at the forefront of SOE reform, with excellent results achieved.



Management innovation

The Company continues to optimize its management system, makes good top-level design and strategic planning, and steadily improves corporate management through efficient organization, standardized processes, and an excellent value creation system.

Strengthening top-level design

- The mid-term revision of the comprehensive development plan for CNNP and its 17 subsidiaries during the "14th Five-Year Plan" period was completed
- More efforts have been made to optimize organizational functions, including the establishment of new departments such as the Securities Department, Operations and Production Department, and Department of Emerging Strategic Industries. Additionally, special research and topic review meetings were held to fully leverage the role of the Strategy and Management Consultation Committee as a think tank

Promoting standardization

- To promote standardization 2.0 across the Company, CNNP has started the overall planning of standardization 2.0 while coordinating the work of sub-systems and each field. Standard management systems have been developed in certain areas, and a unified IT-based system has been implemented
- In terms of radiation protection, seven standards in the energy industry have been applied and approved, along with the launch of the information system iRP
- The 2023 version of the standard organizational structure of nuclear power operation companies has been released and implemented, and five subsidiaries have taken corresponding actions

Improving management system

- The campaign of Innovation &Optimization Year has been carried out and the whole-process talent selection and cultivation system has been further improved
- The action of benchmarking world-class enterprises in value creation has been launched, and the 1241 excellent nuclear value creation system has been built
- Our excellent nuclear power operations and management won the first prize in National Innovative Corporate Management, and the *Continuously Improving, Pursuing Excellence: CNNP Lean Operation Management* was selected for the PKU management case library



Technological innovation

Upholding the philosophy of "development is the top priority, talents are the primary resource, and innovation is the essential driving force", CNNP improves its sci-tech innovation systems, fosters crucial and core technological advancements, and amplifies the impact of technological innovation by promoting their commercialization. This approach harnesses sci-tech innovation as a catalyst to bolster the core competitiveness of CNNP.

Improving sci-tech innovation system

CNNP constantly improves its sci-tech innovation system, focusing on innovation layout, platform construction, R&D management, and intellectual property rights (IPR) protection to strengthen the foundation of sci-tech innovation. In 2023, China Nuclear Power Operation Technology Corporation Ltd., Wuhan, was included in the 29th batch of National Centers for Enterprise Technology. Additionally, the Isotope Preparation and Application Technology Center of Qinshan Nuclear Power Co., Ltd. received accreditation as a Zhejiang Provincial Engineering Research Center.



"3-888" layout for sci-tech innovation

- The medium and long-term R&D directions were optimized and three major research areas of "basic research for application + O&M and under-construction projects research + industrialized research" were built to better allocate resources
- Five regulations were revised and issued, such as the *Management Regulations for CNNP's Centralized R&D Projects*
- The scientific research management was optimized, the CNNP Standard Management System was established and the ERP scientific research management system was upgraded for digitized and refined scientific research management



More efficient management of scientific research with intensive resource utilization

- Proactive decisions and forward-looking deployments were made regarding major technological directions and innovation activities. We continued our efforts to promote key and core technological breakthroughs. Over 10 ministerial and CNNC-level research projects were planned, alongside the launch of 28 centralized R&D projects of CNNP and four invested research projects. These initiatives focused on key research topics such as unit power improvement, capability factor enhancement, agile industries, and cooling source safety
- The industrialization of perovskite was accelerated with the development of pilot production lines; special working groups for comprehensive utilization of nuclear energy (isotopes) and new energy storage industry development were established to coordinate resources for the development of agile industries



"3+6+N" organizational structure for sci-tech innovation

- In accordance with the sci-tech innovation collaboration mechanism of "strengthening core technologies with extensive cooperation", an efficient and powerful common technology supply system has been established. This system includes three scientific research enterprises, six CNNC-level R&D platforms, and numerous innovative R&D centers. Besides, a big innovation center has been launched in cooperation with numerous external academic institutions, leading research centers, and industry partners, to promote collaborative innovation
- The organizational structure and operation mechanism of the CNNP Science and Technology Committee have been optimized and major research projects have been carried out in collaboration with the CNNP Strategic Advisory Committee, universities, research institutions, etc. to provide strategic support for the development of CNNP



Case

100% "Made in China" - Linglong One, the world's first onshore small modular reactor

The "Linglong One" reactor invested by CNNP is the world's first commercial on -shore modular and multi-purpose small reactor. Developed by China National Nuclear Corporation with independent intellectual property rights, it holds immense potential in the global market and stands as a national landmark project. As a 100% "Made in China" product, the "Linglong One" is presently the sole reactor in China with a forward design. Given the absence of an existing reactor type as a reference, it represents a wholly self-developed reactor, requiring both high innovation and a diverse range of technologies.

The "Linglong One" serves not only for power generation but also for various applications including combined heat and power supply, combined water and power supply, urban heat supply, seawater desalination, heat supply for industrial processes, and self-owned power plants. It is a highly secure distributed clean energy source, akin to conventional coal-fired power plants, with the flexibility to be positioned near towns and industrial parks, thus enabling nuclear energy to be "close to cities and users."

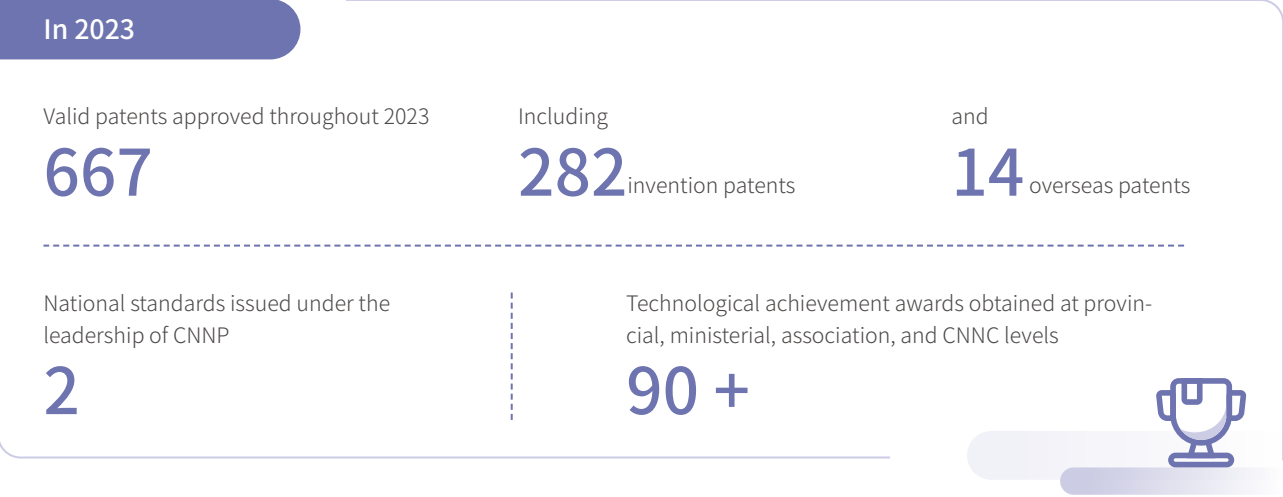
Upon operation, the project is expected to generate 1 TWh of electricity annually, satisfying the electricity needs of 526,000 households in Hainan. Simultaneously, it will reduce CO₂ emissions by approximately 880,000 tons per year, which is equivalent to planting 7.50 million trees annually. With a stable and reliable clean energy supply, it will not only aid in achieving the national "30·60 Decarbonization Goal" and the establishment of Hainan as a "clean energy island" but also contribute to the advancement of the global nuclear energy industry through the demonstration effect of advanced reactor technology.



Enriching sci-tech innovation achievements

The Company is enhancing incentives and assessments for sci-tech achievements. Leveraging its independent R&D platforms, CNNP is bolstering advanced scientific research and advancing the application of technologies such as digital twin AI engines and high-precision array imaging electromagnetic detection technology. These efforts provide robust technical support for digitized nuclear power, the independent development of technological equipment, and the maintenance of special equipment. The first phase of joint research on perovskite solar cells was completed six months ahead of schedule, with the efficiency of rigid and flexible small modules reaching industry-leading levels. The momentum of sci-tech innovation achievements is on the rise, further strengthening the commercialization of high-quality, highly competitive, and core technological breakthroughs. In 2023, over 100 new commercialization contracts were signed.

The Company carries out IPR management and protection in accordance with relevant Chinese laws and regulations such as the *Patent Law*, *Trademark Law*, and *Copyright Law*. The *CNNP Management Measures for Technological Achievements* and the *CNNP Intellectual Property Management System* have been upgraded. The *Rules for the Intellectual Property Management of CNNP* have been formulated and a three-year action plan for high-quality IPR development has also been launched to improve the IPR management system and achieve full-process IPR management for major scientific research projects. Besides, the Company is intensifying its efforts in IPR promotion and training. In 2023, we organized online training sessions on the fundamentals of nuclear power intellectual property, inviting experts to lecture on topics such as high-value patent mining and layout, patent technical disclosure writing, patent navigation, trademarks, and software copyrights. These sessions were attended by 200 IPR management personnel and frontline researchers from subsidiaries. The training significantly improved employees' theoretical and practical understanding of IPR, thereby enhancing the Company's competitiveness in this domain.





2023 Honors & Awards

- CNNP's "Research and Application of the Classification of Safety Sensitive SSCs for Nuclear Power Enterprises" won the **first prize of the 4th Safety Technology Progress Award from the China Association of Work Safety**
- CNNP released two policy research achievements: "China's Responsibilities in IAEA's Generic User Requirements for Small Modular Reactors" and "China's Participation in IAEA's Generic User Requirements for Small Modular Reactors"
- Hainan Nuclear Power Co., Ltd. obtained its **first overseas invention patent** -"POWER-ASSISTED PIPELINE VALVE"
- Qinshan Nuclear Power Co., Ltd. won its first intellectual property standard implementation certification and was recognized as a **National Intellectual Property Advantage Enterprise**

Case | Sanmen Nuclear Power Co., Ltd.'s first overseas patent gets approved



The Sanmen Nuclear Power Co., Ltd.'s invention patent for the "Device for measuring total gas content of primary circuit of PWR nuclear power" has been granted by the United States Patent and Trademark Office (USPTO), marking the first overseas patent approval for Sanmen Nuclear Power Co., Ltd. This achievement is globally significant as it represents the world's first portable device for measuring the total gas content of the primary circuit of PWR nuclear power. The project has successfully tackled numerous key technical challenges through four innovative ideas and has been commercialized through its application in the Shandong Nuclear Power Company Ltd. and the CAP1400 demonstration project. This milestone underscores CNNP's commitment to promoting high-quality development and significantly enhances its influence and credibility on the international stage, facilitating CNNP's global expansion.



Digital Empowerment

We have established the Digital Innovation Center and developed a platform that seamlessly integrates digitization and scientific research. Recognizing digital transformation as a pivotal stride towards high-quality nuclear power development, we are expediting the digitization process within the nuclear power sector. Our aim is to cultivate "new quality productive forces" to propel the high-quality evolution of nuclear power.



Improving the digital control system

- The top-level design of CNNP's digital transformation has been developed and the control processes of CNNP's digitization demands, projects, and organizations have been improved
- The Digital Innovation Center has been put into operation, housing a unified and specialized team in information technology. CNNP's efforts to advance digital transformation have garnered recognition, securing numerous provincial and ministerial -level research projects. These include the National Energy Administration's pilot project of digital transformation and the establishment of the Shanghai Nuclear Power Big Data Joint Innovation Center



Strengthening smart energy management

- A series of self-developed digital software platforms have been established for nuclear power safety management, nuclear equipment reliability management, and nuclear industrial Internet platforms, serving as tools for CNNP units to achieve industry-leading operational performance
- In 2023 the fourth-generation nuclear power work safety management system, ASP-1 project, was successfully completed and implemented across nuclear power plants; the ASP-2 smart management software for key and sensitive nuclear equipment achieved real-time smart monitoring of failure modes and has been deployed across 25 units within five nuclear power bases; the ASP-3 smart human error software R&D project, conducted jointly by the digital nuclear power technology research center established by CNNP and Tsinghua University, aimed to proactively prevent, protect during processes, and analyze post-human errors



Ensuring cybersecurity

- The information security management system has been improved in accordance with the requirements of national laws and regulations related to cybersecurity, the *CNNP Cybersecurity Management Measures* and the *CNNP Data Security Management Measures*. The Cybersecurity and Information Technology Committee operates effectively to coordinate the work of unified cybersecurity operation, emergency response to data security incidents, cybersecurity technical research and cybersecurity talent team building, etc.
- Access management protocols have been reinforced, with a focus on refining the matching rules governing positions and access permissions. Specifically designated personnel are tasked with account authorization, ensuring that various types of information, including customer data, are rigorously protected
- Subsidiaries are required to establish their own data security education and training systems to conduct comprehensive training sessions for data processors and all staff. These sessions cover pertinent laws, regulations, and standards related to data security management and the protection of customer information



The joint research center for digital nuclear power technology established by CNNP and Tsinghua University

2023 Honors & Awards

- The concept of "Innovation-empowered management and digital transformation contribute to the building of a new-type power system with intrinsic safety" was featured in the **Main Forum of Power Safety Management organized by the National Energy Administration**
- Fuqing Nuclear Power Co., Ltd. won the title of **National Quality Benchmarking Enterprise** with its "experience of digitized high-quality O&M of HPR 1000"
- The 5G Plant project of Jiangsu Nuclear Power Co., Ltd. was selected for the **"5G Plants List 2023" released by the Ministry of Industry and Information Technology**
- Sanmen Nuclear Power Co., Ltd.'s Big Data-based Health Management System for Single Point Vulnerability (SPV) was selected for the **demonstration application list of the first (set of) key technical equipment** by the National Energy Administration
- The research and application of intelligent early warning and diagnosis technology for nuclear main pumps based on data mining and machine learning by China Nuclear Power Operation Technology Corporation Ltd., Wuhan. won the **Excellence Award of China Quality Technology Projects 2023**

Case | Digital Equipment Reliability Management System enables intelligent management for nuclear power plants



The Digital Equipment Reliability Management System (ERMs) is a set of modern industrial software independently designed and developed by CNNP. It is designed to be service-oriented, integrated, agile, intensive, collaborative, and intelligent. This software represents a significant milestone as the first IT-based, digitized, and intelligent equipment reliability management software in both China and worldwide. It covers the full range, process, and life cycle of equipment management.

Since 2023, ERMs has been operating stably and smoothly, with scheduled O&M and optimization procedures executed. Several new functions and modules have been designed and developed without major defects affecting system operation. It has provided robust support for equipment management across the five power plants where it is deployed. In terms of commercialization and promotion achievements, the ERMs promotion project at Shandong Nuclear Power Company Ltd. has been well-received by the owner. Additionally, ERMs has received accolades including the Special Prize for Technological Innovation in Power Equipment Management 2022 and the Second Prize for Technological Progress 2023 from the China Nuclear Energy Association.

Supply Chain Management

Abiding by *the Law on Tenders and Bids* and other Chinese relevant laws and regulations, we consistently refine our procurement and supply chain management capabilities. Our goal is to increase the level of value creation within the supply chain. Through strengthening collaborative ties, we harness the resources of each unit to cultivate a supply chain ecosystem characterized by "efficient collaboration, mutual benefits and agility and resilience." This approach fosters shared development with our partners.

Supply chain risk management

Focusing on the identification and prevention of supply chain risks, we continuously monitor and assess key areas including safety, quality, environment, labor and integrity. Our objective is to enhance the resilience of our supply chain, thereby ensuring the safe, stable and efficient operation of nuclear power.

Developing risk assessment and prevention mechanisms



- We continue to conduct supply chain risk assessments and enhance the management mechanism for notifying, issuing and addressing supplier early warning information. We aim to strengthen the stability of our supply chain through a comprehensive assessment and prevention of potential technological, supplier and contractual risks

Implementing dynamic risk monitoring and management



- We have implemented dynamic monitoring and management of supplier risks, utilizing platforms like Tianyan-cha and Qichacha to identify high-risk enterprises
- We have strengthened the management of the bidding process by promoting integrity and standardization awareness, integrating "business credit" into the evaluation criteria for supplier qualification
- We utilize platforms like Credit China and the National Enterprise Credit Information Publicity System to screen and restrict the participation of non-creditworthy enterprises in the bidding process. Through digital platforms, we identify and caution against risks such as shared IP addresses, contact persons, and shared ownership or affiliations within participating units to prevent dishonest practices like bid rigging

Implementing health and safety inspection mechanisms



- We have established a dedicated supplier sourcing interview and safety inspection mechanism for suppliers of hazardous chemicals. This includes conducting quarterly exchanges, interviews and safety inspections in collaboration with safety, quality, commercial and technical departments. Our objective is to standardize supplier behavior, reinforce main responsibilities in production, procurement, transportation, storage, usage and disposal processes, and prevent safety incidents. This ensures that products and services from these suppliers meet the necessary requirements

Transparent procurement

Adhering to the principles of "transparency, compliance, guarantee, efficiency and quality", we have formulated a long-term mechanism for procurement management. Through extensive standardization efforts, we strengthen our procurement management organization system, optimize management processes and operational mechanisms, and promote standardized and digitalized procurement practices. Continuously enhancing our supplier management and other supply chain management capabilities, we aim to build a compliant, efficient and transparent procurement business system.





Promoting intensive procurement reforms

- By comparing the policies of CNNC and CNNP, we have developed the procedural policy for the procurement center. We have optimized the policy upgrading proposals for the main types of business handled by the procurement center and monitored their implementation. Additionally, we have formulated a business switching plan to ensure the high-quality trial operation of the procurement center
- In prioritizing procurement plan control, we have enhanced the secondary nuclear depot control mechanism and simplified the allocation process to facilitate material distribution across power plants. Additionally, we have strengthened the review of strategic spare parts procurement plans to maximize the benefits of efficient management



Strengthening the procurement infrastructure

- To enhance procurement standardization, we have initiated the special standardization 2.0 project in the procurement and warehousing sector, where we refine our model procurement policies and develop standard templates for nuclear power general contracting and engineering supervision service contracts. Through these efforts, we aim to bolster our support capacity
- To drive procurement digitalization, we focus on enhancing the operational efficiency of the procurement center. This entails refining the ERP procurement process, augmenting its functionalities, and deploying an online project management information system tailored for nuclear power projects. Moreover, we've established a digital and intelligence contract management platform, alongside introducing the business panorama cockpit, all aimed at enhancing quality and efficiency
- We have strengthened the procurement and supply chain management performance indicator system and assessment mechanism. To expedite our transition from procurement management to supply chain management, we have released the *Building CNNP into a World-class Enterprise: Three-Year Action Plan for Strengthening Supply Chain Management (2023-2025)*



Enhancing procurement compliance management

- We continue to conduct capacity -building activities for our supply chain team, organizing warehousing skills competitions to enrich our procurement and supply chain expert pool, and ensuring robust oversight of high-quality business operations
- We host experience exchange sessions, sign agreements for transparent employment practices, and promote tools that mitigate human errors in business procurement. Each subsidiary customizes business courses, knowledge and skills competitions, and other specialized training to enhance the procurement team's business sense and compliance control
- We have enhanced oversight and inspection of procurement management to ensure transparency in procurement processes. We conduct targeted inspections in procurement for some subsidiaries in alignment with the integrated supervision mechanism and implement closed-loop management to rectify any issues identified during inspections

Supplier management

Complying with the relevant requirements of the *Supplier Management Regulations*, we enforce supplier access, evaluation and withdrawal mechanisms, implementing categorized management and continuous assessment of suppliers to elevate their social responsibility standards and foster mutually beneficial relationships.



Case

Organizing the CNNP Supplier Conference and the inaugural meeting of the Hualong One Supply Chain Alliance



Committed to independent innovation, CNNP leads the supply chain efforts for the Hualong One demonstration project, aiming to expand the supply chain alliance, foster industrial advancement and research and development, bolster production efficiency and quality, and attain heightened industrial and economic gains. On July 4, 2023, the CNNP Supplier Conference and the inaugural meeting of the Hualong One Supply Chain Alliance were held in Xiamen, Fujian Province. Hosted by CNNP and coordinated by Fuqing Nuclear Power Co., Ltd. and Zhangzhou Nuclear Power Plant, the event centered around the theme of nuclear chain collaboration and mutually beneficial cooperation. During the meeting, participants signed the *Hualong One Supply Chain Alliance Agreement*, followed by a medal award ceremony.



CNNP Supplier Conference and the inaugural meeting of the Hualong One Supply Chain Alliance

Human Capital Development

At CNNP, we continuously explore innovative approaches to employee development and intensify our top-level design of human resources. We consistently enhance our strategic human resources design and establish a comprehensive training framework, fostering a culture of creativity among our employees. Embracing inclusive and diverse employment practices, we prioritize the interests and well-being of our staff, sharing the fruits of development with them. Our aim is to build a happy and harmonious enterprise.

Unblocked career development path

CNNP has implemented a scientific, universal and standardized "five-channel" integrated position system, placing a strong emphasis on the professional growth of each employee. We are continuously expanding opportunities for career development and have established robust mechanisms for job exchanges and promotions. These initiatives are designed to guide employees with diverse backgrounds and expertise to pursue career paths that align with their aspirations.

Deepening talent pools development

Highlights

- Enhancing talent management by instituting management protocols for chief experts, sci-tech leaders, and chief technicians within CNNP, establishing the management system for engineering masters and doctors, and building a six-tier team for CNNP sci-tech talents; facilitating channels for high-caliber talent growth by conducting the selection and recruitment of top-tier talents and finishing the selection and appointment of the first group of chief experts, sci-tech leaders and chief technicians.
- Introducing a "five-channel" standard system; offering top talent development paths including the Spark Plan and the open-competition projects as selection platforms for high-caliber talents.
- Promoting the rapid growth of young employees through the Elite Program, establishing a pool of outstanding young talents in CNNP, and encouraging backbone employees to take on important tasks through career planning.

ESG Performance

Selected

31

chief experts

69

sci-tech leaders

12

chief technicians

Strengthening team building of cadres

Highlights

- Adopting a comprehensive approach to the development of the cadre team, further improving the cadre management system, and optimizing the standards for the leadership team of the headquarters and subsidiaries. In 2023, Fuqing Nuclear Power Co., Ltd. received an AA rating for its cadre management system, while all other units achieved an A rating.
- Continuously improving the cadre team structure and gradually increasing the proportion of young talents in the cadre team.
- Establishing and updating the talent pool of outstanding cadres and continuously improving the cadre pooling mechanism.

ESG Performance

520

young cadres are under 40 years of age, accounting for

39.80

% of the entire system

1

 person is elected as a member of the National Committee of CPPCC and

8

 people are elected as provincial NPC deputies and CPPCC members

Employee growth

The Company has established a comprehensive training and development system tailored to various employees, aiming to enhance their professional capabilities. We actively promote employee participation in competitions, build awarding and recognition channels, and assist employees in realizing their career objectives. In 2023, 7 CNNP employees were granted the title of National Technical Expert.

Orientation training for new hires

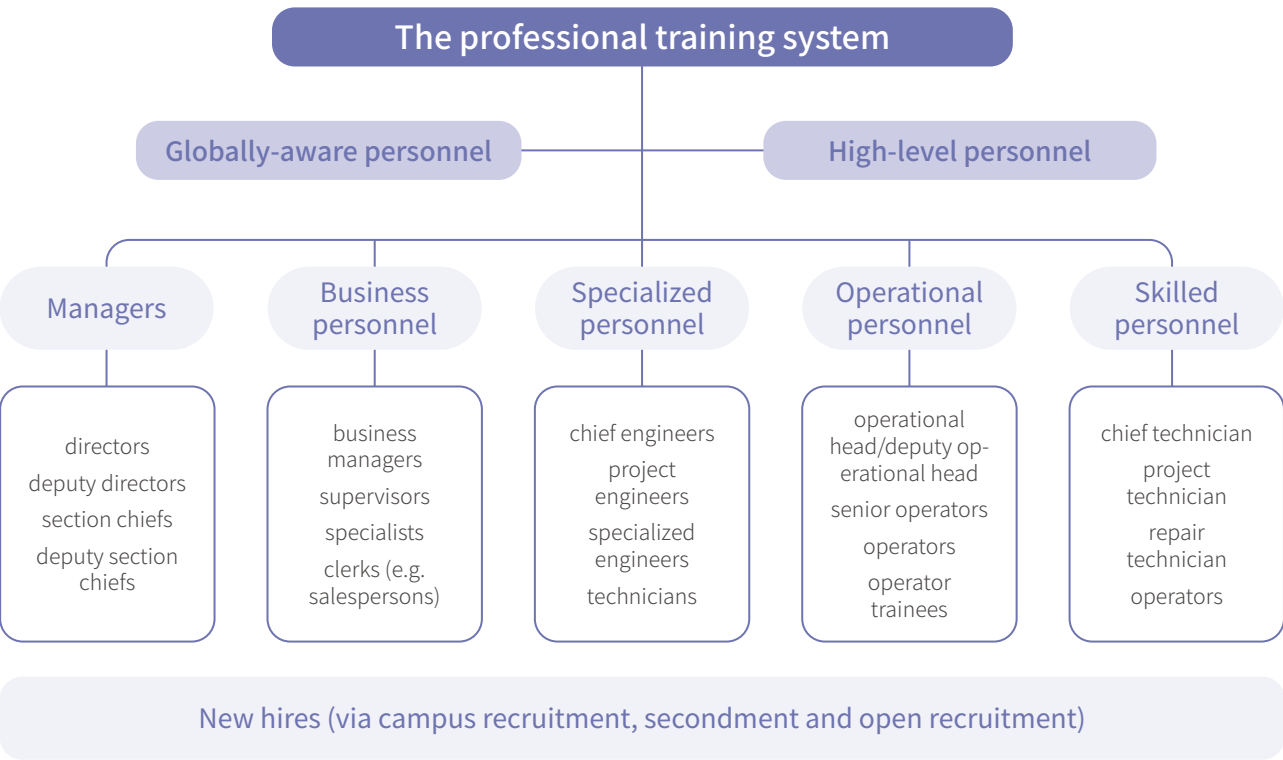
- We organized the "Qihang" training camp for new employees in 2023, covering corporate culture, strategy, and career planning. This initiative helps new employees grasp the Company's growth story and strategic plans, understand the corporate culture, and master fundamental knowledge of nuclear safety and power plant operations. Our goal is to quickly integrate new hires into the CNNP family

Backbone young talents training

- In response to development and job demands, we offer a range of specialized training programs. These encompass training in artificial intelligence, information disclosure, elite talents, and technological and scientific innovation. This initiative aims to equip employees with insights into the latest research advancements and development trends
- We promote collaborative training programs between academia and industry to provide talents in the nuclear power sector with a robust scientific research platform and a comprehensive support system. For example, we have established a joint postdoctoral development mechanism through partnerships such as the Jiangsu Nuclear Power Co., Ltd. postdoctoral research workstation and the mobile station of the School of Physics, Zhejiang University

Leadership training for management talents

- We launched various training programs aimed at enhancing leadership skills. These include professional leadership skills training and programs to enhance management skills for middle management, frontline managers (including new hires) and team leaders. These initiatives are aimed at improving management proficiency





The first media literacy training class for leading cadres of CNNP



Fuqing Nuclear Power Co., Ltd. hosts Fujian Province's "Craftsmanship Cup" - workers' skills competition for nuclear power plants' nuclear pump maintenance and obtains good results

Case | Sanmen Nuclear Power Co., Ltd. of the China Nuclear Industry Fifth Construction Co., Ltd. wins the first "Golden Man" national vocational skills competition of the nuclear power industry

On September 8, 2023, the 2023 national nuclear energy system vocational skills competition for nuclear reactor operators concluded at Sanmen Nuclear Power Co., Ltd. after a five-day event, with the Sanmen Nuclear Power team of the China Nuclear Industry Fifth Construction Co., Ltd. winning the team championship. This competition marks a significant step in developing the nuclear energy sector through talent cultivation and contributing to the nation's nuclear power advancement. It serves as a pivotal strategy to comprehensively enhance the proficiency of nuclear power plant operators. Building upon this competition, we aim to lead the nuclear energy industry into a new era, upholding and promoting the spirit of excellence of our workforce. Through deep exchanges and robust talent development, we are committed to cultivating enough talent to ensure the secure and stable operation of China's nuclear power units and the sound growth of the nuclear energy sector.



The first "Golden Man" national vocational skills competition of the nuclear power industry

Case | CNNP holds the first "Elite Program" workshop

On October 23, 2023, the first training class of the "Elite Program" workshop commenced at the Tianjin campus of the Nuclear Industry College. A total of 41 elite talents from 7 subsidiaries participated in this training initiative. The program's curriculum is designed to enhance political awareness, improve execution capabilities, and refine job-related skills and techniques. It includes various formats such as leader discussions, collective lectures, specialized seminars, and team-building activities, enriching the learning experience and expanding the exchange platform for elite talents within CNNP. The program aims to attract and develop young professionals with exceptional qualities, strong learning abilities, and an entrepreneurial drive. This initiative ensures a talent supply crucial for advancing CNNP's high-quality development and establishing the Company as a leading global nuclear energy enterprise.



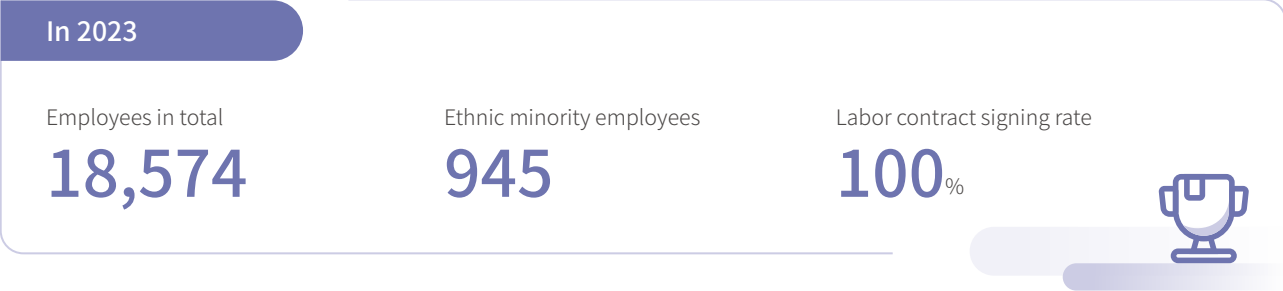
Opening ceremony of the "Elite Program" workshop

Employee well-being

The Company upholds the "people-first" philosophy, regarding the protection of employees' fundamental rights as both a legal requirement and a moral duty. We actively implement principles of equal employment, enhance compensation and incentive systems, promote open and democratic communication channels, and standardize occupational health management. Our goal is to cultivate a diverse and inclusive work environment, enhancing employees' sense of security, happiness and achievement continuously, thus strengthening the Company's cohesion.

Equal employment

Upholding legal, standard and honest employment, CNNP strictly follows Chinese laws and regulations, such as the *Company Law*, the *Labor Law*, the *Labor Contract Law*, the *Law on the Protection of Women's Rights and Interests*, the *Law on the Protection of Minors*, *Regulation on Paid Annual Leave of the Employees*, the *Regulation on Work-Related Injury Insurances* and the *Provisions on Prohibiting the Use of Child Labor*. In addition, we uphold equal employment opportunities and prohibit forced labor, workplace harassment, and child labor. We treat all employees equally based on the non-discrimination principle in terms of employment, training, remuneration, promotion, dismissal or retirement, regardless of gender, age, educational background, ethnicity, religion, or other differences. Our goal is to fully protect the legitimate rights and interests of all employees.



By type	
Managers	3,051
Business personnel	3,109
Specialized personnel	6,394
Operational personnel	3,397
Skilled personnel	1,965
Others	658
By educational background	
Master's degree or higher	2,024
Bachelor's degree	15,250
Junior college	1,083
Others	217
By age group	
35 years old and younger	10,973
36-40 years old	3,507
41-50 years old	2,836
51 years old and older	1,258
By gender	
Male	15,715
Female	2,859

Number of senior executives	106
Proportion of female senior executives	10

Compensation and benefits

In accordance with national laws, regulations and the Company's circumstances, we have established salary standards and management protocols to ensure the legal protection of employees' income. We provide benefits such as social insurance, housing provident fund, supplementary medical insurance, and enterprise annuity, and offer frontline employees high-temperature allowances. Embracing a spirit of humanity, we actively organize various cultural and recreational activities to enrich the leisure time of our staff. We extend our care to retired employees and those in need, aiming to enhance their sense of happiness and fulfillment.

In 2023

Social insurance coverage rate

100%

Paid leave per employee

8.10 days

Assistance fund allocated to staff in need

RMB 169,000

Employees receiving assistance

31





Conducting recreational activities

- We have established reading, yoga, recitation, and other societies, as well as various ball game associations. To fully utilize these societies and associations, we regularly organize relevant activities to enrich the leisure and cultural lives of our employees
- We enhance the development of the "Happy CNNC" heart-warming project and have organized the "Pursuit for Excellence" Cup staff table tennis, badminton and light volleyball competitions. Our goal is to strengthen communication among subsidiaries and to encourage cadres and staff to become more physically and mentally energetic through sports and exercises



Caring for employees

- We send birthday wishes to employees every year and visit employees to offer support for events such as marriage, child-birth and hospitalization due to illness
- We adopt sensible suggestions to improve the dining quality and service level, and protect the rights and interests of the employees



Visiting retired staff

- We prioritize the needs of retired comrades and ensure their well-being. We enhance the "one person, one policy" service system and provide increased support for retired colleagues facing difficulties, ensuring that most retirees feel the Company's care



Employee badminton competition



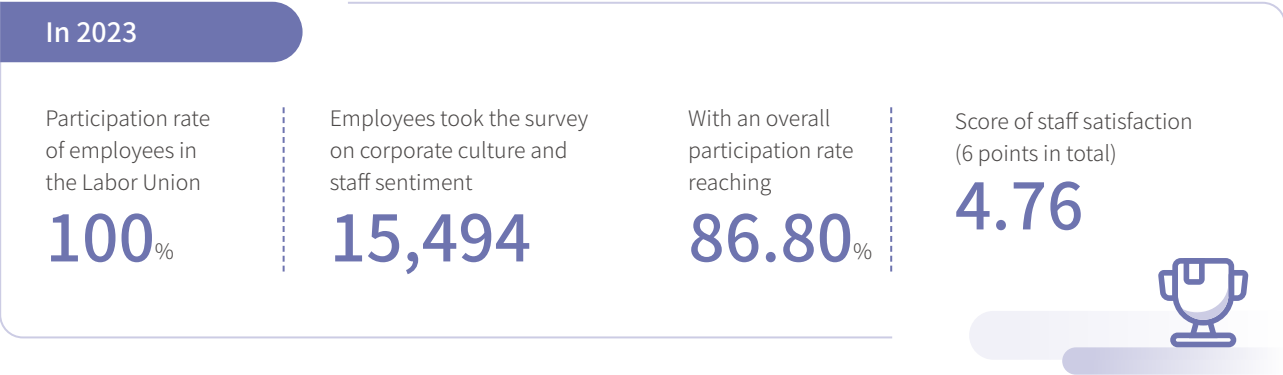
Employee light volleyball competition



Employee table tennis competition

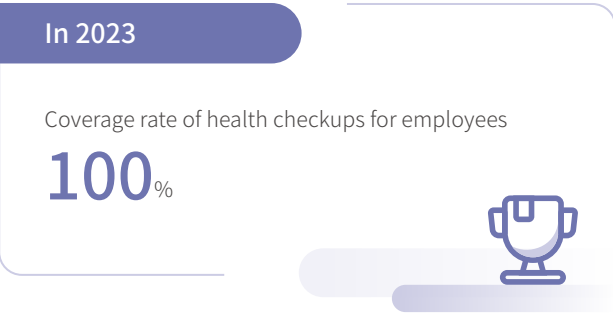
Democratic management

We utilize various channels such as the Labor Union, Workers' Congress, the "Voice of Employees" Mailbox, Meet the General Manager Day, Call for Constructive Suggestions, Democratic Meetings of the Party Organizations, and Surveys on Employee Opinions to gather feedback and suggestions from employees. We respond promptly to staff concerns, conducting regular follow-ups to ensure that every issue raised receives attention and feedback. In 2023, we conducted a survey on corporate culture and employee sentiment, evaluating factors such as happiness, fulfillment and belonging, and collected a total of 3,764 valuable suggestions.



Occupational health and safety

Abiding by the *Law on Work Safety*, the *Law on Prevention and Control of Occupational Disease* and other applicable laws and regulations in China, CNNPC improves the occupational health and safety management system. Through occupational health and safety training, refined security protocols and enhanced monitoring and prevention of occupational disease hazards, we strive to build a healthy and safe work environment for employees, ensuring their physical and mental well-being.



Implementing strict health management

- We regularly organize health checkups for all employees and retired employees, and conduct special checkups for women, guaranteeing the health of our employees
- We regularly organize popular science activities such as "health lectures" and "Keeping healthy in nuclear power industry" to enhance employees' awareness of health care and disease prevention
- We carry out daily supervision of the occupational health of production contractors, regularly review the data from contractors' occupational health monitoring, and continuously standardize the management of occupational health monitoring in each subsidiary

Enhancing vocational disease prevention and treatment

- We strictly carry out daily monitoring and regular testing of occupational disease hazards on-site, including ionizing radiation, chemical toxins, noise, and high temperatures. We consistently engage occupational health service organizations to conduct annual testing and evaluation of occupational disease hazards, as well as testing and evaluation during overhaul periods, ensuring that overall evaluation and testing meet national legal requirements
- We carry out timely supervision and inspection of the usage of occupational disease protection facilities the labor protective equipment, ensuring effective protection against occupational disease
- We intensify our efforts to raise awareness about occupational disease prevention and treatment. This includes distributing informative booklets and organizing health-focused events. Our goal is to enhance the capabilities of both the Company and construction units' occupational health management personnel in overseeing and managing workplace health

Ensuring mental well-being

- We organize psychological assessment, psychological counseling and suitability evaluation for employees to protect their mental health
- In conjunction with festival themes, we conduct relevant mental health publicity, popularize mental health knowledge, and regulate the mentality of employees

Support for Development of the Industry

Responding to the Belt and Road Initiative, CNNP actively organizes and participates in industry exchange activities. By engaging deeply with domestic and international partners, we share the latest advancements and undertake research and revision work on nuclear power standards, bridging gaps in industry standards. Our goal is to support the safe and sustainable development of the nuclear power sector by establishing a high-quality standard system.

Deeper cooperation and exchanges

The Company is actively exploring opportunities for external collaboration and exchanges. We aim to establish a wide range of cooperative relationships with governments, enterprises, universities and banks, seeking complementarity and mutual benefits. Our goal is to drive the advancement of the nuclear power industry.

Government-enterprise cooperation and exchanges

- CNNP and the Nuclear and Radiation Safety Center of the Ministry of Environmental Protection have joined forces to ensure the smooth operation of existing nuclear power units, maintain high standards in the construction of new nuclear power units, and promote sustainable growth in the nuclear energy sector. Our collaboration includes scientific and technological research, platform development, and the improvement and promotion of nuclear technology. We have also signed a strategic cooperation framework agreement to formalize our collaboration
- CNNP Xiapu Nuclear Power Co., Ltd. extended an invitation to local courts, education bureau and tax bureau to visit its science exhibition hall, fostering communication and understanding
- The Party committee of CNNP Yanlong Technology Co., Ltd., in collaboration with the Financial Street Work Committee, organized a themed Party Day event titled "Government-Enterprise Unity for Progress: Summer Nuclear Industry Exhibition"



University-enterprise cooperation

- We take concrete actions in promoting industry-university-research cooperation through concrete actions. To this end, we have signed strategic cooperation agreements with several prestigious universities, including Tsinghua University, Zhejiang University, and Xi'an Jiaotong University. Together, we are exploring avenues for talent cultivation, technological innovation, and the application of scientific and technological advancements



Cooperation with companies

- We have strategic collaborations with CNNC Xi'an Nuclear Instrument Co., Ltd., and the Nuclear Power Institute of China. These partnerships involve in-depth discussions on nuclear safety and the localization of materials. Through these collaborations, we facilitate the exchange of information and resources, enhancing the core competitiveness of the Company
- We engage in exchanges and collaborations with overseas companies such as Westinghouse, Framatome and the Emirates Nuclear Energy Corporation (ENEC). Together, we have reached a consensus on contributing to the healthy, stable and sustainable development of the global nuclear power industry



Bank-enterprise cooperation

- We enhance exchanges and collaboration with institutions such as the People's Bank of China, the Agricultural Bank of China, the Export-Import Bank of China, and China Construction Bank to expand our financing channels and reinforce our financial security framework



CNNP and Tsinghua University deepen cooperation on science and technology innovation in digital nuclear power technology

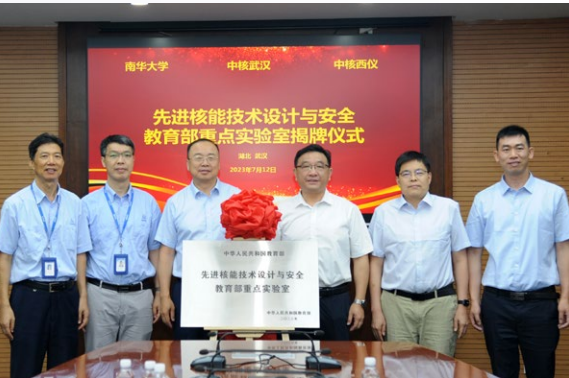


Case

Inauguration of Key Laboratory of Advanced Nuclear Energy Design and Safety, Ministry of Education at China Nuclear Power Operation Technology Corporation Ltd., Wuhan



On July 12, 2023, an inauguration ceremony was held in Wuhan for the Key Laboratory of Advanced Nuclear Energy Design and Safety, Ministry of Education. This laboratory was jointly founded by China Nuclear Power Operation Technology Corporation Ltd., Wuhan, the University of South China, and CNNC Xi'an Nuclear Instrument Co., Ltd. The establishment of this laboratory marks a significant milestone in China Nuclear Power Operation Technology Corporation Ltd., Wuhan's efforts to promote industry-university-research cooperation. The primary objective of the laboratory is to address significant demands in the nuclear energy and safety field across various application scenarios, including on land, at sea, in the air, and even in space. These demands focus on areas ranging from advanced design and optimization to operational reliability enhancement, radiation safety, and decommissioning research. The aim is to tackle challenges related to advanced theories, application foundations, and engineering issues. All in all, the goal is to establish the laboratory as an internationally renowned center for advanced nuclear energy and safety research, a leader in pioneering technological development, and a platform for developing national defense science and technology of strategic significance. The laboratory will provide technical support for national nuclear energy safety.



Inauguration of Key Laboratory of Advanced Nuclear Energy Design and Safety, Ministry of Education

Formulation of industry standards

CNNP is actively planning new initiatives to drive internal innovation. With a progressive approach, we aim to develop a greater number of high-quality standards with independent intellectual property rights. Additionally, we continue to focus on developing core technologies, building a renowned brand, and contributing to international standards. These efforts are aimed at accelerating the global advancement of the nuclear power sector and establishing a world-class clean energy enterprise.

In 2023, Sanmen Nuclear Power Co., Ltd. took the lead in issuing industry standards for the energy sector: *Guidelines for the Commissioning of High-Pressure Hydrogen Systems in Nuclear Power Plants* and *Guidelines for Adding Zinc to Coolants of the Primary Circuit in Pressurized Water Reactor Nuclear Power Plants*. These guidelines offer crucial guidance for the commissioning of high-pressure hydrogen systems and the implementation of zinc addition technology in nuclear power plants.

In 2023

National standards, industry standards, association standards, and CNNC corporate standards by CNNP

50+



Case

CNNP leads the drafting of the first national standard



In 2023, the national standard GB/T42508-2023, *Guidelines for Risk Assessment of Investment Projects*, spearheaded by CNNP, received formal approval from the Standardization Administration of the P. R. C and took effect immediately. This standard, developed over three years, was led by CNNP with the participation of Jiangsu Nuclear Power Co., Ltd. It is the first in general investment risk management. It is praised for its originality and practical guidance, marking CNNP's significant contribution to national standards.



The first national standard drafted and led by CNNP



On September 4, 2023, the Interregional Workshop on Technology Development and Applications of Small Modular Reactor, sponsored by the International Atomic Energy Agency and the China Atomic Energy Authority, and hosted by CNNP, convened in Hainan

Global cooperation

The Company is pursuing a strategy of attracting investment and technology while expanding its global presence. This strategy aims to enhance collaboration in technical services and equipment export in countries and regions along the Belt and Road Initiative. Initiatives include providing nuclear power training overseas and promoting the global adoption of advanced nuclear power equipment. These efforts highlight the Company's commitment to serving the overarching goals of the Belt and Road Initiative as a state-owned enterprise.

Deepening global business

- Zhangzhou Energy Co., Ltd. warmly welcomes international students enrolled in the Tsinghua University International Master's Program in Nuclear Engineering and Management. Through exchanges and seminars, we aim to accelerate international cooperation in the field of nuclear energy
- Jiangsu Nuclear Power Co., Ltd. provides technical support to Belarusian experts to advance the improvement of operation and maintenance capability of nuclear power units
- The Nuclear Power Operation Research Institute and Westinghouse have signed a technical support service framework agreement to cooperate in engineering design, technical consulting, licensing services and technical/training seminars

Developing the global market

- To expedite the planning of overseas non-nuclear clean energy projects, the Company has conducted over ten visits to pivotal countries, including Vietnam, Kazakhstan, Uzbekistan, Pakistan and Serbia. During these visits, negotiations were held to plan for a series of key projects
- Exploring novel business models abroad, we have entered into a series of supply chain contracts for VVER units. This approach ushers in a fresh paradigm where equipment supply drives the provision of technical services overseas
- CNNP Rich Energy Co., Ltd. has established overseas representative offices in Vietnam and Kazakhstan, marking significant milestones in its international endeavors. The Company has also successfully concluded share transfer agreements for the 99MW wind power project in Pakistan and the 150MW wind power project in Kazakhstan, signifying pivotal achievements in its overseas ventures in the realm of new energy

Deepening international exchanges

- We organized the second China-ASEAN Forum on the Peaceful Uses of Nuclear Technology, aiming to promote the "five great homes" initiative. We have established a comprehensive strategic partnership with ASEAN, focusing on collaborative projects, talent exchanges, and environmental initiatives. Together, we are forging pragmatic and efficient cooperation mechanisms to foster sustainable socio-economic growth in ASEAN nations and promote the high-quality development of the China-ASEAN comprehensive strategic partnership
- We hosted the Interregional Workshop on Technology Development and Applications of Small Modular Reactor, engaging in profound discussions with over 200 government officials, experts, and scholars from more than 50 countries and regions. The discussions covered topics such as small modular reactor technology development, client requirements, and safety regulations. Our aim is to seek win-win cooperation and jointly facilitate the development of small modular reactors



The second China-ASEAN Forum on the Peaceful Uses of Nuclear Technology



The visit to the small modular reactor construction site

Outlook for 2024

2024 marks the 75th anniversary of the founding of the People's Republic of China. This year is pivotal for achieving the goals and tasks outlined in the "14th Five-Year Plan." It is also crucial for CNNP as we advance intensive management reforms across the board. Upholding the principle of seeking progress while maintaining stability, CNNP will balance high-quality development with high-level safety, accelerating our journey to becoming a world-class enterprise.

We will strengthen our development foundation through high-level governance. Upholding Party leadership and Party building, we will continually enhance the work safety under Party guidance, improve our mechanisms for legal and compliant governance, foster technological innovation and effectiveness, and steadily increase management efficiency. By focus-

ing on intensive management reform, we aim to solidify the foundation of our company's development through high-level governance.

We will ensure stable operations through work safety. In line with the national security concept and a rational, coordinated and progressive approach to nuclear safety, we prioritize our nuclear safety efforts and are committed to enhancing the safety management of non-nuclear clean energy, intensifying our efforts to achieve breakthroughs in core technologies, and securing the nuclear power supply chain. Adhering to the high-quality standards of the "Four Bests," we will diligently advance nuclear power project construction. Our goal is to achieve stable development through high-level safety, striving to maintain a dynamic balance between growth and safety.

We will continue to contribute to China's 30·60 Decarbonization Goal by advancing clean nuclear energy. Embracing the new development philosophy, the Company showcases the pioneering actions and strong sense of responsibility of Chinese enterprises in combating climate change. We will continually explore innovative models to expand the diverse applications of nuclear energy, and steadily advance the implementation of "nuclear power +" projects, to provide services such as nuclear energy heating, hydrogen production, steam supply, seawater desalination, and isotope production. In pursuing innovative development, we will intensify efforts to achieve breakthroughs in the agile cleaning technology industry. Focusing on enhancing unit safety performance and the operation and maintenance of "Hualong One," we will engage in research and development as well as the promotion of low-carbon, zero-carbon, and negative-carbon technologies.

We view clean and low-carbon nuclear energy as the main driver of green development to better serve China's 30·60 Decarbonization Goal and the Beautiful China initiative.

We will promote social common prosperity with harmonious coexistence between humans and nature. Upholding a people-oriented principle, we will design comprehensive talent development paths and optimize various channels for growth, ensuring employee well-being and helping them achieve their full potential. Moreover, as a central state-owned enterprise, we are committed to delivering the concept of "coexistence, co-prosperity, and co-glory," integrating our development with local communities. We will consolidate the achievements of rural vitalization, engage in charity, and contribute to building a harmonious society, and creating a vision of wellbeing marked by harmony and beauty.



Honors and Awards

Awardees	Honor/Award	Awarded by
CNNP	First Prize of 2022-2023 National Enterprise Culture Outstanding Achievements	China Enterprise Confederation, China Enterprise Directors Association
	Golden Bauhinia Award for "Outstanding Listed Company of High-quality Development"	HKTWW, Hong Kong Chinese Enterprises Association, Chinese Financial Association of Hong Kong, Chinese Securities Association of Hong Kong, Hong Kong Chartered Governance Institute
	2023 Best Practice Activity for Boards of Listed Companies-Best Practice Case	China Association of Public Companies
	GoldenBee 2022 Excellent CSR Report – Evergreen Award	China Business Council for Sustainable Development, GoldenBee Thinktank
	The case of "Practicing Biodiversity Conservation and Developing Nuclear Energy for a Better Home" won the 18th People's Corporate Social Responsibility Award for "Green Development"	People's Daily and hosted by People.cn
	A-level in Evaluation of Information Disclosure by the Shanghai Stock Exchange (the highest level)	Shanghai Stock Exchange
Qinshan Nuclear Power Co., Ltd.	Organization Prize of the 20th National Quality Award	China Association for Quality
	2023 National Power Industry Equipment Management Benchmark Project	China Electric Equipment Management Association
	Water-saving Enterprise in Zhejiang Province	Zhejiang Provincial Department of Economy and Information Technology
Jiangsu Nuclear Power Co., Ltd.	National Enterprise with Best Corporate Culture Practice	China Enterprise Confederation, China Enterprise Directors Association
	WANO Moscow Center Member Support Mission and Interaction A evaluation	WANO Moscow Center
	Benchmark nuclear power plant	WANO Moscow Center
	WANO 1 Assessment rating (Tianwan Nuclear Power Base)	WANO Moscow Center
	"Water Efficiency Leader" in Lianyungang City	Lianyungang Water Conservancy Bureau

Awardees	Honor/Award	Awarded by
Fujian Fuqing Nuclear Power Co., Ltd.	Nominated for the 7th China Grand Awards for Industry	China Federation of Industrial Economics
	National May Day Labor Award	All-China Federation of Trade Unions
	Unit 5 and Unit 6 won the National Quality Engineering Gold Award	China Association of Construction Enterprise Management
	The National Nuclear Science Popularization Education Base	China Association for Science and Technology, Ministry of Education, Ministry of Science and Technology, State-owned Assets Supervision and Administration Commission of the State Council, Chinese Academy of Sciences, Chinese Academy of Engineering, State Administration of Science, Technology and Industry for National Defense
	2023 Fujian Provincial Green Factory	Fujian Provincial Department of Industry and Information Technology
	First Prize of Fujian Provincial Science and Technology Progress Award in 2022	Department of Science and Technology of Fujian Province
Hainan Nuclear Power Co., Ltd.	National May Day Labor Award	All-China Federation of Trade Unions
	National Defense Science and Technology Progress Award	Ministry of Industry and Information Technology
	National Youth Work Safety Demonstration Unit	Central Committee of the Communist Youth League of China
	National Industrial Tourism Innovation Unit	China National Tourism Administration
	Hainan Province Poverty Alleviation Advanced Unit	Hainan Provincial Committee of the Communist Party of China and Hainan Provincial People's Government
Sanmen Nuclear Power Co., Ltd.	The Top WANO Annual WER Reporter	WANO Tokyo Center
	2023 Team Champion of the National Nuclear Energy System Nuclear Reactor Operator Professional Skills Competition	China Nuclear Energy Association, China Employment Training Technical Guidance Center
CNNP Xiapu Nuclear Power Co., Ltd.	National Worker Vanguard	All-China Federation of Trade Unions
	National Nuclear Science Popularization Education Base	Chinese Nuclear Society



Appendices

Appendix 1: 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, i.e., 3×10^8 m/s.
Nuclear power	The fusion of light atomic nuclei and the fission of heavy atomic nuclei can both release energy, known as nuclear fusion energy and nuclear fission energy respectively. During fusion or fission, a significant amount of heat is generated. The energy is then converted from nuclear energy to thermal energy, mechanical energy and electrical energy. This form of electricity is commonly referred to as nuclear power. Currently, nuclear power primarily relies on fission for electricity generation.
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.
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.
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.

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	The effective dose equivalent is the sum of the products of the average dose equivalent received by each organ or tissue in the human body under conditions of non-uniform irradiation and the corresponding tissue weighting factors, taking into account the stochastic effects of radiation on the tissues or organs.
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.
Peaking carbon dioxide emissions	Carbon peaking (Peaking carbon dioxide emissions) refers to a point in time when carbon dioxide emissions stop growing and peak, and then gradually fall back. It represents a historical turning point in which CO ₂ emissions shift from increasing to decreasing It marks the decoupling of carbon emissions from economic development, which is important for reducing greenhouse gas emissions and achieving the goal of carbon neutrality. The target includes peak year and peak.
Carbon neutrality	A state of net-zero carbon emissions, can be achieved by balancing the total amount of carbon dioxide or greenhouse gas emissions produced directly or indirectly by a country, company, product, activity, or individual over a certain period via carbon offset or removal initiatives, such as, adoption of low-carbon energy sources, afforestation, energy saving and emission reduction, etc.
The "dual carbon" goals	On September 22, 2020, at the General Debate of the 75th Session of the United Nations General Assembly, Chinese President Xi Jinping announced that China will scale up its Intended Nationally Determined Contributions by adopting more vigorous policies and measures, and aim to have CO ₂ emissions peak before 2030 and achieve carbon neutrality before 2060.
Carbon sink	The process, activity or mechanism of using photosynthesis to absorb carbon dioxide in the atmosphere and fix it in vegetation and soil through measures such as afforestation, forest management, and vegetation restoration, thereby reducing the concentration of greenhouse gases in the atmosphere.

Appendix 2: Key Performance

Dimen-sions	Indicator	Unit	2021	2022	2023
Govern-ance per-formance	Revenue	billion yuan	62.70	71.29	74.96
	Net profit attributable to shareholders of the listed company	billion yuan	8.22	9.01	10.62
	Net profit attributable to shareholders of the listed company after deducting non-recurring gain and loss	billion yuan	8.01	9.04	10.40
	Net cash flow from operating activities	billion yuan	35.61	46.70	43.13
	Net assets attributable to shareholders of the listed company	billion yuan	76.30	88.64	90.95
	Total assets	billion yuan	409.90	464.62	539.27
	Number of directors	/	12	12	12
	Number of independent non-executive directors	/	4	4	4
	Number of General Meetings of Shareholders	time	5	2	3
	Number of Board of meetings	time	12	8	7
	Female directors	/	2	3	2
	Proportion of female directors	%	16.67	25	16.67
	Number of employee director	/	1	1	1
	Number of incidents of commercial bribery and corruption	/	0	0	0
Safety per-formance	Unplanned automatic shutdowns	time	2	4	4
	Incident of INES Level 2 or above	/	0	0	0
	Fatalities	/	0	0	0
	Serious injuries	/	0	0	0
	Fire accidents	time	0	0	0
	Overdose irradiation accidents	time	0	0	0
	Internal pollution incidents	time	0	0	0
	Special operations personnel with certificates rate	%	100	100	100
	Customer privacy breach incident occurred	/	0	0	0

Dimen-sions	Indicator	Unit	2021	2022	2023
Environ-mental per-formance	Investment in environmental protection and energy conservation	million yuan	66	203.24	147.74
	Number of controlled operating units	unit	24	25	25
	Power generation of nuclear power units	TWh	173.12	185.24	186.48
	Reduction of standard coal burned equivalent by annual power generation of nuclear power units	10,000 tons	5,236.97	5,620.15	5,622.28
	Reduction of carbon dioxide emissions equivalent by annual power generation of nuclear power units compared to burning standard coal	10,000 tons	13,720.86	14,724.80	14,730.38
	CO2 emissions	10,000 tons	9.2366	8.9897	10.16
	Actual CO2 emission per 10,000 yuan of output value	tCO _{2e} / 10,000 yuan	0.0151	0.0130	0.0143
	Actual comprehensive energy consumption index per 10,000 yuan of industrial output value	TCE/ 10,000 yuan	0.2184	0.2071	0.2031
	Electricity generated from non-nuclear clean energy (wind energy)	TWh	4.55	6.54	10.90
	Electricity generated from non-nuclear clean energy (photovoltaic)	TWh	4.97	7.51	12.48
	Electricity generated from non-nuclear clean energy (total)	TWh	9.51	14.05	23.38
	Water withdrawal	10,000 m ³	2,374.78	2,328.23	2,099.10
	Water consumption per unit of power generation	m ³ /MWh	963	979.30	958.70
	Industrial water reuse rate	%	98.69	98.81	98.95
Social per-formance	Total funds invested in rural vitalization	million yuan	10.29	11.55	16.13
	Total investment in consumption-driven assistance	million yuan	2.37	5	4.98
	Number of official engaging in rural vitalization assistance	/	13	15	17
	Number of employees participating in volunteer activities	Participants	5,864	5,674	4,478
	R&D investment	billion yuan	1.62	1.91	2.01

Dimen-sions	Indicator	Unit	2021	2022	2023
Social perfor-mance	Proportion of R&D investment to revenue	%	2.58	2.69	2.67
	Number of R&D personnel	/	4,119	3,984	4,357
	Proportion of number of R&D personnel to all employees	%	26.14	23.30	23.50
	Number of applications for invention patents	/	739	676	984
	Number of authorized invention patents	/	94	126	282
	Number of valid patents	/	3,570	4,648	5,535
	Number of intellectual property rights such as trademarks and copyrights	/	210	360	677
	Senior executives	/	94	96	106
	Proportion of female senior executives	%	7.40	4.20	9.43
	Employee turnover rate	%	1.19	1.15	1.18
	Female employees	/	2,313	2,595	2,859
	Ethnic minority employees	/	1,049	726	945
	Employees in total	/	15,756	17,090	18,574
	Employee health checkups coverage	%	100	100	100
	Labor contract signing rate	%	100	100	100
	Social insurance coverage	%	100	100	100
	Labor union membership rate	%	100	100	100
	Employee training coverage rate	%	89.50	98.90	90.90
	Number of trainees	/	14,712	16,903	16,891
	Training investment	million yuan	65.63	47	113.79
	Employee training hours	hour	1,601,730	3,204,220	3,019,112
	New hires of the headquarters and subsidiaries	/	1,283	1,618	1,444
	Open recruitment rate of the headquarters and subsidiaries	%	100	100	100

Appendix 3: GRI Index

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Appendix 4: Expert Opinion

Sustainable development is the "golden key" to addressing today's global challenges. Countries worldwide are actively seeking and implementing solutions to combat climate change, environmental pollution, wealth inequality and social injustice. The pursuit of sustainable development has become the world's greatest consensus and a shared endeavor for all humanity. It is also a crucial objective in China's path to modernization, which aims to build a society where humans and nature coexist harmoniously, and all people prosper together. In this context, CNNP, as a publicly listed company, takes proactive measures and embraces the dual responsibility of "building a country with strong nuclear power" and "developing a modern energy system." By emphasizing green and innovation-driven development, the Company aligns with the "rural vitalization" strategy. It fosters an ESG ecosystem and actively fulfills our social responsibilities. Through these efforts, CNNP has made significant contributions to sustainable development and achieved remarkable results.

2024 marks the twelfth year since CNNP officially released its first Social Responsibility Report. This year, CNNP merges the Social Responsibility Report with the Environmental, Social, and Governance (ESG) Report under the theme "Delivering Sustainable Development for a Nuclear-Powered Future." By integrating information, the Company provides a more effective response to the *Guidelines of the Shanghai Stock Exchange for Self-Regulation of Listed companies—Sustainability Report (Trial)*. This approach offers a more comprehensive view of CNNP's corporate social responsibility and ESG performance.

The report fully meets the requirements for information disclosure in the ESG field and proactively responds to the standards set by the Guidelines No. 14 of the Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial). In the opening chapter, it emphasizes governance, strategy, risk management and metrics and targets. The report has a systematic analysis on the Company's management practices and achievements in governance, safety, environment and society. It consistently aligns with the SDGs, supporting innovation, ecological environment protection, education empowerment and community development. This showcases CNNP's long-term focus, commitment and continuous management of ESG issues with an international perspective and global awareness. The main content section of the report centers on CNNP's key responsibilities in governance, safety, environment and society. It provides in-depth responses to 24 issues of greatest concern to the public, including corporate governance and risk management, nuclear safety management, environmental impact monitoring and transparent communication. The report highlights CNNP's series of actions in actively practicing ESG principles and demonstrates the Company's commitment to integrating corporate development with social responsibility. This approach accelerates the establishment of a world-class clean energy enterprise focused on value creation. It reflects the Company's dedication to comprehensive reform, technological innovation, employee care, environmental protection, nature conservation, social development and active engagement in social welfare activities.

Nuclear power is an important tool to achieve China's 30·60 Decarbonization Goal. CNNP actively promotes the safe and orderly development of nuclear power, upholds the paramount importance of nuclear safety, and continuously expands the nuclear power market. Moreover, it promotes the integration of "nuclear power + strategic emerging industries" in various scenarios, such as heating, industrial steam supply and isotope production. By doing so, the Company contributes Chinese expertise and solutions to the global development of nuclear power and supports the achievement of the SDGs with Chinese strength. "The road ahead is long and arduous, but with determined steps, a promising future awaits." I hope CNNP to leverage its advantages for the high-quality development of nuclear energy, guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and a people-centered development philosophy. It is expected to make greater contributions to industry progress, social development and the creation of a beautiful China.

President of the China Association of Social Workers

陈存根

Appendix 5: Related Reports and Publications



CNNP System Of Culture Excellence



CNNP Employee Code Of Conduct



White book on the 12th Anniversary of "Appealing Nuclear Power" Nuclear Science Popularization Activities



Why Nuclear Power



Stories of Nuclear Power



CNNP Visual Identification Standard Handbook



Enjoying the Beauty of Nuclear Power, Achieving Harmonious Co-existence with Nature– China National Nuclear Power Co.,Ltd. 2022 Actions on Biodiversity Conservation



Nuclear Safety Culture Journey of CNNP



Continuously Improving, Pursuing Excellence: CNNP Lean Operation Management



CNNP Ten Principles of Excellence Nuclear Safety Culture (2022 Edition)



Delivering Instructions and Creating High-quality CNNP by CNNP



Issue 1 of Nuclear Power Boom 2023



Issue 2 of Nuclear Power Boom 2023



Issue 3 of Nuclear Power Boom 2023



Issue 4 of Nuclear Power Boom 2023

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Appendix 7: Feedback from Readers

Dear readers,

Thank you for reading the *China Nuclear Power Corporation Limited Social Responsibility Report and Environmental, Social and Governance Report 2023*! We look forward to your opinions and suggestions to help us improve our reporting in the future.

Please scan the QR code on the right and fill out the questionnaire online to provide feed-back on our report. Thank you!



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