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2023 CGN Corporate Social Responsibility Report

About This Report

This is the 13th corporate social responsibility (CSR) report issued by China General Nuclear Power Corporation in China since the *CGN Corporate Social Responsibility Report 2011* was first released in 2012. In our annual CSR report, we disclose our CSR philosophy and practices in detail to stakeholders, and communicate and interact with them to jointly drive the sustainable development of the Group and the society.

Reporting Period

This Report covers the period from January 1, 2023 to December 31, 2023. To make the report comparable and forward-looking, some contents are extended to previous years or referred to later years.

Reporting Scope

The Report covers China General Nuclear Power Corporation and its subsidiaries and branches.

Compilation Conformance

- *Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities with High Standards in the New* Era released by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC)
- *GRI Sustainability Reporting Standards (GRI Standards)* issued by Global Sustainability Standard Board (GSSB)
- *Guidance on Social Responsibility (ISO 26000:2010)* issued by International Organization for Standardization (ISO)
- *GB/T 36001-2015 Guidance on Social Responsibility Reporting*
- *The 2030 Agenda for Sustainable Development* by the United Nations

Data Sources

All the data and information disclosed in the Report come from the official documents of the Group or the news, documents and reports officially issued by external organizations, which is reviewed by the relevant departments. Statistics in relation to our business in China do not include that of Taiwan Province.

Reliability Assurance

The Group assures that the report is free of false record, misleading statement or material omission.

Report Access

The report is available in both Chinese and English. In case of discrepancy, the Chinese version shall prevail. You can download the electronic report from our website www.cgnpc.com.cn. If you have any questions or suggestions about the report, you can contact us (see the back cover of the Report).

Reference

For better expression and readability, the entities involved in the report are referred to by their abbreviations. China General Nuclear Power Corporation and its subsidiaries are referred to as "CGN", "the Group", or "we" for short in this report. CGN's subsidiaries are referred to as follows respectively: CGN Power Co., Ltd. is referred to as "CGN Power", China Nuclear Power Operations Co., Ltd. is referred to as "CGN Operations", China Nuclear Power Engineering Co., Ltd. is referred to as "CGN Engineering", China Nuclear Power Design Co., Ltd. (Shenzhen) is referred to as "CGN Design Institute", China Nuclear Power Technology Research Institute is referred to as "CGN Research Institute", Suzhou Nuclear Power Research Institute is referred to as "CGN Suzhou Institute", Daya Bay Nuclear Power Operations and Management Co., Ltd. is referred to as "DNMC", Yangjiang Nuclear Power Co., Ltd. is referred to as "YJNPC", Fujian Ningde Nuclear Power Co., Ltd. is referred to as "NDNPC", Liaoning Hongyanhe Nuclear Power Co., Ltd. is referred to as "HYHNPC", Guangxi Fangchenggang Nuclear Power Co., Ltd. is referred to as "FCGNPC", Taishan Nuclear Power Joint Venture Co., Ltd. is referred to as "TNPJVC", CGN Huizhou Nuclear Power Co., Ltd. is referred to as "HZNPC", CGN Cangnan Nuclear Power Co., Ltd. is referred to as "CNNPC", CGN Lufeng Nuclear Power Co., Ltd. "LFNPC", CGNPC Uranium Resources Co., Ltd. is referred to as "CGNPC Uranium", CGN New Energy Holdings Co., Ltd. is referred to as "CGN New Energy", CGN Energy International Holdings Co., Ltd. is referred to as "CGN Energy International", CGN Wind Energy Limited, is referred to as "CGN Wind Energy ", CGN Nuclear Technology Development Co., Ltd. is referred to as "CGN Nuclear Technology", CGN Digital Technology Co., Ltd., referred to as "CGN Digital Technology", Beijing Guangli Nuclear System Engineering Co., Ltd is referred to as " Guangli Nuclear ", CGN Environment Protection Industry Co., Ltd. is referred to as "CGN Environment Protection", CGN Capital Holdings Co., Ltd. is referred to as "CGN Capital", CGN Finance Co., Ltd., is referred to as "CGN Finance" and CGN Services Group Co., Ltd. is referred to as "CGN Services". Names of CGN's branches in China are in the form of "Region Name + Branch", names of CGN's project branches overseas are in the form of "CGN+Region Name + Branch" and names of nuclear power bases are in the form of "Region Name + Nuclear Base".

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Message from Chairman

In 2023, faced with complex and severe internal and external situations, We always kept in mind national priorities, firmly safeguarded nuclear security, deepened reform and innovation, and made new strides for high-quality development. By the end of 2023, our total assets had exceeded RMB 1 trillion, total installed capacity of clean energy had exceeded 100 GW, and we had 38 nuclear power units under construction or in operation, with the installed capacity of 43.81 GW. In 2023, the domestic installed capacity for new energy exceeded 10 GW, and our businesses covered 30 provinces, autonomous regions and municipalities directly under the central government at home, and 16 countries and regions abroad. We had been rated A in the business performance assessment by the SASAC for ten consecutive years and ranked among the top central SOEs in terms of comprehensive benefits. We contributed to Chinese modernization with our high-quality development, and played our due role in building China into a strong country in all respects and pursuing national rejuvenation.

Putting safety first and giving full play to the supporting role of safety work

Deeply aware of the extreme importance of nuclear safety, we work together with stakeholders to improve safety management to avoid safety accidents, and strive to promote the high-quality development of China's nuclear energy industry, and make it safer, more economical, and more widely accepted. Our work safety performance has been steadily improved. In 2023, CGN had 27 in-service nuclear power units in stable operation, 77.5% of the NPPs achieved the world's advanced level in WANO indicators and 15 units scored full marks in the comprehensive index. The average capacity factor of CPR units reached 92.3%, a world advanced level. As at December 31, 2023, Unit 1 of Ling’ao NPP had been running safely for around 6,277 days, shattering the world record for similar units. The gas-fired power plant in Yulchon, the Republic of Korea and the HPL Power Plant in Bangladesh had been operating safely without accidents for over 6,000 days, and the Daesan Power Plant, also in the Republic of Korea, had been operating safely without accidents for over 5,000 days, becoming local models in safety management. We have advanced engineering construction with high quality. The first rector of Hualong One, the Unit 3 of Fangchenggang NPP, has been put into high-quality operation, and the Phase II of Ningde NPP project and Taipingling NPP project have been approved. The Husab Uranium Mine Project has achieved its annual production target for the first time. The CGN Hinggan League 3 GW Wind Power Plant and the 1 GW Offshore Wind Farm at Huizhou Port, have been completed and put into operation. The Tanque Novo (TN) Wind Power Project in Brazil was put into full capacity operation 69 days ahead of schedule. The overall SQE performance has been stable. We have raised the awareness of implementing SQE management in thinking, political orientation, and action. CGN has carried out work safety inspections for four consecutive years, and safety performance inspections on the leadership of secondary subsidiaries for two consecutive years. We have also vigorously implemented the dual-prevention mechanism of risk grading control and safety hazard identification and elimination, and achieved the goal of "two eliminations and six zeros."

Striving for reform and innovation to lead the development of new quality productive forces

With a focus on the initiative to deepen and upgrade the state-owned enterprise (SOE) reform, we have continuously stimulated our endogenous driving forces and innovation vitality, and strengthened our determination to promote scientific and technological innovation as the "top priority." We have insisted on starting from reality to develop new quality productive forces in line with the principles of establishing the new before abolishing the old and adjusting measures to local conditions, and better played our principal role in scientific and technological innovation, injecting strong impetus into development. We have enhanced the comprehensive effectiveness of high-standard reform. Since the implementation of the three-year action plan for SOE reform, we have launched the "1+4+X" reform, comprehensively optimizing our management system and continuously deepening our market-oriented operation mechanism. We were rated A in the 2022 SASAC assessment on the effects of the three-year action plan for SOE reform. We have advanced work on all fronts to achieve greater self-reliance and strength in science and technology and modernization. With a focus on building original technology hubs for advanced nuclear energy and expanding into strategic emerging industries, CGN has accelerated to develop the South China Atomic Energy Science and Technology Innovation Center. The Center was approved to build two national R&D platforms, and has produced multiple key equipment and core technologies that were successfully applied for the first time in Hualong One, China's homegrown third-generation nuclear power technology. We have successfully held a conference on building the industrial chain of Hualong One with more than 5,400 enterprises. We have accelerated the cultivation of high-caliber scientists and technologists. While implementing major technological projects, we have developed independent training plans for academicians in line with the principle of "one policy for one person," improved the administrative measures for chief experts, established the position of chief expert, and publicly recruited high-level talents from around the world, thus accelerating the cultivation of a group of strategic scientific and technological talents, a group of backbone talents, and another group of young scientists and technologists.

Fulfilling our duties to provide clean energy for the public

As a SOE and mainstay of China's clean energy development, we, committed to building a beautiful China, have given full play to our industrial advantages, and provided a series of high-quality "CGN proposals" regarding ecological conservation, rural revitalization, and Belt and Road collaboration. We have worked actively toward China's carbon peaking and carbon neutrality goals. In 2023, CGN generated 324.672 TWh of on-grid electricity, equivalent to the reduction of 97.63 million tons of standard coal consumption and 260 million tons of CO_2 emissions or the increase of 731,000 hectares of afforestation area, contributing to the decarbonization drive and green and low-carbon development. We have prudently and effectively promoted comprehensive rural revitalization. CGN has built and put into operation China's first EBI food preservation center for agricultural products in the source of origin in Baise, Guangxi, increasing farmers' income by developing characteristic industries. We have assisted Wudongcheng Village in Yangxin County, Hubei Province in making use of over 900 mu of barren land by growing ramie, rice, and shrimp, generating an output value exceeding RMB 10 million and a collective income of RMB 260,000 a year. The CGN wind power project in Leye has distributed dividends of RMB 9.15 million to 63 villages in the county. We have actively promoted win-win Belt and Road cooperation. In 2023, the TN 180 MW wind power project was officially put into operation in Brazil, lighting up 430,000 Brazilian households.

The year 2024 marks the 75th anniversary of the founding of the People's Republic of China and is a crucial year for CGN to advance a new round of reform and build a world-class enterprise. we will keep in mind our special mission as a central SOE on this new journey in the new era, and accelerate to build a world-class clean energy group specialized in nuclear energy and with global competitiveness, enhance our core functions and competitiveness, better give full play to the role of scientific and technological innovation, industrial control, and safety management, and strive to contribute more to Chinese modernization!

Yang Changli

Chairman

China General Nuclear Power Corporation

CSR Feature

Working Together to Build the Modern Industrial Chain for Hualong One

Faced with the complex and volatile supply chains in the world, CGN, together with upstream and downstream enterprises in China, has established a set of world-advanced proprietary nuclear power standards after years of unremitting efforts. We make efforts to improve the localization rate of nuclear equipment steadily, enhance the core competitiveness of enterprises on the industrial chain, and build a high-quality industrial chain for Hualong One. We are fostering new quality productive forces at a faster pace and inject strong impetus into the high-quality development of the nuclear energy industry in the new era.

Polishing the name card for China self-developed Hualong One

After 13 years of technological development, engineering design and the building of the first nuclear unit, CGN has successfully developed Hualong One, an internationally advanced third-generation nuclear power brand to which China has exclusive intellectual property rights.

Mastering core technologies

Intellectual property rights of Hualong One cover various areas, including overall design of models, fuel and core optimization, equipment R&D, construction, operation, and maintenance. We have exclusive intellectual property rights to all the core technologies, including the reactor core design, active and passive safety technology, design of systems and key equipment, DCS system design, and calculation and analysis software.

700+
Authorized patents

120+
Software copyrights

The homegrown "nerve center"

As the nerve center of nuclear power plants, the nuclear-class distributed control system (DCS) has strict quality standards, demands huge R&D input and has high requirements for identification. In October of 2010, China Technology Co., Ltd. released FirmSys, which was integrated with Hualong One. By the end of 2023, FirmSys was applied in a total of 23 nuclear power units under construction and in operation.

The integrated test shop of FirmSys

The evolution of Hualong One

2010 The Hualong One R&D project was officially kicked off.

2015
August It passed the review of the National Energy Administration and the National Nuclear Safety Administration.

2020
February It passed the Generic Design Assessment (GDA).

2022
October It obtained the European User Requirement (EUR) certification.

2023
March The first demonstration project of Hualong One, Unit 3 of Fangchenggang NPP, was put into commercial operation.

Making steady progress in the batch construction of Hualong One

Hualong One plays an active role in guaranteeing national energy security and optimizing China's energy mix. In 2023, it was being built in several NPPs and units. We steadily advanced the mass construction process to make sure that improvements are made from project to project and from unit to unit.

In 2023

1
Hualong One nuclear power unit put into operation

4
Hualong One nuclear power units certified

Case | The first Hualong One unit in western China put into operation

Unit 3 of Fangchenggang NPP, the first Hualong One unit in western China, completed the 168-hour trial operation on March 25, 2023, marking that it was ready for commercial operation.

After phase I and II projects are completed and put into operation, Fangchenggang NPP is expected to generate 34.5 TWh of electricity every year, enough to meet the annual production and living needs of 58.7million people. Compared to the coal-fired power station of the same scale, it can reduce 104 million tons of standard coal consumption and 285.6 million tons of CO_2 emissions or the increase of 78,000 hectares of afforestation area.

Putting into operation

March 25

Unit 3 of Fangchenggang NPP, the first Hualong One unit in western China, was officially ready for commercial operation. By then, CGN had 27 in-service units with an installed capacity of 30.56 GW.

The press conference to mark Unit 3 of Fangchenggang NPP being put into operation

Approval

July 31

Units 5 and 6 of Ningde NPP were approved by the government. Thy also adopt the Hualong One technology.

Ningde Nuclear Power Base

December 29

The construction of Units 3 and 4 of Taipingling NPP got approval from the government. They also adopt the Hualong One technology.

Construction

August 26

The first concrete was poured for the nuclear island of Unit 6 of Lufeng NPP.

September 28

Unit 2 of San'ao NPP completed dome hoisting and two Hualong One units in the Phase I of San'ao NPP entered into the installation stage.

November 12

Unit 4 of Fangchenggang NPP successfully completed all hot testing, marking the completion of hot functional testing of Unit 4 and the transition to the fuel loading phase.

December 5

Unit 1 of Taipingling NPP launched the cold function test as scheduled, marking a transition from installation to the joint trial phase.*

December 22

Unit 1 of Taipingling NPP launched the cold function test as scheduled, marking a transition from installation to the joint trial phase.

Working together to build the modern industrial chain for Hualong One

During the batch construction of Hualong One, CGN gave full play to its role as head of the nuclear equipment supply chain and established the CGN Joint R&D Center For Equipment Localization which leads more than 5,400 domestic equipment manufacturers to jointly develop new technologies and equipment, with several breakthroughs made in core technology. As a result, more than 400 key pieces of equipment have been localized, including core equipment of the nuclear island, secondary and tertiary pumps for nuclear power, electrical equipment, and the nuclear grade distributed control system. Many landmark scientific research achievements represented by the distributed control system FirmSys were released. We are working to build a modern industrial chain for Hualong One with proprietary and controllable equipment, leading technologies and innovations and international competitiveness, thus improving the resilience and safety of the nuclear equipment industrial chain.

95%+

Domestication rate of equipment of newly built Hualong One projects

RMB **300**+ million

Saved in the procurement of equipment for projects under construction

100%

Projects capable of using all homegrown units

10

Proprietary technologies applied for the first time

Working together to tackle technological challenges

Developing critical materials together

To develop several critical materials for building the nuclear island, we deeply cooperate with external enterprises. Through more than 100 experiments and targeted research, breakthroughs have been made in several technologies and related products have been put into use, resulting in a 31.75% drop in cost and shortening the materials supply cycle by about 2.5 to 4 months. The benefits are shared with partners through equity transfer.

Promoting the domestication of wielding equipment

We jointly developed the main-line welding equipment with domestic manufacturers, and developed the corresponding welding process in pure argon shielding gas for the main line based on the progress and experience accumulated, which can effectively reduce the equipment purchase and service cost, saving about RMB 8 million for each unit.

Case **Announcing a joint declaration to build consensus on collaboration for common interests**

On November 14, 2023, the plenary board meeting of the CGN Joint R&D Center For Equipment Localization and the Meeting on Building the Industrial Chain of Hualong One were convened in Shenzhen, and attended by more than 440 representatives from nuclear power equipment manufacturers, including China First Heavy Industry (CFHI), Harbin Electric Corporation, Dongfang Electric Corporation, and Shangahi Electric. At the meeting, the joint declaration entitled "Our Mission: Enhance Core Competitiveness and Industrial Resilience" was released. The participants exchanged views on topics such as safety and quality, technological innovation, management upgrade, digital empowerment, and green development. A consensus on collaboration for common interests was built. The participants agreed to work together to safeguard safety and stability of the industrial chain and supply chain of Hualong One equipment, promote the development of the Hualong One industrial chain, and build a world-leading modern industry cluster.

Expanding the application of advanced manufacturing technologies

To meet the needs of the Hualong One project, we jointly established the Joint Laboratory of Advanced Building Technologies with nuclear power enterprises, including China Construction Second Engineering Bureau and China Nuclear Industry Huaxing Construction Corporation, as a means to promote the application of advanced manufacturing technologies, and expand technology resources. Significant benefits have been achieved in key paths and key local construction sites. All units under construction continue to optimize their schedule.

Honors

- 2 proprietary technologies were selected into the third batch of major technological equipment for the first unit (set) in the energy sector by the National Energy Administration
- 1 achievement was selected as the One-stop Application Demonstration Program by the Ministry of Industry and Information Technology

"In promoting the domestication of nuclear power equipment, CGN and CFHI support each other and work together. The two companies have witnessed how China's nuclear power equipment industry started from scratch and grew bigger and stronger. CFHI has already become one of the biggest beneficiaries of CGN's effort to promote connectivity and common development of the industrial chain. In the future, we will ramp up research and development efforts to help build the modern industrial chain of Hualong One and promote higher-quality development of China's nuclear power industrial chain.

——Xu Chongyong, Deputy General Manager of CFHI

Over the years, based on our exchanges with CGN, Shengu Group has developed the quality management philosophy that stresses a wide coverage, faithful implementation, effective execution and significant improvement. This philosophy is written in the job handbook and implemented in actual operations, with the results in the nuclear grade equipment, as a means to keep consolidating nuclear security. Looking ahead, Shengu Group will keep pace with CGN's development, and strengthen cooperation and exchanges with other peer companies to innovate, improve the quality, share the achievements, and lift China's nuclear power industry to a new level."

——Yu Hongchang, Vice President of Shengu Group

*On May 25, 2024, Unit 4 of Fangchenggang NPP was put into high-quality operation, marking the full completion of CGN's "Hualong One" demonstration project.

CSR Feature

Creating a Shared, Prosperous Future for the Belt and Road Initiative

The year 2023 marked the 10th anniversary of the Belt and Road Initiative (BRI), which has injected new impetus into the world's economic growth, and contributed to improving people's livelihoods and well-being around the world as more actions and practices are implemented under this vision. As a world-leading clean energy supplier and service provider, CGN, in line with the principles of "extensive consultation, joint contribution and shared benefits," joins hands with other Belt and Road countries and regions to build a clean energy industry ecosystem, actively participates in the global energy governance and energy transition, and keeps giving back to local communities. Together, we work to create a prosperous community with a shared future for mankind.

Deepening business layout to promote the green BRI

Following the global transition toward clean and diversified sources of energy, we are committed to providing green, safe, stable and reliable power for the energy transition and even economic transformation of BRI partner countries and regions. We strive to build clean-energy engineering projects that meet high standards and are hailed as benchmark projects for the world, and inject new vitality into the friendship between China and its BRI partner countries and regions.

After years of efforts, CGN has formed a clean energy development layout of "One Horizontal and Two Verticals" in the world. "One Horizontal" means to take root in Malaysia, extending to BRI partner countries "horizontally", including Bangladesh and Laos. "Two Verticals" refers to take root in France and Brazil respectively, gradually radiating to the rest of Europe and Africa, and to the rest of South America and North America, respectively, and forming two "vertical" clean energy development belts.

CGN has supplied **250** TWh+ clean power to 15 countries and regions overseas

equivalent to the reduction of **200** million tons of CO_2 emissions

equivalent to an increase of **544,000** hectares of afforestation

Enhancing cooperation

CGN embraces China's drive to open up at a higher level. We continue to leverage our expertise in clean energy, consolidate resources, and expand our clean-energy cooperation with countries in Asia, Africa and Europe, to jointly build high-standard, sustainable clean energy projects that benefit the people. We also work with stakeholders in global energy governance, and cement our friendship in this process.

Case | Writing a new chapter of Sino-French nuclear energy cooperation

On the afternoon of April 6, 2023, Li Li, CGN Director, and Luc Rémont, the EDF Group's Chairman and Chief Executive Officer, signed the *Declaration of Signature Of The E&P, O&M and R&D Cooperation Agreements between ELECTRICITE DE FRANCE S.A.and CHINA GENERAL NUCLEAR POWER CORPORATION* in the People's Hall, in the presence of Chinese President Xi Jinping and his French counterpart Mr. Macron. Later in June, CGN and the French Alternative Energies and Atomic Energy Commission signed the *Amendment to the CGN-CEA Nuclear Research and Technology Cooperation Agreement*. By furthering bilateral cooperation, China and France have set an example of international nuclear energy cooperation, and jointly advanced clean-energy technologies, contributing to global response to climate change, energy security and green development.

Case | The China-Laos clean energy base project ready to break ground

In October 2023, CGN and the Lao government signed a memorandum of understanding on deepening cooperation through developing a renewable energy base in the north of the country, to facilitate the launch of Phase I construction of the project in northern Laos. This energy connectivity project, spanning across three northern provinces of Oudomxay, Phongsaly and Luang Namtha, is a core project of Northern Laos Interconnection Clean Energy Base. This clean energy base will feature an integrated wind-, solar-, hydropower generation and energy storage system.

Highlight projects

Edra Melaka Power Plant (EMPP) in Malaysia

With a total installed capacity of 2.242 GW, EMPP can meet nearly 10% of total power needs of Peninsular Malaysia, and supply clean, reliable electricity to 4 million households in the country.

Kedah Power Plant in Malaysia

With a total installed capacity of 50 MW and an annual power generation capacity of 78.4 GW, the Kedah Power Plant can supply electricity to 30,000 households on average per month, equivalent to an annual reduction of 540,000 tons of CO_2 emissions.

Tanque Novo wind power project (TN project) in Brazil

Put into operation in April 2023, the TN project, with a total installed capacity of 180 MW and an annual power generation capacity of 720 GW, can supply power to 430,000 households in Brazil, equivalent to an annual reduction of 650,000 tons of CO_2 emissions and an increase of about 1,800 hectares of afforestation.

Promoting common prosperity in BRI partner countries

Communicating effectively with local communities and bonding with them for mutual benefits are integral to CGN's overseas business operations. CGN keeps giving back to local communities in the host countries by driving the development of local industrial chains and manufacturing industry, cultivating talents, and participating in philanthropic activities, striving to prosper with local communities.

Driving economic development

In building high-quality international energy cooperation projects, CGN combines globalization with localization, actively brings China's advanced technologies and advantages to project countries and regions, leverages its capacity in integrating industrial chains, and promotes the development of local industries.

Case | The Husab Uranium Mine Project marks its 10th anniversary

As the BRI celebrated its 10th anniversary, the Husab Uranium Mine Project also entered its tenth year. The project is China's largest physical project in Africa, a signature project of Sino-Namibian cooperation. Since the project was launched in 2013, CGN Swacop Uranium has actively integrated into local communities, and provided local enterprises with market opportunities and pathways to development, facilitating Namibia's economic development.

The mine road of the Husab Uranium Mine, invested and constructed by CGN Swakop Uranium, covers a total length of over 22 km.

Over the past 10 years

project has created nearly **10,000** jobs

contributed NAD **8.6** billion to Namibia's GDP

awarded **62.6**% of contracts to local bidders

It hires about **1,700** local employees

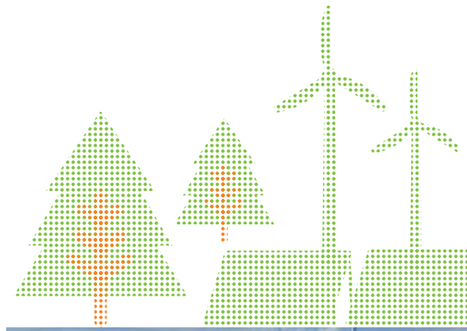
accounting for **96**% of its full-time workforce

I was here in 2013 to witness the start of construction of the Husab mine. Back to here, I am very glad and amazed by the transformation of a small desert village into what it is today.

——Sam Nujoma, Namibia's founding President

Case | The TN wind power project brings new growth opportunities to Brazil

With a total installed capacity of 180 MW, the TN project in Brazil has the largest wind turbine blazes in South America. While supplying clean energy and accelerating energy transition, CGN has created more than 1,000 jobs in construction and operation, and provided job skills training to local residents. Besides, CGN has set up popular science education bases and opened them free of charge to the public, to help raise public awareness of clean energy and promote the sustainable development of local clean energy industry. The TN project has become a vivid example of accelerating China-Brazil cooperation at a higher level in the new era.



We have benefited much from the Chinese wind power project.

——Paulo Carneiro, Mayor of Tanque Novo

CGN's increasing investment in new energy in Brazil demonstrates its environmental responsibility and pledge.

——Jerônimo Rodrigues, Governor of Bahia

Participating in the TN project is one of the most important working experiences in my life. My Chinese colleagues have rich experience in engineering, project management, and other areas. Working with them has further enhanced my knowledge and skills in engineering, project sustainability and management.

——Matheus Schiochet, Deputy Project Engineering Manager

Improving the people's well-being

CGN has long supported the development of culture, education, health care, sports and other areas in its project countries and regions. We share corporate development benefits with local people, striving to enhance local residents' sense of safety, gain and happiness.

Case | The Edra Student Aid Program lights up educational aspirations

Edra Power Holdings Sdn Bhd, a subsidiary of CGN Energy International, launched a long-term student aid program in Malaysia in 2005, in response to the goal of achieving 100% enrolment across all levels from preschools to upper secondary proposed by the Ministry of Education of Malaysia. Since then, it has donated financial aids to students in need, and every year it distributes incentive packages each containing "one school bag and one shoe voucher" to all the fifth-grade students, to lighten the burden of impoverished families before the new school year begins. As of the end of 2023, the Edra Student Aid Program had benefited 30,000 students in total, including 1,600 students from 26 schools in 2023 alone.

Case | Cultivating a "seed team" for the new energy industry in Laos

In December 2023, the China-South Asia vocational training class was opened in Kunming, Yunnan, to 20 Lao youths. It was a vocational training program taught in the Chinese language, and covered such topics as the basic knowledge of the new energy industry, safety management, quality control, engineering management, operation and maintenance, and field training at wind and solar power plants. Through cooperation with enterprises, it aimed to cultivate new-energy specialists for Laos in batches, improve the skills, knowledge and operational abilities of Lao employees, and help them grow into field engineers in the new energy industry.

Conducting proactive communication

CGN attaches great importance to transparent communication with local communities. We have set up science popularization venues and launched Open Day events to demonstrate our commitment to clean energy, and tell stories of concerted effort for building an energy community of shared future.

Case | The CGN Global Sustainability Report released

In June 2023, CGN held a press conference on the release of its 2023 Global Sustainability Report in Paris. The report, presented in Chinese, English and French, shares CGN's efforts in implementing sustainability philosophy, fulfilling corporate social responsibilities and protecting the environment. At the event, Li Li, director at CGN, delivered a speech; Jan Noterdaeme, co-founder of CSR Europe (CSRE), shared his insights into the Report; Bernard le Guen, vice-president for international nuclear energy projects at Électricité de France (EDF), showed pictures taken in China and shared his wonderful memories of working with CGN; Michel Derdevet, professor of Sciences Po and the College of Europe, and Guillaume Moukala Same, economic research analyst at Paris-based think tank Asterès, shared their opinions of clean energy development and expectations of Sino-French energy cooperation.

Case | The TN project gives their first popular science lessons on campus

In May 2023, CGN Brazil Energy visited three primary and secondary schools to give lessons on wind farms. They introduced to the students the basic information about the company and the Tanque Novo wind farm, different types of power generation in different industries, how wind and solar energy is generated, and how to build a wind farm. It also plans to launch an Open Day for popular science activities and invite nearby residents, teachers and students to visit the wind farm on a regular basis.

Case | The Open Day in commemoration of the 10th anniversary of the BRI

On September 2023, in collaboration with the Friends of Silk Road Club of Malaysia, Edra Power Holdings Sdn Bhd, a subsidiary of CGN Energy International, organized an Open Day event to celebrate the 10th anniversary of the BRI. Lin Shiguang, the Political Counselor of the Chinese Embassy in Malaysia and more than 100 Malaysian university students were invited to visit CGN's EMPP. At the subsequent forum themed on "The BRI and the Malacca Blueprint for Strategic Development", the company had in-depth exchanges with local government and youth representatives.

About CGN

Company Profile

China General Nuclear Power Group (CGN) is headquartered in Shenzhen, Guangdong Province and is a central SOE controlled by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). As the mainstay of clean energy development in China, CGN actively implements national strategic requirements, develops the nuclear energy as its main responsibility and primary business, and focuses on strategic emerging industries. We adhere to brand leadership, strengthen the driving force of innovation to continuously improve our core competitiveness and core functions. We also ramp up efforts to develop new quality productive forces to promote high-quality development of clean energy. After more than 40 years of development, CGN has formed a "6+1" industrial layout, covering nuclear power, nuclear fuel, new energies, non-power nuclear technology, digitization, tech-based environmental protection, and industrial finance. The Group has 2 mainland listed companies and 3 Hong Kong listed companies to accelerate the pace towards a world-class clean energy group with nuclear energy as its characteristic. By the end of 2023, the total assets of CGN exceeded RMB 1 trillion, and the total installed capacity of clean energy exceeded 100 GW. Its scale has been among the ranks of super large central SOEs.

Listed companies

- CGN Power 01816.HK
- CGN New Energy 01811.HK
- CGN Mining 01164.HK
- 003816.SZ
- CGN Nuclear Technology 000881.SZ

Overseas business development

Operating subsidiary or region	Installed capacity (MW)
Edra Power Holdings Sdn Bhd	6,869
CGN Korea Energy	2,722.1
CGN Europe Energy	2,337.5
CGN Brazil Energy	1,627.8
Other	72.0

The "6+1" Industrial Layout

Nuclear power

A key pillar business

- Steadily promoting the batch construction of Hualong One with high quality.
- 27 in-service units with an installed capacity of 30.568 GW, accounting for 53.6% of the installed capacity of in-service units in Chinese mainland.
- 11 nuclear power units under construction at home with a total installed 13.246 GW.
- On-grid power generation from nuclear power in 2023 was 214.146 TWh.

Nuclear fuel

A pillar for the development of nuclear energy sector

- Investing in the construction of Husab Uranium Mine in Namibia.
- Actively building diversified procurement channels and shaping a nuclear fuel supply system with CGN characteristics.

*The figure is as of the end of 2023

New energies

A key pillar business

- 618 new energy projects in China with a total installed capacity of 45.2363 GW; 73.406 TWh of on-grid power generated from new energy in 2023.
- 48 new energy projects outside China with a total installed capacity of 13.63 GW under construction or in operation, covering 16 countries with 46.275 TWh of on-grid power generated from new energy.

Non-power nuclear technology

A pillar business

- A special electronic accelerator and irradiation reactor has been developed for sewage treatment in collaboration with Tsinghua University.
- A total of over 600 electron accelerators (sets) have been produced and sold, ranking among the top of domestic nuclear technology applications.
- 18 electron beam irradiation centers in China, equipped with 62 electron accelerators (sets) with a total power of 5,160 kW.
- Globally advanced proton therapy technology has been introduced to promote the localization process of this technology on all fronts, and three proton therapy center projects have been signed and implemented in Shanghai, Yangzhou, and Chengdu respectively.

Tech-based environmental protection

A priority business

- 1.05 million tons of daily water supply and drainage capacity.
- 240,000 tons of hazardous solid waste treated each year.
- 18.68 million m^3 of biogas produced each year.
- 183,500 tons of organic fertilizer produced each year.

Digitization

A priority pillar-to-be business

- Have successfully developed FirmSys, China's first proprietary nuclear-class distributed control system (DCS) .
- The DCS system has been applied to 23 nuclear power in operation or under construction in China, , which indicates that China has entered the stage of industrial application of home-grown nuclear- class DCS.

Industrial finance

A "booster" to industrial development

- Becoming a "booster" to industrial development, an incubator for emerging businesses, an accelerator for technological innovation and an magnifier for capital appreciation to underpin the high-quality development of CGN's six businesses in the real economy.
- Leading-edge research on new technologies, industry patterns and modes and development opportunities around the clean energy sector.

Our Footprints in 2023

CSR Data

	CSR performance	Stakeholders
Sound business	› Operating income: RMB 149.8 billion › Overseas operating income: RMB 37.2 billion › Ratio of overseas operating income: 24.85%	Shareholders and employees
Safe development	› 77.5% of NPPs achieved the world's advanced level in WANO indicators, and the average capacity factor of CPR units reached 92.3% › Number of level-2 or above incidents defined in the International Nuclear and Radiological Event Scale: 0 › Incidence of occupational disease among employees: 0	Employees and contractor employees
Low-carbon development and environmental protection	› On-grid power generated from clean energy: 324.672 TWh › On-grid power generated from clean energy equivalent to reduction of 97.63 million tons of standard coal consumption › On-grid power generated from clean energy equivalent to the reduction of 260 million tons of carbon dioxide emissions	All
People first	› 5,310 new employees hired › Total employee training hours: 4,742,000 hours › Average training hours per employee: 101 › Employee training coverage: 100%	Employees
Community engagement	› Direct investment in assistance funds for rural vitalization: RMB 373.7974 million › Training 4,172 primary-level management personnel › Building two demonstration sites for rural vitalization	Communities

Awards for high-quality development

Sound business

› CGN was rated A in the business performance assessment by SASAC for the tenth consecutive year, received the title of "Benchmark Enterprise" in the special assessment of the SASAC's Double-hundred Action for Reform of SOEs, and rated A in the SASAC assessment on the effects of three-year action plan for SOE reform

› CGN's "Smart Financial Sharing" scenario was awarded the second prize in the State-owned Enterprise Digital Scenario Innovation Competition of the SASAC

› The Innovative International Communication: Building an Interconnected New Silk Road for Overseas Generation Z was listed in the Top 10 Excellent Cases of Chinese Enterprise Global Image Construction 2023

Safe development

› The commercial operation of the first rector of Hualong One in the western region was listed in the "Top Ten Mega-projects of China's Central SOEs in 2023"

› The 401.5 MW offshore wind farm project on Nanpeng Island in Yangjiang was awarded the title of "National Quality Project"

› YJNPC won the "20th National Quality Award"

› CGN Brazil Energy and Kuala Langat Power Plant (or KLPP) of Edra Power Holdings Sdn Bhd, respectively won the "2023 RoSPA Health and Safety Awards" from the Royal Society for the Prevention of Accidents in the UK

Low-carbon development and environmental protection

› The Hongyanhe Nuclear Power Base was selected as one of the "Eighth Batch of National Ecological and Environmental Science Popularization Bases"

› CGN Brazil Energy, a subsidiary of CGN Energy International, won the "Gold Certification from the Brazil GHG Protocol Program for Greenhouse Gas Emissions"

› CGN New Energy won the "IFF (International Financial Forum) Global Green Finance Award 2023"

People first

› CGN was selected as a "typical case of creating healthy enterprises" by the National Patriotic Health Campaign Committee

› CGN was listed into the "2023 China's Top 100 Best Employers" by Zhaopin

› CGN was awarded the title of "2023 Employer Excellence of China" and "Top Graduate Employer Brands" by 51job

Community engagement

› The EBI technology for food preservation project in Baise, Guangxi won the "Best Poverty Reduction Case" award at the Fourth Call of the Global Solicitation on Best Poverty Reduction Practices

› Two assistance projects, including the "Rainbow Project" and "EBI technology for food preservation project in Baise" initiated by CGN, were selected as excellent cases and demonstration projects in the *Blue Book on Supporting Rural Vitalization by Central State-owned Enterprises (2022)*

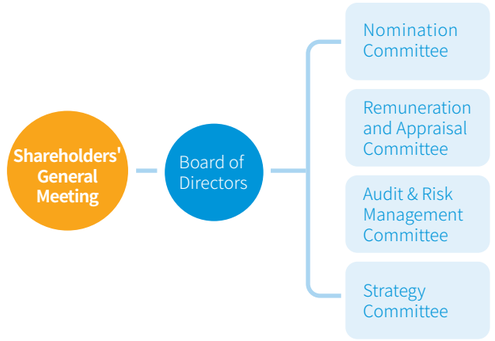
› Two projects, including the landfill leachate treatment project in Leye County, Guangxi, were selected as the "Best Practice Case of Listed Companies for Rural Vitalization" in 2023

› YJNPC was awarded the Silver Cup of "Red Cotton Cup for Poverty Alleviation in Guangdong" by the Rural Work Leading Group of the CPC Guangdong Provincial Committee

Corporate Governance

Board of Directors

In accordance with Chinese laws and regulations such as the Company Law, the Board of Directors of CGN has fully implemented the national requirements on the central SOE governance. We further regulate the development of the Board and continuously improve its standardization and efficiency. Under the Board, there are four specialized committees: Nomination Committee, Remuneration and Appraisal Committee, Audit & Risk Management Committee, and Strategy Committee. They will give full play to their respective expertise and advantages to effectively support the decision-making of the Board.



Board Building

Standardization

We fully implement the reform plan of the SASAC and continue to strengthen supervision while ensuring standardized operations. We have formulated the *Operational Rules for the Chairman's Special Meetings* to further define and standardize the scope and form of the Chairman's exercise of authority. In accordance with the new version of the *Rules of Procedure for the Board of Directors*, we have promptly revised the working rules for the four specialized committees, ensuring their standardized operations.

Differentiation

We strive to build a Board culture that is open-minded yet dares to raise questions, to ensure scientific and rational decision-making. We have increased efforts to urge the implementation of Board resolutions and follow-up actions, and established an after-meeting feedback mechanism. This has resulted in a four-tier mechanism for decision implementation, ensuring that Board resolutions and related requirements are implemented promptly and effectively.

Diversity

The Board includes one female director, and each director brings a wealth of experience in various professional fields such as nuclear power engineering construction and management, new energy development, power system management, engineering construction, overseas business, economic operations, financial management, internal risk control, safety management, and SOE supervision and management. The directors are all veterans in their respective field, and can faithfully, honestly, and diligently fulfill their responsibilities.

Board Operations

In 2023, the Board further strengthened its sense of responsibility and fully played its roles in making strategies and decisions, and preventing risks. The Board approved the *Mid-term Evaluation and Revision Recommendations for the Corporate Development Plan during the 14th Five-Year Plan Period*, and made 36 decisions regarding corporate reform and development, major investment and financing projects, and risk prevention and control. The Board led the management team to further enhance the annual assessment for major risks, continuously tracked the evaluation of investment projects, steered the Group towards high-quality development, and contributed to national energy security and economic stability.

4 Regular Board meeting

1 Interim Board meeting

4 Special report meetings of Board

14 Specialized committee meetings

1 Theory-discussing meeting of outside directors

6 Outside directors investigation

Board Composition

In 2023, there were nine incumbent directors, with changes to four of them.

Yang Changli
Chairman

Gao Ligang
Director and President

Li Li
Director

Wang Hongjun
Outside Director

Bi Yaxiong
Outside Director

Ma Li
Outside Director

Ning Fushun
Outside Director

Wei Suo
Outside Director

Huang Xiaofei
Employee Director

9 Board directors

7 Directors recommended by SASAC

including **5** Outside directors

1 Director recommended by Guangdong Hengjian Investment Holding Co, Ltd.

1 Employee director

Management Team

In strict accordance with the requirements of relevant laws and regulations, CGN has established a standardized organizational structure and management system to promote sustainable development through scientific and effective decision-making.

Yang Changli
Chairman

Gao Ligang
Director and President

Li Li
Director

Shi Bin
Vice President

Cheng Yongpin
Secretary of the Discipline Inspection Commission

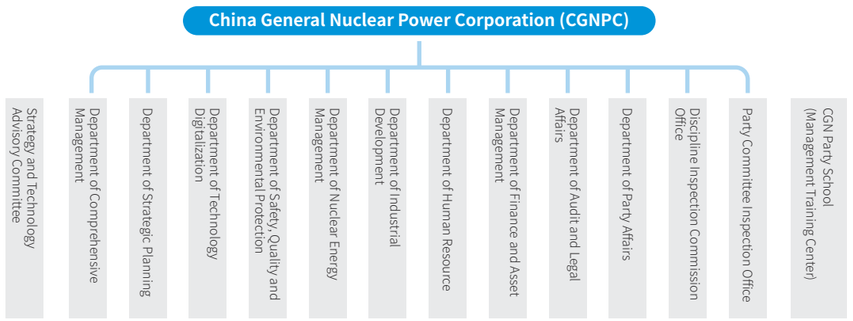
Pang Songtao
Vice President

He Haibin
Chief Accountant

Guo Limin
Vice President

Li Yilun
Vice President

Governance Structure



Compliance Management

CGN rigorously implements the *Administrative Measures for the Compliance of Central SOEs* and other relevant directives. Compliance management is comprehensively integrated into key areas such as technological innovation, industry control, and safety services. This integration aims to promote a culture where "everyone respects, learns, observes, and applies the law," strive for "full compliance by all employees," and provide strong support for the Group's compliant operations and high-quality development.

Deepening foreign-related compliance management

CGN organizes foreign-related enterprises to release cross-border data compliance guidelines. By conducting a tiered analysis of data, cross-border data, and regulations for cross-border data, CGN summarizes the principles and trends of cross-border data regulation. Based on case studies, CGN extracts key compliance points and guides foreign-related enterprises to safely and compliantly conduct cross-border data transfers, and adapt to relevant regulatory rules in different jurisdictions at home and abroad.

Cultivating the culture of compliance

Through case presentations, specialized lectures by outside lawyers, online training, and other methods, compliance training is provided to personnel in key areas and high-risk positions. Additionally, a variety of compliance-themed promotions are conducted for all employees through legal education columns, special posters, video broadcasts, quizzes, and creating special promotional pages, aiming to enhance overall compliance awareness.

Case | The Working Meeting on Compliance in 2023

On April 13, 2023, CGN held the Working Meeting on Compliance in 2023 at the Daya Bay Nuclear Power Base in Shenzhen. The meeting conveyed the spirit of the SASAC's meeting on promoting law-based governance and strengthening compliance management for SOEs in 2023. It summarized the achievements, challenges, and issues in CGN's legal compliance since 2022. The meeting also outlined the overall plan for law-based governance and compliance of CGN in 2023 and made key arrangements. Gao Ligang, President of CGN, attended and addressed the meeting.

Risk Management

CGN has established an enterprise risk management (ERM) system characterized by "unified leadership and hierarchical management." Through risk identification, analysis, and prioritization, combined with an assessment of risk tolerance, CGN balances risks and benefits to determine focal points and prioritize risks for control, thereby formulating response strategies.

Improving the risk management system

CGN has improved the *Enterprise Risk Management System* and five other policies, and clarified the research framework of quantitative indicators for major risk monitoring and the capacity building requirements for the risk management team. Besides, CGN has improved the major risk reporting mechanism, optimized the division of responsibilities and methods for investment risk assessments, and further standardized daily risk management.

Conducting major risk assessment

Through comprehensive risk assessments, specialized risk evaluations, questionnaire surveys, and interviews, CGN has fully identified major operational risks, then classified, consolidated, assessed, and prioritized them, and accordingly developed the "10 km, 10m" Risk List. The responsible units are specified, and control objectives and countermeasures are formulated to enforce regular risk management.

Identifying overseas operational risks

CGN analyzes changes to the risks at home and abroad, strengthens risk prevention and control for overseas operations, and organizes relevant companies to conduct thorough risk assessments for overseas projects. For medium- and high-risk projects, CGN establishes a risk management ledger and developed tailored risk mitigation measures for each of them to effectively prevent and resolve risks.

Sustainability Management

Always bearing in mind the mission of "develop clean energy to benefit mankind", CGN leverages its expertise professionally and efficiently, fully fulfills its corporate social responsibility (CSR) in strategy planning, production activities and routine management, and joins hands with stakeholders to march toward sustainability.

Sustainability Management

Opportunities and challenges

- Promote the effective upgrading in quality and rational growth in quantity of the economy with a focus on high-quality development.
- Make coordinated efforts to reduce carbon emissions and pollution, become greener, and boost growth, and continue to prioritize environmental protection and pursue resource-efficient, intensive and low-carbon growth.
- Actively and steadily move toward the carbon peaking and carbon neutrality goals, and gradually shift toward the system of controlling both the amount and intensity of carbon emissions.
- China's *Plan for Building the Modern Energy System during the 14th Five-Year Plan Period* proposes to actively, safely and orderly develop nuclear power.

Strategy

The Clean Energy Plus strategy

- Firmly pursue the goal of becoming stronger, better, and larger, increase investment in strategic emerging industries, and accelerate the implementation of the seven major initiatives for developing leading nuclear energy, ensuring nuclear fuel security, doubling the new energy capacity, making breakthroughs in digitalization, making breakthroughs in nuclear technology, strengthening the foundation for technology-enabled environmental protection, and launching future industries.
- Optimize the business layout and structure and efficiently coordinate factors with clean energy at the center and under the guidance of integration.
- Develop core technologies and core products on the basis of localization.
- Promote the rapid replication of core competencies with the support of specialization.
- Allocate factors more efficiently in a market-oriented way to enhance market competitiveness and stimulate momentum and vitality.
- Expand the development space through overseas development and enhance global resource allocation capacity and international influence.

CGN's NICER CSR Management Model

Based on years of CSR practices, CGN has created a unique mission-driven and transparent CSR management model, known as the NICER model. It is intended to strengthen the CSR culture, strategy, organization and management, promote more targeted and effective CSR practices in such areas as Nuclear Security, Influence Expansion, Community Engagement and Environmental Sustainability, and keep enhancing transparent Responsibility Communication with all sectors of society. More pragmatic CSR actions will lead to higher-quality, more efficient, equitable, sustainable and secure growth.

Apply the new development philosophy in full, in the right way, and in all fields of endeavor

Driven by the mission from the inside out

Develop clean energy to benefit mankind

Nuclear Safety
- Guard safe operation
- Ensure energy supply
- Building quality projects

Influence Enhancement
- Lead industry innovation
- Realize international development
- Collaborate with partners for win-win outcomes

Community Engagement
- Build a harmonious community
- Promote rural vitalization
- Help employees grow

Environmental Sustainability
- Develop clean energy
- Reduce carbon emissions
- Protect the ecological environment

CSR practices

Responsibility Communication

Brand identity

Driven by the mission from the inside out

Multi-party participation

Throughout the whole process

Integrated into strategy

Integrated into management

Integrated into culture

Integrated into organization

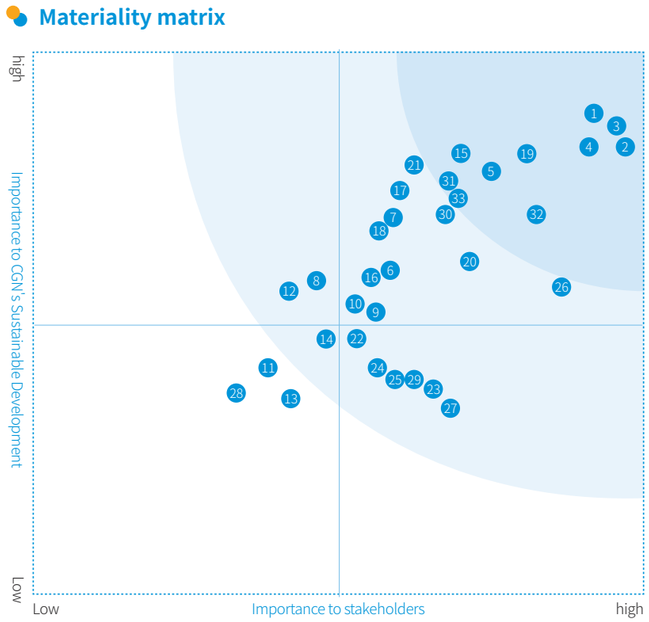
Managerial support

Materiality Management

CGN closely tracks the expectations and latest demands of stakeholders, and continues to carry out materiality assessment and analysis. Following the process of "identification, prioritization, evaluation, and review" , we promote materiality survey research and analysis, invite internal and external stakeholders to participate in online questionnaire surveys, and have collected 11,058 valid copies of the questionnaire. We have screened out key material topics covering the three major aspects of economy, environment, and society over "importance to stakeholders" and "importance to CGN's sustainable development", and provided key disclosure of these topics in the report.

As the highest decision-making body for material topic management, the Board is responsible for reviewing and evaluating the various issues and their impact, and authorizes relevant administrative departments in accordance with the CGN Governance and Authorization Regulations and the CGN Management and Authorization Regulations on the daily management and execution of sustainability operations. Meanwhile, we adhere to the reporting and review procedures, guide the centralized management departments to conduct review to improve the quality and efficiency of the reporting of topics, and continuously improve the management practices of key material topics.

Materiality matrix



1. Safety management
2. Engineering quality and safety
3. Safe operation
4. Personnel safety and health
5. Network security
6. Technology innovation strategy
7. Key technical breakthroughs
8. Digital transformation
9. Deepening reform and management innovation
10. Participation in industry standard development
11. Intellectual property protection
12. Improving industrial control capabilities
13. Responsible supply chain
14. Multi party cooperation
15. Environmental management
16. Tackling climate change and carbon emission management
17. Energy Management and energy conservation and emission reduction
18. Resource conservation
19. Waste management
20. Ecological restoration and biodiversity conservation
21. Environmental services
22. Equal opportunities
23. Employee rights
24. Employee development
25. Employee care
26. Rural vitalization
27. Community engagement
28. Transparent communication
29. Corporate philanthropy
30. business ethics
31. Compliant operation
32. Risk management
33. Sustainability management

Stakeholder Engagement

Stakeholders	Expectations and Demands	Communication and Response
Government	Compliant operation Ensuring nuclear safety Optimizing energy mix Maintaining and increasing the value of state-owned assets Abiding by laws and paying taxes according to law	Implementing national energy policies Improving corporate governance Subject to regulatory review Reporting regularly
Shareholders	Continuous and stable returns Transparent information	Sound business Information disclosure
Customers	Fair and transparent operational environment Stable supply of clean energy	Improving operation management Actively coordinating grid dispatching Strengthening communication
Partners	Fair partnership Building a responsible supply chain	Open cooperation and win-win development Transparent procurement
Employees	Guarantee of Compensation and benefits Health and safety Career development Employee care	Ensuring the basic rights of employees Protecting employees' occupational health and safety Providing abundant staff training opportunities and more development opportunities Carrying out employee care and cultural activities
Environment	Tackling climate change Waste management Biodiversity conservation	Promoting clean energy development Continuously optimizing environmental management Implementing biodiversity conservation initiatives Developing environmental protection industry and services
Communities	Engaging in community development Transparent communication Charity	Driving economic development and creating jobs Active and transparent communication Continuously carrying out charitable activities Supporting rural vitalization
Media	Transparent and open information	Transparent information disclosure Regular communication

SAFETY FIRST

Consolidating the Foundation for Development

The core of CGN strength lies in its principle of "Nuclear safety is our overriding priority"

With a strong sense of responsibility to the country, society, and the people, CGN always regards nuclear safety as the lifeline of its survival and development. We adhere to the basic principle of "safety first, quality foremost and pursuit of excellence" and make sure that all production, operation and management decisions and activities follow this principle, so as to continuously enhance our safety management and truly ensure nuclear safety.

Contributions to UN SDGs

77.5%
Ratio of units achieving the world's advanced level (top quartile) in WANO indicators

6,277
Consecutive days of safe and stable operation of Ling'ao NPP Unit 1 by December 31, 2023

92.3%
Average capacity factor of CPR units

Tighter Safety Management

Nuclear safety is the lifeline of the survival and development of a nuclear company. While thoroughly studying and implementing President Xi Jinping's key instructions on work safety, CGN coordinates development and safety measures. In 2023, we actively advanced the "Safety Management Improvement Year" campaign to steadily improve nuclear safety performance and fully guarantee nuclear safety.

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Accidents violating the "two eliminations and six zeros" SQE control targets

Safety management system

While in strict compliance with laws, regulations, guidelines, and standards such as the *Nuclear Safety Law* and the *Work Safety Law*, CGN continues to raise the awareness of the extreme importance of work safety and improve the SQE control system and governance capabilities, in order to consolidate the foundation of nuclear safety management.

Implementing safety responsibilities

The implementation plan for the inspection of work safety responsibility performance 2023 was issued, and the safety performance of 79 executives of 10 subsidiaries with potential first-class risks was inspected, and all subsidiaries were urged to play the primary role in implementing work safety responsibilities. Subsidiaries have each established an internal evaluation mechanism for the work safety performance of junior- and middle-level managers to ensure that the safety responsibilities are well implemented at the front line. The principal heads took the lead to build a sound all-staff work safety responsibility system with clearer division of responsibilities among team leaders, outsourcing labors, and contractors.

Identifying and eliminating safety hazards

The *Action Plan for Identifying and Eliminating Major Safety Hazards 2023* has been released, and 19 actions in 4 areas have been deployed by the Safety Committee to comprehensively inspect the safety of outsourcing workers and leased spaces, the implementation of responsibilities of workers engaged in hazardous operations, and the effectiveness of the all-staff post-based safety responsibility system. Specific and executable plans for handling work safety hazards by level and by type have been formulated and a taskforce has been set up for this goal, so as to comprehensively identify, classify safety hazards and deal with them accordingly.

Standardizing work safety control norms and procedures

In the field of nuclear power engineering, we have optimized HSE standards, international benchmark implementation standards and on-site atlas based on previous practices to explicitly further standardize the safety management requirements for related operations. As for offshore wind power, we have fully learned from on-site practices and released the *Offshore Wind Power SQE Standardization and International Benchmark Evaluation Manual (2nd Edition)*, which serves as an effective guide for the offshore wind power SQE management.

Strengthening emergency response

While optimizing its emergency response system and strengthening emergency technical support, CGN continues to implement the 24/7 standby duty system, and has enhanced measures for emergency response, and improved the preparation and all-weather response for nuclear emergency to make sure that it can effectively respond to nuclear emergency. In 2023, we effectively responded to six typhoons affecting China, namely, Doksuri, Talim, Saola, Haikui, Khanun, and Koinu, with no casualties or major property loss.

The new emergency command center has been put into operation. It is equipped with four functional modules, namely emergency command, technical support, emergency decision-making, and comprehensive support, and has greatly modernized CGN's emergency command with the help of information technology.

The emergency response for CPR1000 under both French and Chinese technical specifications has been standardized to improve the accuracy of emergency response.

Nearly **100** %
On-duty rate of nuclear emergency organizations

100 %
Percentage of authorized emergency response personnel receiving retraining

17
Basic nuclear emergency response training sessions organized

100 %
Coverage of CGN's operating NPPs participating in annual drills

Case | Effective response to the super typhoon Saola

In September 2023, in the face of the super typhoon Saola, CGN organized a series of effective response actions, with Gao Ligang, President of CGN, serving as the chief commander to coordinate the work. Before its landing, we activated the first-level emergency response and formulated the standard plans against typhoon, flood and thunder/lightening for NPPs in operation and under construction based on previous experience. When Saola made its landing, our staff stayed on duty for emergency response. In the aftermath, each company immediately conducted on-site inspections, cleared fallen trees, drained water in low-lying areas, repaired damaged doors, windows, and equipment, and resumed production in an orderly manner while ensuring safety. There were no injuries or major property loss during the whole process.

Building a culture of safety

Sticking to the work style of "strict compliance, prudent decision making, detail-oriented, and fact-based approach," we have launched a variety of activities to raise employees' awareness of safety in combination with the characteristics of our business, in an effort to establish a safe development concept, create a safety-conscious environment, and enhance the safety awareness of all staff.

Honors

- HYHNPC was awarded Excellent Organizing Unit for the Case of 2023 Nuclear Safety Culture Building by the China Nuclear Energy Association.
- 14 nuclear safety culture building cases from CGN's NPPs were commended for their high quality.

Regular safety training

We have organized staff to watch safety-themed videos such as the *Interpretation of New Work Safety Law, Prevention First*, and *Life First*. Subsidiaries have also organized occupational safety lectures and discussions on work safety that suit their specific business characteristics.

Promoting the safety culture in diverse forms

CGN has issued the nuclear safety culture manual, the nuclear safety culture convention as well as the code of conduct on nuclear safety for all employees, for managers, and for decision makers, respectively. We have organized activities such as the Nuclear Safety Culture Forum and the Nuclear Safety Culture Month. Besides, we have also launched a micro-video contest on the theme of nuclear safety, and jointly produced 63 micro-videos with suppliers, attracting over 620,000 views, creating an environment where everyone values and safeguards nuclear safety.

Building a global governance system

We have established a practice model for building the safety-conscious culture overseas and launched the Global Safety Month and Global Safety Workshop, so as to gradually establish a global HSE governance system with our own characteristics.

Case | The Work Safety Month themed activities

During the 22nd National Work Safety Month, CGN organized a series of activities with the theme of "Developing Safety Awareness and Emergency Skills Among All Staff." By holding seminars, lectures, and training, we have organized 1,876 related special training activities with 74,692 participants, and 1,439 routine safety training activities with 50,292 participants, stepping up in safety education on the staff.

For instance, DNMC carried out a series of activities such as "Be the Whistleblower against Safety Hazards," safety inspections for heatstroke prevention, and talks on work safety, to effectively raise the safety awareness and improve the emergency response skills among all staff.

Building a First-Class Brand

Thorough safety inspections carried out to ensure nuclear safety

To implement the instructions of President Xi Jinping, CGN has effectively translated the investigation and research results into measures for high-quality development and conducted safety inspections for four consecutive years at NPPs in operation and under construction. We conduct in-depth investigations and research at the front line and implement regular, standardized and long-term safety management measures in to ensure complete nuclear safety.

Regular safety inspections

To implement the instructions of President Xi Jinping, executives have formulated special research plans for its responsible areas. Focusing on key and hard issues, in-depth safety inspections were conducted at nine nuclear power bases, to urge all employees to truly put nuclear safety above everything else.

Standardized safety inspections

Safety inspections have been scheduled throughout the year and a uniform work plan has been formulated to establish a standardized closed-loop management process of "self-inspection by NPPs, on-site inspection, report preparation, rectification, and supervision." The safety inspection standards have been clarified and inspection assessment forms developed with special attention to key areas of nuclear safety. The approach of "centralized inspection plus flexible supervision" has been adopted, with external experts hired to provide insights from a third-party perspective regarding the work safety of each nuclear power base.

Sustainable safety inspections with closed-loop management

Through the large-scale work safety inspections, we have put forward targeted specific measures to enhance the management of each project. A list of rectifications has been made to clarify the timetable and roadmap of rectification for each unit and ensure effective rectification with closed-loop management. Good practices have been identified and promoted.

Yang Changli, Chairman of CGN, on an inspection visit to Yangjiang NPP

Quality Projects

Always adhering to the principle that "today's project quality decides future nuclear safety," CGN conducts lifecycle project quality management, with a particular focus on improving quality and efficiency. CGN comprehensively strengthens quality management, fulfills its quality control responsibilities, strives to build quality projects, and ensures efficient and safe operation of units.

Quality management

While Hualong One is under mass construction, CGN has launched the optimization of the integrated management system to improve its effectiveness, internal and external confidence, and management efficiency, so as to enhance the SQE management of the engineering construction process.

SQE responsibilities

We have established special committees for lifting and hoisting operations, fall protection, and tunnel construction as well as project-specific subcommittees. We have also improved the risk-oriented supervision model and made full utilization of digital means to strengthen supervision over the process and collaboration. Risk control over scattered operations and those during non-working hours has also been enhanced to keep safety risks well under control.

Quality improvements in key areas

In response to the lack of uniform standards in the steel–concrete hybrid tower industry and the varying technical levels of manufacturers, we have set up a joint acceptance check team to inspect the organizational structure, management system, internal control documents, and physical facilities of each project's tower prefabrication plants. The team also oversees the whole prefabrication process of the first piece and exercises quality control. Only after passing the acceptance check can it enter into mass production. Seven such inspections were conducted in 2023 with a 100% pass rate, effectively reducing the quality risks of tower prefabrication and installation.

Special quality improvement actions

Based on the characteristics and needs of engineering construction, we take actions to make improvements in light of the actual construction situations and common quality issues. A number of quality supervision reports have been published, such as *Control of Key Prefabricated and Basic Quality Points of Conduit Rack, Control of Key Quality Points for Ensuring Corrugated Pipe Space and Angle,* and *Gluing of C-shaped Horizontal Seams of Pieces*. The success experiences have been shared and promoted.

Honors

- YJNPC won the 20th National Quality Award from China Association for Quality (CAQ)
- The Offshore Wind Farm Project in Nanpeng Island, Yangjiang was awarded the National Quality Project Award by China Association of Construction Enterprise Management.
- The No.5 project of the Delingha PV Base in Qinghai won the title of 2023 National Equipment Management Benchmark Project in the Power Industry.
- The 49.5 MW wind power project of the Laojunmiao Wind Farm Phase I in Mulei, Xinjiang won the 2023 China Small- and Medium-sized High-quality Power Project Award.

11
Nuclear power units under construction in China

13.246 GW
Installed capacity in total

12 GW +
Capacity of new energy projects that started construction in China

10 GW +
Newly added capacity, both record high

Both hitting record highs

Key engineering projects

Nuclear power projects

- Unit 3 of Fangchenggang NPP met the requirement for commercial operation
- It took Unit 2 of San'ao NPP only 20.9 months from the start of construction to dome hoisting.
- It took Unit 1 of Taipingling NPP only 48 months from the start of construction to cold test.
- The civil construction around the nuclear island of Unit 5 of Lufeng NPP is progressing as scheduled.
- Units 5 and 6 of Ningde NPP and Units 3 and 4 of Taipingling NPP were approved for construction.

Nuclear fuel project

- The Advanced Fuel Development Center project completed civil construction and phased commissioning, both without materials and with only lean materials.

New energy projects

- The 3 GW wind power project of CGN Hinggan League, China's largest onshore wind power base in operation, achieved full-capacity power generation.
- The 1000MW offshore wind power project of CGN in Huizhou Port, the first gigawatt--level offshore wind power project in the Guangdong-Hong Kong-Macao Greater Bay Area, achieved full-capacity power generation.
- The wind farm project in Jimunai, Xinjiang, CGN's first source-network-load-storage project, was connected to grid for power generation.
- CGN Zhaoyuan 400 MW offshore photovoltaic project in Yantai, China's first large-scale nearshore pile-fixed photovoltaic project, started construction.
- The Baise 120 GW pumped storage hydropower (PSH) project in Guangxi, the first large-scale PSH project independently developed and constructed by CGN, got approved and prepared for construction.
- The TN wind power project in Brazil achieved full-capacity power generation.

Case | The CGN 3 GW wind power project at Hinggan League achieves full-capacity power generation

On December 10, 2023, as one of the first large-scale wind and solar bases built in China's desert and gobi areas, the 3 GW wind power project in Hinggan League, Inner Mongolia achieved full-capacity power generation, becoming China's largest onshore wind power base in operation. The project installed 701 units in Hinggan League to supply more than 10 TWh clean power each year, equivalent to reducing about 2.96 million tons of standard coal consumption and about 8.02 million tons of CO_2 emissions, as well as to adding about 22,500 hectares of afforestation. The project thus will generate huge economic and ecological benefits.

Operational Safety

NPP operation

Always following the basic principle of "safety first, quality foremost and pursuit of excellence," CGN keeps strengthening safe operations of NPPs in operation and new energy projects and ensures safety and stability with lean O&M, so as to continuously improve safety performance.

In 2023, CGN put one nuclear power unit into commercial operation. All the 27 in-service nuclear power units are in safe and stable operations.

Guaranteed energy supply

CGN has formulated in advance a comprehensive and detailed power supply plan, and organized power plants to optimize their maintenance plans during crucial periods to ensure the capacity of units in peak seasons.

Stable, orderly power generation

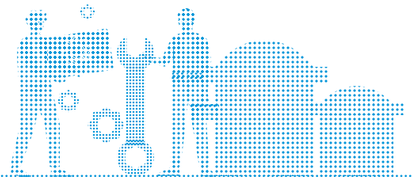
At nine NPPs in operation and under construction, CGN has organized in-depth investigations into safety risks and hazards, particularly turbine trips and reactor trips, ensuring the unit risks are well monitored and managed.NPPs are urged to eliminate major and common safety hazards and defects timely and properly, in order to ensure the safe and stable operations of units.

Better outage performance

Under the goal of the "Excellent Operation 2025," CGN doubles down on technological innovation and management improvement, and has effectively coped with the challenges of record-high outage workload and overlapped outages of multiple rounds. We have made breakthroughs in several outage tasks with excellent performance. In particular, in 12 rounds of outages, we had zero safety accidents and zero quality accidents, and the number of safety accidents per 100 outage days dropped by 8.3% compared with that of 2022. The Group's first outage in the past thirty years has been completed with high quality, so have 14 major renovations, such as that of DCS.

19
Outages completed with high quality

25.08 days
Duration of each outage on average



27
In-service nuclear power units

89.4%
Average capacity factor of in-service units

92.3%
Average capacity factor of in-service CPR units, at the world's advanced level

77.5%
Ratio of units achieving the world's advanced level (top quartile) in WANO indicators

74.7%
Ratio of units achieving the world's excellent level (top decile) in WANO indicators

6,277
Consecutive days of safe and stable operation of Ling'ao NPP Unit 1 by December 31, 2023

Meet our model workers

Safeguarding the safety of nuclear power units

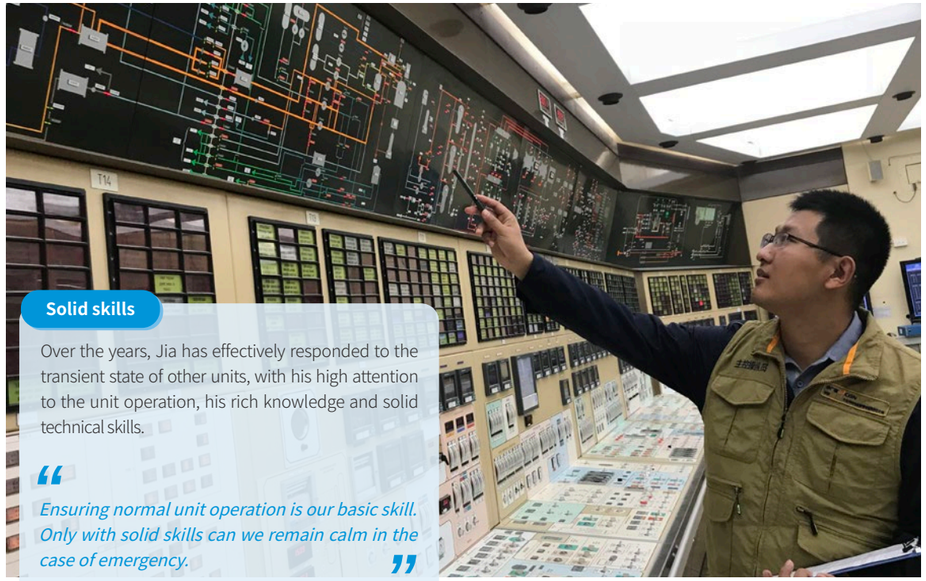
Jia Zhengjun is a chief operator at DNMC. In the past decade since he joined the company in 2011, he has devoted himself to safeguarding the safety of units while continuously improving his professional skills.

Successful plan implementation

To replace valve positioners of the GRE system with reduced power in order to eliminate defects during the company's first extended operation, Jia Zhengjun and his team had several brainstorming sessions to study the characteristics of the extended operation and participated in multiple drills. Finally, they successfully implemented the control plan, eliminated safety hazards for the subsequent extended operation of units, created favorable conditions for the flexible adjustment of outages, and accumulated valuable experience in load control during extended operation.

Dedication to work

The once-in-30-years outage and renovation project of the Daya Bay NPP was of overriding importance, but the challenge was unprecedented. Jia spent his spare time on the review and acceptance check of the DCS transformation. He edited over a hundred DCS transformation specifications, identified issues, and proposed more than 200 countermeasures. He won the first prize in safety hazard investigation of the special award for Daya Bay NPP's once-in-30-years renovation.



Solid skills

Over the years, Jia has effectively responded to the transient state of other units, with his high attention to the unit operation, his rich knowledge and solid technical skills.

"Ensuring normal unit operation is our basic skill. Only with solid skills can we remain calm in the case of emergency." said Jia, which is exactly what he does.

Safe operations of new-energy projects

Committed to lean management, CGN strengthens the SQE management system and ensures safe operations with the support of technological innovation and safety technologies.

Enhancing supervision and management

The SQE performance inspection mechanism has been optimized, and classified inspections are conducted on all 8,480 employees of CGN and performance review on all middle-level managers in 36 regional companies/business divisions. Two CGN-level comprehensive safety inspections have been conducted, covering all plants and project sites.

Empowering safety with technology

Through technological innovation, we have gotten rid of major operational risks in offshore wind farm installation and construction on mudflat. Also, we have improved intrinsic safety by using AI to identify and warn against violations, thus timely removing unsafe equipment conditions and human behaviors.

Cultivating a more capable team

We have developed 25 new energy SQE business standard courses to well satisfy the needs of safety supervision teams. The SQE awareness and skills of employees at all levels have been enhanced through activities including trainings and competitions which are organized inside and outside the Group, and online and offline.

Honors

- EMPP in Malaysia won the 2023 POWER Top Plant Award.
- The Daesan Power Plant in the Republic of Korea achieved 5,000 days of safe and accident-free operations, becoming the best role model of safety management among local power plants.

CGN's utilization hours of wind and solar enegy is

4.5%

higher than the industry average

Occupational Health

CGN strictly implements national regulations governing occupational safety and health and the occupational health management responsibility system. We continue to improve the occupational health management system and actively respond to the *Healthy China Action Plan (2020-2030)*. Each subsidiary is encouraged to participate in the Healthy CGN initiative and always put the safety and health of employees in the first place.

0

Occupational disease incidence rate

14

Best practices jointly voted by the National Health Commission and the China Enterprise Confederation across the Group for building healthy enterprises

All subsidiaries (excluding newly established ones) have passed the **ISO 45001 occupational health and safety management systems certification.**

Strengthening occupational health oversight and management

We have organized our subsidiaries to formulate their *Key Work Plan for Occupational Health Management in 2023* in a coordinated manner. Regarding the key areas of occupational health management, 14 specific tasks have been established, with focus on the standardization of the occupational health management system, the control of occupational diseases at the source, and occupational health oversight and management. The key work for occupational health in 2023 has been clarified, arrangements made, and management standardized.

Keeping occupational hazards under strict control

We work to ensure that the occupational disease protection facilities are designed, built and put into use simultaneously with the main engineering facilities. We also optimize the design, provide construction services and conduct strict acceptance check to control occupational hazards at the source. The control of radiation sources is tightened during the construction of each NPP, and materials with minimal activation products are preferred. Once put into operation, each NPP will set up a taskforce for managing radiation sources, and apply new shielding to control on-site radiation levels.

Always following the principle of ALARA - "as low as reasonably achievable", we monitor and effectively control employees' personal radiation doses in real time through the radiation work permit system and the personal dose control system, to ensure that it is always under the set limit.

Enhancing support for contractors in occupational health management

We provide training for contractors' part-time occupational health management personnel to enhance their ability to independently manage their staff' s occupational health. We also inspect contractors' occupational health management system and their occupational health examination to ensure that the contractors have effectively performed their responsibility of occupational disease prevention and control.

Via the Occupational Health Surveillance System (OHSS) independently developed by CGN, each NPP conducts comprehensive occupational health management of employees (including contractors) exposed to occupational hazards, reviews their occupational health examination results based on their actual exposure and safety management requirement, and digitizes the surveillance process.

Raising awareness of occupational health

We provide targeted training to meet the different needs of key responsible persons, occupational health management personnel, and ordinary employees, to ensure that managers are equipped with the knowledge and skills of occupational health management, and employees are familiar with the main occupational disease hazards they are exposed to and the protective measures taken in their workplace.

Case | The Health Management Studio of NDNPC

NDNPC has opened a health management studio which conducts daily self-help therapy, special therapy for outage workers, and Sanfutie therapy, and invites doctors to give free medical consultations and health lectures. It is aims to help employees develop a healthy lifestyle, alleviate common diseases such as cervical spondylosis and lumbar spondylosis, and learn how to prevent and reduce the occurrence of diseases.

Case | Health care activities

To raise employees' health awareness and improve their health preservation knowledge, dietary and exercise routines, and thus live happily, CGN's labor unions at each level organized over 10 health care activities such as health report interpretation, health knowledge promotion, disease prevention, TCM consultation, and physical examination. They distributed health care kits to all employees over 50 years old and provided TCM consultations in different areas to help employees better understand their own physical conditions, proper medication and health knowledge, and improve their personal health management.

INNOVATIVE DEVELOPMENT

Empowering the Future with Technologies

The core of CGN strength lies in its adherence to independent innovation

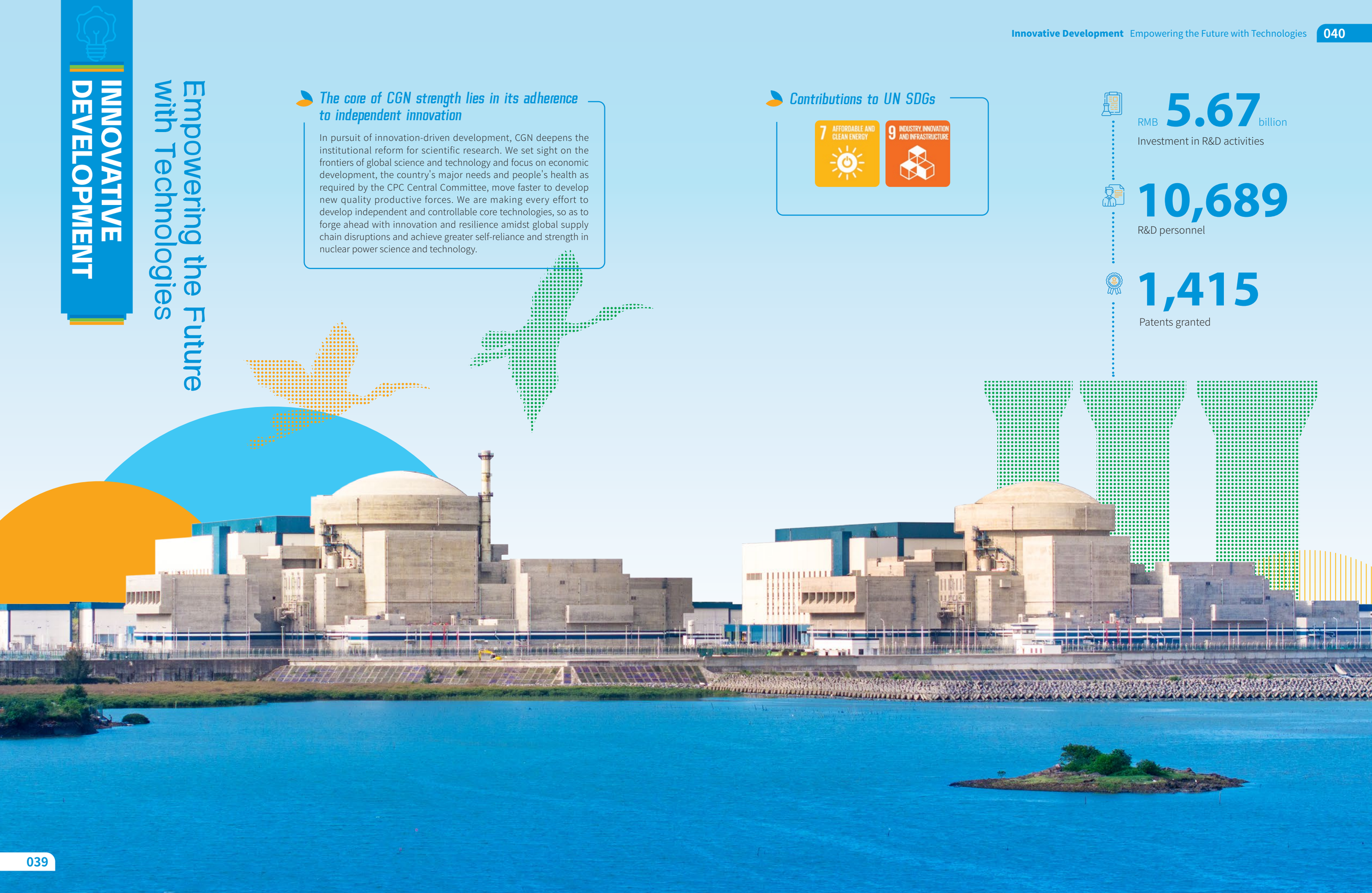
In pursuit of innovation-driven development, CGN deepens the institutional reform for scientific research. We set sight on the frontiers of global science and technology and focus on economic development, the country's major needs and people's health as required by the CPC Central Committee, move faster to develop new quality productive forces. We are making every effort to develop independent and controllable core technologies, so as to forge ahead with innovation and resilience amidst global supply chain disruptions and achieve greater self-reliance and strength in nuclear power science and technology.

Contributions to UN SDGs

RMB **5.67** billion
Investment in R&D activities

10,689
R&D personnel

1,415
Patents granted



The Innovation Momentum

To constantly improve the ability of independent innovation, CGN consolidates the foundation for innovation through institutional reform and gathers innovation forces through open collaboration. Benchmarking against advanced technologies of world-class enterprises, CGN strives to seize the innovation momentum and generate new quality productive forces.

R&D capability enhancement

The technological innovation system

To seize the strategic initiative, CGN focuses on building its core capacity, and has optimized the positioning and division of responsibilities of subordinate scientific research institutions to form a cascade layout. We have strengthened opening up and cooperation and built both tight and loose circles of friends as well as an industry-university-research institute-user collaboration system for scientific research that features a big network with a small core.

The technological innovation policy

We try our utmost effort to provide preferential policy support to deserved projects and improve the technological innovation policy system. We have implemented project- and team-based operation, improved the full-process management of scientific research projects, and issued policies for the certification and application of scientific and technological achievements and the post-evaluation management of scientific research projects to better commercialize and apply the achievements and manage their evaluation. We have also formulated policies to make R&D expenses equivalent to profit recovery and give bonus to technological innovation achievements, etc., with the aim to strengthen assessment and its long-term value and encourage member companies to increase their efforts in technological innovation.

Cultivation of scientist and technologists

While undertaking major R&D projects, we accelerate the cultivation of strategic, backbone and young scientists and technologists. We have formulated individualized training plans for cultivating academicians, improved the administrative measures for chief experts, and newly appointed 13 chief experts. To attract targeted talents, we have conducted the first open recruitment for high-caliber talents over the globe. Four of our employees were selected into the key talent programs of the SASAC, 12 high-caliber specialists were recruited, and 19 more were recruited in a flexible way. To accelerate the cultivation of young scientists and technologists, we have revised the appointment system for professional technical positions to encourage young scientists and technologists to form teams and shine.

Case | Training highly-skilled NPP O&M specialists

CGN Operations regards the cultivation of skilled specialist as an important strategy for high-quality development. To improve the training of skilled specialist, it has established an education and training committee and improved internal policies such as the Occupational Skill Level Accreditation Administration and the Administration of Core Employees. It has also built skills training facilities such as the skill training center and the human error prevention training center. Over 500 in-person training courses and over 300 online courses have been developed. Besides, it leverages the exemplary role of highly-skilled specialist and adopts the "master-apprentice" model to accelerate talent cultivation.

2 Master craftsmen

1 Winner of the China Skills Award

7 National-level technical experts

National Outstanding Contribution Award for Skilled Talent Cultivation

Sci-tech innovation cooperation

CGN maintains good partnerships with many research institutions, including the Chinese Academy of Sciences, the China Academy of Engineering Physics, the National Natural Science Foundation of China, Tsinghua University, Harbin Institute of Technology, and University of Science and Technology Beijing. And the partnership has been tightened in recent years through the establishment of joint ventures, joint research institutes, and joint laboratories. In 2020, the Group established the Joint Fund for Enterprise Innovation and Development in collaboration with the National Natural Science Foundation of China, released its R&D research demands, and solicited proposals from research institutions nationwide. The cooperation agreement was renewed at the end of 2023. The Group has signed a framework agreement on technology cooperation with the Chinese Academy of Sciences. The two convene technology cooperation meetings regularly to share their research achievements and market demands.

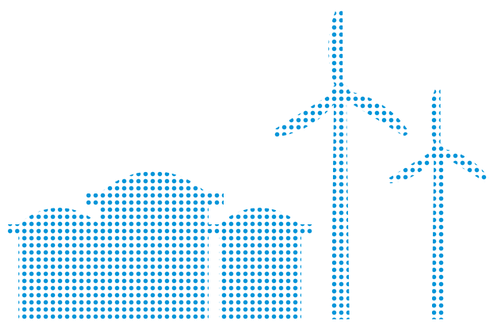
RMB **5.67** billion
Investment in R&D activities

42
National-level specialists and professionals

10,689
R&D personnel

Three innovation hubs

In response to China's regional development strategy and the demands of the Group's technological innovation, CGN has, based on its location, established three innovation centers. The first is the South China Atomic Energy Science and Technology Innovation Center in the Guangdong-Hong Kong-Macao Greater Bay Area, aiming to serve the nuclear energy and nuclear fuel industry. The second is the Yangtze River Delta Emerging Industry Technology Innovation Center, to serve industries related to digitization, nuclear technology application, and technology-enabled environmental protection. The third is the CGN New Energy Future-oriented Industries Technology Innovation Center in the Beijing-Tianjin-Hebei region, to serve the new energy industry. In addition, the Group's National Key Laboratory of Nuclear Power Safety Technology and Equipment was put into operation after being restructured in 2023.



Case | Accelerating the development of the innovation center in the Yangtze River Delta Region

CGN continues to promote the development of the Yangtze River Delta Emerging Industry Technology (Digitization) Innovation Center. The High-end Industrial Control Research Institute (under construction) was inaugurated under the Center and it has been included into the system of national advanced technology application and recommendation centers. The Center has 13 innovation laboratories, with over 200 research projects carried out each year. It is facilitating key and core technological breakthroughs to lay a high-quality foundation for the further R&D of cutting-edge nuclear technology, so as to seize strategic initiatives.

Main innovation achievements

Hualong One

- Owned by CGN, it is one of the third-generation NPP models widely accepted in the world' s nuclear power market.
- Single-unit layout, nominal power of 1.2 GW, safe and efficient.
- Projects under construction in China: Unit 4 of Fangchenggang NPP in Guangxi, Units 1, 2, 3, and 4 of Taipingling NPP in Guangdong, Units 1 and 2 of San'ao NPP in Zhejiang, Units 5 and 6 of Lufeng NPP in Guangdong, and Units 5 and 6 of Ningde NPP.
- It passed the European User Requirement (EUR) certification in October 2020 and the Generic Design Assessment (GDA) in January 2022.

FirmSys

- It is China's first proprietary nuclear-class distributed control system (DCS).
- It has been applied in 23 NPPs under construction in China and has saved construction costs by nearly RMB 10 billion. China has entered the stage of industrial application of home-grown nuclear-class DCS.

Smart robotics for nuclear power plants

Focusing on the O&M of NPPs in operation and the need for building new intelligent reactors, we have conducted research on core technologies in key fields, and made an effort to develop robots for special nuclear power operations to make NPPs safer, more economical, friendly and intelligent. We boast nearly 100 robot products used in nuclear island main equipment maintenance and fuel assembly operation and repair, etc. They have already been adopted by nuclear bases in Daya Bay, Yangjiang, Hongyanhe and Fangchenggang, etc. We have built world-leading sci-tech facilities and an open R&D system and test platform covering core processes such as the design and R&D of smart robots for NPPs, key technology research, test and validation.

Case | The nuclear power robot team unveiled at CINIE 2023

In November, 2023, six robots from CGN Power's nuclear power robot team, including a robot for clearing foreign objects off the secondary side of the steam generator and a multiple stud tensioning machine (MSTM), were unveiled at the Shenzhen International Nuclear Energy Industry Innovation Expo (CINIE) 2023. The clearing robot is able to steadily crawl up walls in confined spaces. It is equipped with a six-meter-long flexible and extendable mechanical arm and a HD camera, and can efficiently perform video scanning and cleaning tasks between the steam generator's secondary side and the 8mm heat transfer tubes, with an overall coverage rate of up to 95%.

"NATENE", a software package for independent nuclear power technology

SOPHORA, an online core monitoring system developed independently by CGN, is a core product of the NATENE software package for nuclear power technology. The system was applied to the first Hualong One (HPR 1000） unit in west China in March 2023. Its core technology, "an online method for measuring the three-dimensional power distribution of the cores", won the 24th China Patent Gold Award.

Fluid and static pressure shaft seal for nuclear main pumps

- As an important pressure boundary of the primary circuit of NPPs, the shaft seal is widely recognized as the most technologically sophisticated component of the nuclear main pump. The fluid and static pressure shaft seal independently developed by CGN for nuclear main pumps passed all performance indicators during the first refueling outage of the unit 6 of HYHNPC in Liaoning in July 2023.

Honors

- The "Research and Application of Advanced Dry Storage of Spent Fuel for Large PWR NPP" won the first prize of Scientific and Technological Progress Award from the China Nuclear Energy Association.
- The "Research and Application of Key Technologies for Independent Maintenance of Main Pumps" and the "Innovation and Practice of Hualong One 's GDA Project" won the first prize of Energy Innovation Award from the China Energy Research Society.
- The "Research and Application of Advanced Numerical Reactors" and the "Research and Practice of Key Technologies for Digital Collaborative Design of Nuclear Power Plants" were voted among the top ten demonstration projects by the National Energy Administration.
- The "Intelligent and Mobile Nuclear Power Warehousing Project" won the Excellence Award at the 5th China Industrial Internet Contest.
- The "Research and Application of Key Technologies of Robots for Efficient and Safe O&M of Fuel Assemblies of Large Nuclear Reactors" won the first prize of Shenzhen Scientific and Technological Progress Award.
- Another 4 subsidiaries of CGN Nuclear Technology were certified as specialized and sophisticated enterprises: CGN Juner (Zhejiang) New Materials Co., Ltd., CGN-Delta (Zhongshan) Polymer Co., Ltd., CGN-Top (Hubei) New Materials Co., Ltd. and Jiangyin Aikesen Bodun Polymer Co., Ltd.
- China Techenergy Co., Ltd. was selected into the list of candidates for world-class demonstration enterprises and specialized and sophisticated demonstration enterprises by the SASAC.

IPR protection

CGN earnestly implements policies such as the *Outline for Building a Strong Country in Intellectual Property (2021-2035)* and the *Guidelines on Promoting the High-Quality Development of Intellectual Property Work of Central SOEs*. The Group has formulated the CGN Administrative Rules on Proprietary Technology and upgraded such policies as the CGN Intellectual Property Administration Policy, to further standardize the creation, use, protection and management of intellectual property rights.

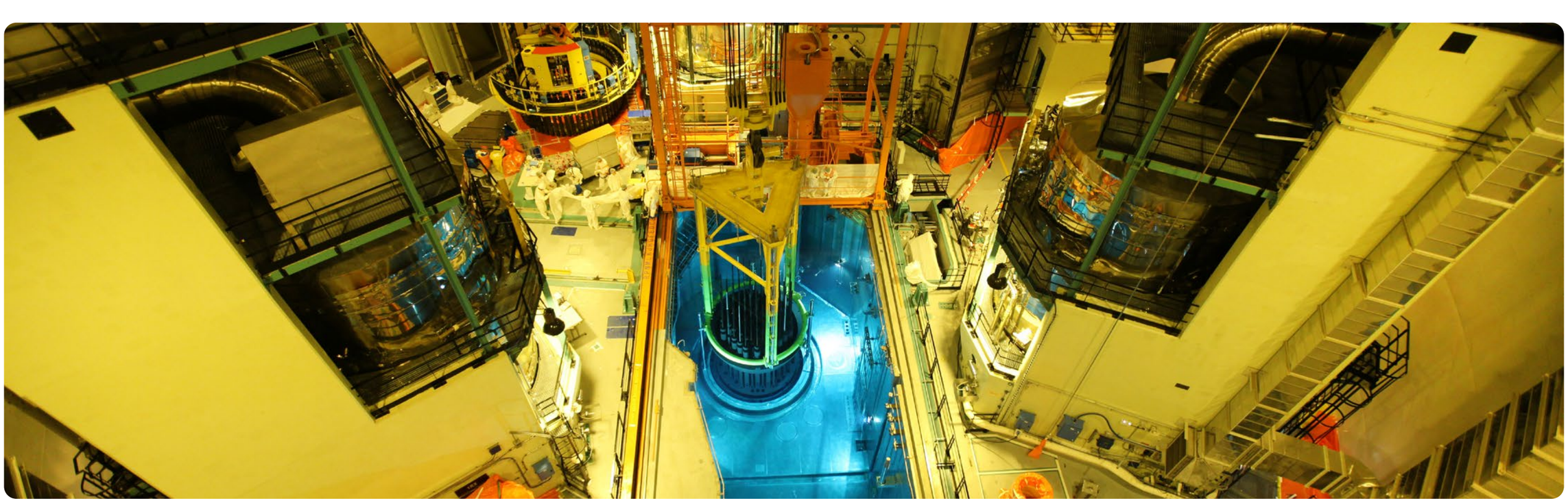
Honors

- "An online method for measuring the three-dimensional power distribution of the cores" won the 24th China Patent Gold Award.

635
Invention patents granted

5
China Patent Excellence Awards granted

768
Utility model patents granted



Digital Transformation

CGN takes digital transformation as a strategic measure to sharpen its future core competitiveness. Focusing on the deep integration of digital technology and the industry and its innovative application, we are accelerating digital transformation to make nuclear power safer and more reliable. We are also working to deeply integrate digital technology with 18 digital engineering projects in eight areas covering business management, nuclear energy, new energy, nuclear fuel, nuclear technology, environmental protection, finance, and the industry etc., thus empowering industrial transformation and upgrading.

Well-designed digital transformation

Targeting at digital transformation of the conventional industry, the digitalization industry, and infrastructure construction, CGN takes multiple measures to unleash the potential value of data elements and pursue digital innovation-driven development.

Case | The first CGN Digital Ecology Conference held in Shanghai

In December 2023, the first 2023 CGN Digital Ecology Conference was held in Shanghai. It gathered 115 experts, scholars, and technical backbones from subsidiaries of CGN, China Mobile, China Unicom, Huawei, Baidu, QAX and iFlytek, etc. at the CGN Yangtze River Delta Emerging Industry Technology (Digitization) Innovation Center. Under the consensus of "insight, empowerment, and collaboration," they probed deep into topics such as the development trends of the digital economy in the energy sector and the deep integration of emerging digital technologies with the energy sector, jointly contributing to the high-quality development of the digital ecosystem. Pang Songtao, Vice President of CGN, attended the conference and delivered a speech.

Top-level design

The plan of digitizing nuclear power has been formulated, and the path for promoting the digitization of nuclear power clarified. The data governance tasks have been divided into one main task and two auxiliary tasks, and the strategic direction and mode of "digital nuclear power" have been set. The plan of digitizing nuclear power has thus been improved in multiple dimensions.

Data governance

Data governance has been conducted over the source data of CGN's key functional indicators. More than 5,500 basic items, over 270 code items, and 203 key indicators have been sorted out and indicator data assets in 11 functional areas have been uploaded to the platform, ensuring full access to all business management data and laying a data foundation for efficient surveillance and lean management.

Work evaluation

A measurement and improvement system for digital transformation with CGN's own characteristics has been built. They system covers "6+1" industries and includes 10 sets of evaluation index models. Trial evaluations have been conducted on 25 subsidiaries to objectively analyze their level of digital transformation and existing problems. The closed-loop evaluation will help these subsidiaries make continuous improvement.

Communication platforms

Internal digital ecosystems and interactive platforms have been created to accelerate CGN's digital transformation. We have organized the first CGN Digital Ecology Conference, the 2023 Digital Transformation Scenario-Based Innovation Competition, and the Digital Transformation Skills Competition (RPA and YiDA), to fully stimulate internal vitality. A total of 379 scenarios have been identified for digital transformation.

Honors

- CGN passed the phase I acceptance check of the digital and intelligent supervision of state-owned assets organized by the SASAC, ranking first among all power generation enterprises.
- The research on numerical reactors by CNPRI and the digital and collaborative engineering design by CGN Engineering were voted among the Top 10 Demonstration Projects of Nuclear Power Digital Transformation by the National Energy Administration.
- CGN Engineering and NDNPC were selected as "Demonstration Central SOEs in Digital Transformation" by the SASAC.

Strong support for digitization

Based on and driven by data governance, CGN deeply integrates digital transformation with its endeavor to build a world-class demonstration enterprise, striving to improve production and operational efficiency and effectively empower industrial transformation through digitization.

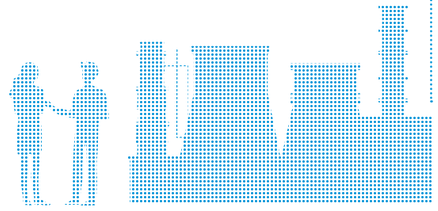
Digitized industry

To empower our core business with digitization, we have launched pilot projects on information platforms for key and sensitive components of NPPs and created digitization models through such core products as the "monitoring-warning-disposal-evaluation" smart construction site system of San'ao Nuclear Base, the digital nuclear fuel operation system for NPPs, the management system for NPPs' important and sensitive instrument control parameters, the fuel management system of NPPs, the intelligent operation platform for offshore wind power, the digital natural uranium supply system, and the intelligent treasury system, etc.

Digitized talent cultivation

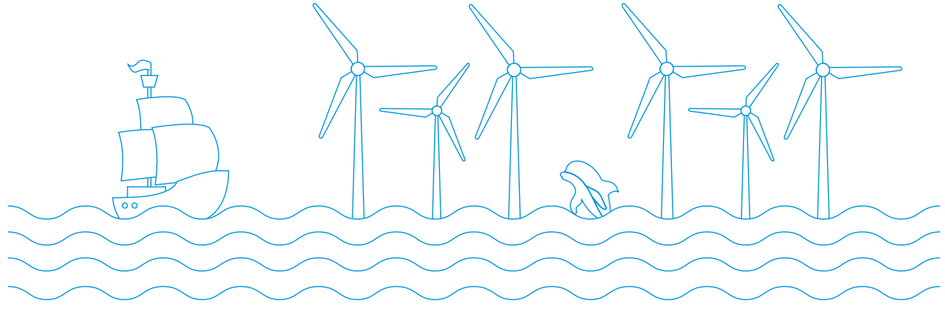
We have launched an intelligent talent profiling model project, which is able to achieve data connectivity across the human resources system through the comprehensive functions of "basic data + intelligent analysis algorithm + data visualization." It provides managers with comprehensive, accurate, and real-time talent profiles, ensuring that human resources management effectively supports business and strategic decision-making.

The project won the "Excellent Application Award," the highest award in the Intelligent Supervision Model Innovation Competition organized by the SASAC. It was recognized as valuable for extensive promotion and application in various levels of state-owned asset supervision agencies and SOEs.



Case | The intelligent operation platform for offshore wind power safeguards maintenance at sea

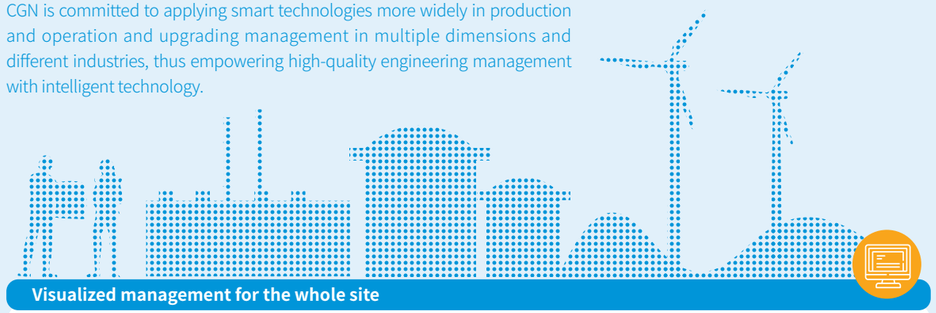
CGN New Energy continues to improve the intelligent operation platform for offshore wind power. Based on the platform's data collection and analysis results, over 520 sailing plans have been made and more than 700 maintenance tasks have been completed. The platform has simplified on-site work, optimized real-time forecasting and warning and enhanced the safety and efficiency of both crew and vessels. It is able to reduce the risks of offshore construction, prevent and control risks in a targeted manner, and effectively protect the safety of crew and equipment.



Building a First-Class Brand

The smart construction site system guarantees high-quality engineering management

CGN is committed to applying smart technologies more widely in production and operation and upgrading management in multiple dimensions and different industries, thus empowering high-quality engineering management with intelligent technology.



Visualized management for the whole site

The Intelligent Construction Site (ICS) platform created by CGN Engineering covers five aspects: safety, quality, environment, occupational health, and data intelligence. Over 30 functions of the platform have been put into use in projects under construction. The platform utilizes technologies including biometric recognition, personnel positioning, electronic fence and tamper-proof blockchain certificate to visualize the management of quality checkpoints in NPP construction. The use of video surveillance and AI can significantly enhance the safety of on-site operations. GIS, drone aerial photography, and automatic image stitching technologies are used to build a three-dimensional model of the entire plant to support project decision-making and digital display. With over 40 million pieces of data accumulated, the platform is capable of managing the data of over 90,000 workers, 30,000 tools, 6,000 facilities and pieces of equipment, and over 350 types of work forms, supporting the visualized management of the whole site.

Further standardized management

RPA (Robotic Process Automation) is CGN Engineering's "digital employee." A basic platform is built based on the business scenarios to develop key technologies such as AI expansion and cross-system data fetching. Twenty-four such "digital employees" made approximately 130,000 runs throughout 2023 for about 5,000 hours. Internal policies, processes, and supervision are also continuously improved to enhance quality and efficiency with intelligent technology.

More efficient file management

We have conducted in FCGNPC Phase II the pilot project of e-file archiving and e-record management, which is among the third batch of e-document archiving and e-archive pilot projects for engineering construction projects selected by the National Archives Administration of China. About 170,000 e-files in 21 subcategories of five major categories of nuclear power projects have been archived. The pilot project passed the special acceptance check by the National Archives Administration of China on December 15.

Business Layout

Integrating itself into the new development dynamic, CGN promotes market development in a coordinated way to seize the initiative and inject more momentum into sustainable operations.

Orderly implementation of nuclear energy projects

- We have made technological breakthroughs in and optimized the design of onshore small reactors, upgraded the standard design of nuclear islands, and passed the expert review organized by the China Nuclear Energy Association. We have developed more affordable technical solutions, met the goal of reducing costs by 10%, and completed the verification test for the key system.
- We have conducted strategic cooperation with Tsinghua University in the field of integrated shell-type reactor technology. CGN Clean Energy Technology (Shanghai) Co., Ltd. has been set up to develop and improve integrated shell-type reactors, design and provide technical services to nuclear islands, and manage the technologies.

Advance in the digitization industry

- We have optimized the overall technical solution for the integrated intelligent operation platform and initially finished construction. With 16 applications from two batches launched on it, the platform has been available for internal project owners and other nuclear power enterprises.
- We have formulated the industrial IoT solution for NPPs and the solution for the prototype verification platform. Based on the comprehensive technical solution of "two platforms and one network," we have come up with a basic version and a standard version of functional configuration for intelligent NPPs, which have both been approved by professional reviews. The basic-version system has been applied at CNNPC Phase II and the standard-version system at FCGNPC Phase III and SZNPC Phase I.

Breakthroughs in the new energy capacity doubling plan

We have introduced new energy development models in China and held on to our differentiated competitive edge. We have another 10 GW approved and filed for record and over 20 GW new energy reserves added, striving to reach the following targets in strategic emerging industries:

Thermal power	Obtained the quota of 875 MW for solar thermal plus projects in Gansu and Xizang.
Offshore wind power	Bid for the wind farm project in Guangdong and got a quota of 3.80 GW, including 1.4 GW from sea areas under provincial jurisdiction and 2.4 GW from sea areas under national jurisdiction.
Green power	Ranked first in the sellers' market from Bloomberg in terms of green power trade volume for three consecutive years.
Sand control	Solidly implemented the demonstration project of desert control in southern Xinjiang and the work plan for the five key processes to realize the greening goal as scheduled.

Case | New breakthroughs in the business layout in the hydrogen energy industry

To achieve China's carbon peaking and carbon neutrality goals and ensure energy security, CGN Industrial Investment Fund Co., Ltd. took the lead to complete the investment in hydrogen energy projects, with the focus on the R&D of proprietary leading liquid hydrogen storage and transportation technology in China. The 1-ton machine has passed trial operation tests, exceeding the design expectations across indicators. It has added a big asset to CGN's hydrogen energy business structure consisting of one main body, two wings, and three focal points. On the afternoon of June 26, 2023, He Haibin, chief accountant of CGN, attended the meeting commemorating the 15th anniversary of CGN Industrial Investment Fund Co., Ltd.

Case | An inspection visit to Hushan Uranium Mine

To mark the 10th anniversary of the BRI, Guo Limin, Vice President of CGN, visited the Hushan Uranium Mine in Namibia on May 12-13, 2023. He inquired in detail about the production and operational activities of the mine and had a meeting with staff representatives of the CGN Swakop Uranium.

Win-win Cooperation

Through "extensive consultation and collaboration for shared benefits," CGN actively engages itself in dialogue and cooperation with various stakeholders to build a transparent cooperation model with mutual trust, promote technological exchange and collaborative innovation, and jointly develop the clean energy industry.

High-quality supply chains

CGN has established a standardized, mature, and efficient supply chain management system, and upgraded management mechanisms based on actual operation conditions. The CSR performance of partners is also taken into consideration, to send the message of responsible operations and thus contribute to a fair and transparent environment for market competition.

Transparent and honest procurement

CGN implements open procurement whenever it should, and makes public procurement information covering all categories, all procurement methods, and the whole procurement process to subject to public supervision. We strictly follow the laws and regulations governing bidding and tendering activities. We work to ensure compliance throughout the procurement process by building a closed-door evaluation venue, a uniform expert database, and a wholly-digital bidding and tendering process.

Supplier communication

By holding supplier conferences and other activities, we work to create a platform for communication, experience sharing, and achievement display for both supply and demand sides. We encourage and nurture high-quality partners for long-term cooperation, advocate integrity, self-discipline and work safety. We communicate CGN's development trend and cooperation philosophy to suppliers to promote win-win cooperation in good faith with suppliers.

Standardized supplier management

CGN have formulated the *CGN Administrative Policy for Procurement Activities* and *CGN Administrative Measures for Supplier Management* to clarify supplier management principles, criteria for supplier selection, qualifications review, performance evaluation, and supplier exit. Besides, a tendering (administrative) center has been established to coordinate and further standardize supplier management.

Access control

We conduct necessary and reasonable control over the access of suppliers at different levels.

Suppliers are classified into four categories according to their relationship with CGN:

- strategic suppliers
- bottleneck suppliers
- key suppliers
- general suppliers

We strictly check the qualifications and original documents of newly-approved suppliers, and effectively control the number of suppliers for each category of goods. The review mainly includes their business conditions, commercial credit, relevant performance, completeness of their SQE system, technical level, and financial condition, to ensure that the selected suppliers can meet business demands.

Performance evaluation

We evaluate suppliers which have completed the contracts in different dimensions, and keep a record of their misconduct, if any, or blacklist them in the case of severe circumstance.

Supplier exit

We have established on the CGN e-commerce platform system a database of suppliers with misconduct and a corresponding punishment mechanism. We have specified requirements for restrictions or prohibitions. Suppliers who cause severe consequences or conducted serious misconducts will be blacklisted on a Group-wise or company-wise basis, depending on the severity of the consequences or behavior.

Industrial chain enhancement

Safe, stable industrial chains and supply chains are the foundation for the new development dynamic. CGN proactively plays its role as head of the industrial chains in technological innovation, industrial control, and safety support. With an open and collaborative mindset, CGN strengthens industry alliances through order-based cooperation, industry funds or think tank collaboration, and the integration of complementary industries. Also, we have initiated a joint R&D center for equipment localization.

Over the past 15 years since its establishment, CGN's joint R&D center for nuclear power equipment localization has seen a continuous growth in the number of its members, which is attributed to the mass construction of nuclear power projects. The number of members has increased from 50+ to 139.

50+ → **139**

We have greatly improved our capability of independently controlling over key technologies as the import substitution rate of Hualong One increased significantly from 64% to 95%+.

86.7% → **95%+**

Case | CGNEI Gas Turbine Power Generation Committee officially established

In November 2023, the launch ceremony of CGNEI Gas Turbine Power Generation Committee was held simultaneously in Kuala Lumpur, Malaysia, and Shenzhen, China. It gathered more than 100 representatives from industry associations, enterprises, and universities, to jointly seek the development of the gas turbine power generation industry. At the conference, CGNEI announced its Gas-fired Power Leadership program and Five Main R&D Directions.

Gas turbines are important for promoting the global transition to clean and low-carbon energy and achieving the carbon peaking and carbon neutrality goals. The committee aims to build a professional platform for gas turbine power generation collaboration, strengthen collaboration across the industrial chains, and improve the operation and maintenance level of gas turbines.

Cross-sector cooperation and exchanges

CGN conducts extensive industry exchanges and cooperation, and collaborates with internal and external partners to boost the coordinated development of key technologies and related industries. We promote common prosperity for industry partners by enhancing the leading role and the cohesion of the industry.

Signed the agreement on comprehensively deepening strategic cooperation signed with the Shenzhen Municipal People's Government

According to the agreement, CGN will focus on new energy, environmental protection, technological innovation, etc., and actively promote win-win cooperation in key projects for building the headquarters economy, promoting the application of nuclear technology, and building the hydrogen energy industry cluster. The partnership will contribute to Shenzhen's drive to build a pilot demonstration zone of socialism with Chinese characteristics and to the development of China's energy industry.

May 26

Signing the agreement in the witness of Meng Fanli, Party Secretary of Shenzhen, and Yang Changli, Chairman of CGN

Attended the 11th Guangdong, Hong Kong and Macau Power Industry Summit

At the summit, Yang Changli, Chairman of CGN, delivered a speech entitled "Embracing New Opportunities for Green Development to Create a Better Future for the Greater Bay Area," advocating pragmatic cooperation, systematic planning, and coordinated resource utilization to explore low-cost and high-efficiency paths to decarbonization.

June 1

Yang Changli receives on behalf of CGN the cup symbolizing the right to host the 12th Guangdong, Hong Kong and Macau Power Industry Summit from Richard Lancaster, CEO of CLP Holdings Limited.

September 6

The signing ceremony for The *Strategic Cooperation Agreement between the People's Government of Shanxi Province and China General Nuclear Power Corporation*

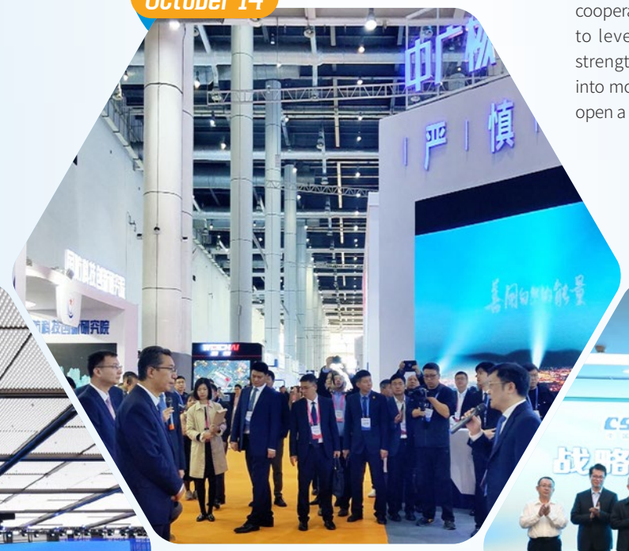
Attended the 2023 Taiyuan Energy Low Carbon Development Forum

With the theme of "Smart Energy for Green and Win-Win Future," the forum was jointly organized by the Ministry of Foreign Affairs, the National Development and Reform Commission, Ministry of Science and Technology, Ministry of Natural Resources, Ministry of Ecology and Environment, the SASAC, National Energy Administration and the People's Government of Shanxi Province. CGN was invited to attend the event and signed a strategic cooperation agreement with the People's Government of Shanxi Province, hoping to further strengthen cooperation in new energy, nuclear technology, and the use of technology for environmental protection and jointly fuel high-quality development.

Attended the 13th CIPF and the 24th WIPO-CNIPA Award for Chinese Outstanding Patented Invention

With the theme of "Intellectual Property Leading Industrial Digital Transformation," the 13th China International Patent Fair (CIPF) was co-hosted by China National Intellectual Property Administration and the People's Government of Liaoning Province and undertaken by the People's Government of Dalian Municipality. CGN and the other 231 exhibitors showcased a series of innovations and high-value patents and products in key areas. CNPRI won the 24th China Patent Gold Award for its "An online method for measuring the three-dimensional power distribution of the cores."

October 14



CGN showcases " Hualong One " and "NATENE", CGN's software package for core and fuel design, at its booth at the CIPF.

Signed the strategic cooperation agreement signed with CSSC

Gao Ligang, President of CGN, paid a visit to Yang Jincheng, General Manager of China State Shipbuilding Corporation Limited (CSSC), in Shanghai. The two exchanged views on how to further cooperation in nuclear power equipment and the new energy industry, and witnessed the signing of a framework agreement on strategic cooperation. The two expressed the willingness to leverage their respective resources and strengths, expand their strategic cooperation into more fields for mutual benefits, and jointly open a new chapter of pragmatic cooperation.

November 3

Pang Songtao, Vice President of CGN, and Sheng Jigang, Deputy General Manager of CSSC, at the agreement signing ceremony

GREEN DEVELOPMENT

Protecting Lucid Waters and Lush Mountains

The core of CGN strength lies in its commitment to green development

Serving as the mainstay of Chinese clear energy sector, CGN has actively acted on Xi Jinping' thought on ecological conservation. In pursuit of green development, active efforts have been made to develop clean energy, advance the transition of our energy structure and contribute to the achievement of China's 30·60 Decarbonization Goal. By doing so, we strive to make significant contributions to the harmonious coexistence of humanity and nature.

Contributions to UN SDGs

97.63 million tons

Standard coal consumption equivalently reduced thanks to on-grid power generated from clean energy

260 million tons

Carbon dioxide emissions equivalently reduced thanks to on-grid power generated from clean energy

0

Major environmental pollution

Response to Climate Change

At present, climate change emerges as one of the greatest challenges around the world. CGN seizes the strategic opportunities arising in high-quality development of economic society and the transition to green and low-carbon development in the energy sector. To follow the trend, we vigorously develop clean energy and leverage our advantages in innovation to facilitate the green and low-carbon transition of the economy and society. We aim to better serve China's 30·60 Decarbonization Goal(to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060).

Developing clear energy to realize low-carbon operations

Energy transition holds the key to achieving China's 30·60 Decarbonization Goal. CGN actively promotes a clean energy development pattern that balances the development of nuclear power and new energy, providing a continuous supply of clean electricity for economic and social development, and contributing to the green and low-carbon transition of China's energy sector.

Nuclear power

CGN actively advances nuclear power project development with a commitment to the principle of "developing nuclear power in an active, safe and orderly manner" steadily increasing the installed nuclear power capacity. Meanwhile, we continuously explore the comprehensive utilization of nuclear energy and summarize experience of the HYHNPC nuclear-powered heating demonstration project to steadily expand the scale of heating and make full use of our advantages in nuclear power as one of clean and low-carbon energy. In 2023, CGN's on-grid power generated by in-service nuclear power units reached approximately 214.146 TWh, a year-on-year increase of 7.95%.

New energies

CGN develops new energy as our pillar industry, covering a wide range of business types, including wind power, PV power, solar thermal, pumped storage, energy storage, hydrogen energy, and hydropower. As of the end of 2023, there were 618 in-service new energy projects at home, with an installed capacity exceeding 45GW. Moreover, there were 48 holding projects overseas, with an in-service installed capacity of 13.630 GW under construction, spanning 16 countries.

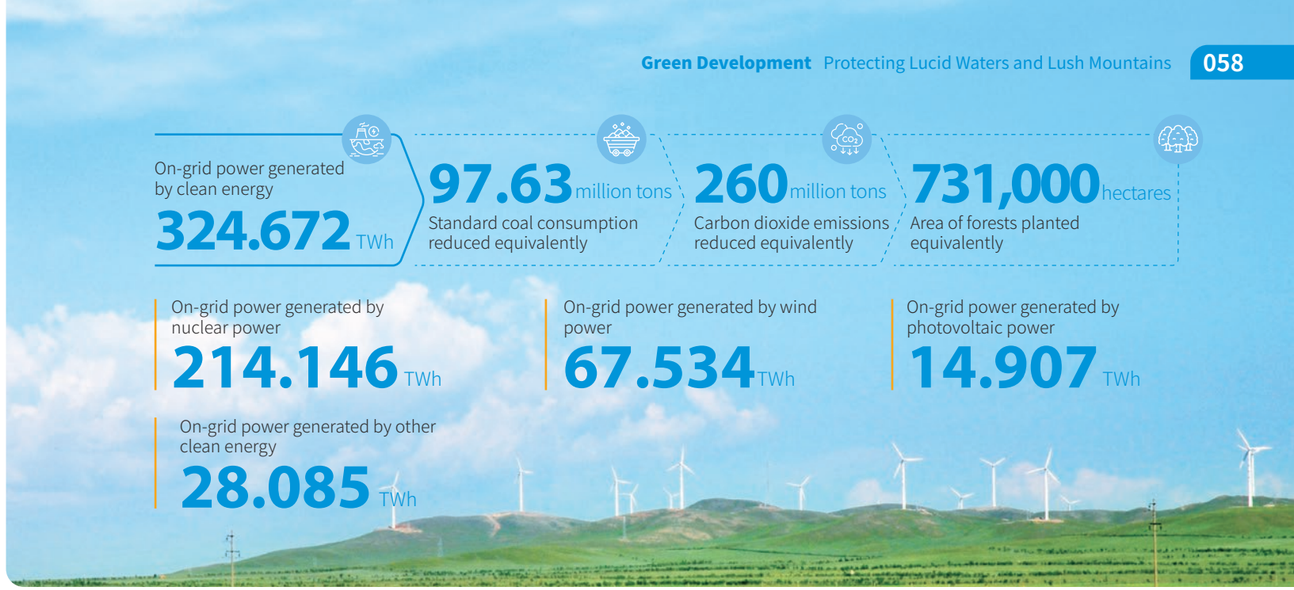
Case **Fangchenggang NPP's "nuclear +solar +wind+ energy storage" project starts construction**

On November 8, 2023, CGN officially started the construction of the first phase of the " nuclear +solar +wind +energy storage" green energy demonstration base project at Fangchenggang NPP, Guangxi. This project is the first of its kind in western nuclear power bases that combines nuclear power with new energy sources. It is an important step for Fangchenggang NPP to achieve the goal of zero carbon through the green energy construction of "nuclear power +comprehensive smart energies ".

According to the plan, the project will construct three onshore PV plants, one offshore PV plant, and one wind farm. It aims to create a "green and smart zero-carbon base" characterized by "nuclear power +comprehensive smart energies," in efforts to promote the large-scale consumption of clean electricity and deep synergy among source, grid, load, and storage, and contribute to China's 30·60 Decarbonization Goal.

Case **Participating in entrepreneur symposium on building the Yellow River basin ecological conservation and high-quality development pilot zone**

On June 1, 2023, the entrepreneur symposium on building the Yellow River basin ecological conservation and high-quality development pilot zone was held in Yinchuan, Ningxia. Li Yilun, Vice President of CGN, attended the symposium and signed a strategic cooperation framework agreement on behalf of CGN with the People's Government of Ningxia Hui Autonomous Region. Both parties will fully leverage their strengths in industry, technology, capital, talent, and resources to carry out comprehensive strategic cooperation in various areas, including the high-quality development of new energy, technological innovation, talent development, and environmental protection and governance in Ningxia. Together, they aim to create a new pattern featuring mutually benefit and win-win results.



Deepening green operations to achieve carbon reduction

In line with national energy conservation and emission reduction policies, CGN has organized multiple meetings to deploy key tasks for carbon peaking and carbon neutrality (energy conservation and emission reduction). We continuously strengthen operational energy conservation and consumption reduction management, urge our subsidiaries to pursue innovation in energy conservation and environmental protection technologies, and advance energy conservation and consumption reduction in construction, operation, office, and transportation, striving to improve energy utilization efficiency.

16
Subsidiaries completed the GB/T23331 Energy Management System certification.

Structured energy conservation and carbon reduction management

Conducting investigations on energy conservation and carbon reduction work

- We strengthen efforts in energy conservation and carbon reduction, clarifying the responsibilities of subsidiaries in finding out their own situation and enhancing fine management of energy conservation and carbon reduction in key areas. Activities such as "comprehensive investigation of energy efficiency of key products and equipment within the Group" and "carbon inventory surveys within 21 subsidiaries" have been carried out.
- We conduct carbon inventories to identify the sources of carbon emissions and potential for emission reduction in key subsidiaries. All subsidiaries have been encouraged to develop " work plans for energy conservation and carbon reduction " tailored to their specific realities. We have promoted the implementation of 35 key actions with significant emission reduction value and benefits according to the plan.

Establishing a sound energy conservation and carbon reduction management system

- We improve energy conservation and carbon reduction management systems and strictly implement energy conservation reporting systems. By urging key energy-consuming secondary subsidiaries to get the certification of the GB/T23331 energy management system, we see that energy conservation and emission reduction responsibilities are fulfilled.
- We carry out the project on establishing the methods and indicators of measuring the energy-saving effect, and conduct prospective research on energy conservation and efficiency evaluation in nuclear power, new energy, environmental protection, and other industries, so as to standardize the monitoring and statistical work of energy conservation and environmental protection indicators.

Establishing an energy conservation assessment and evaluation system

- We perfect the long-term energy conservation mechanisms and implement energy conservation target accountability systems to improve energy management. We develop the methods and indicators of measuring the energy-saving effect based on relevant energy management regulations, policies, and standards. By breaking our energy conservation targets setting out for the 14th Five-Year Plan period, we assess energy conservation effects and carry out "energy leaders" review throughout the entire group to further strengthen energy conservation supervision and management and boost energy efficiency.

Direct greenhouse gas emissions (Scope 1)

133,700 tons

Indirect greenhouse gas emissions (Scope 2)

871,000 tons

Energy-saving and consumption reduction measures throughout the entire process

In construction

CGN Engineering promotes energy conservation and carbon reduction in the field of nuclear power engineering construction. It formulated the *Management Regulations on Green Construction* to set energy conservation and carbon reduction requirements for the construction process, including prioritizing the use of energy-efficient and eco-friendly construction equipment and machinery recommended by the nation and the industry, prioritizing construction processes with lower electricity or energy consumption, and enhancing energy conservation awareness education for on-site construction personnel.

In operation

DNMC has established an energy management center platform to improve energy management, energy measurement and statistical systems. It also conducted energy audits, energy-saving supervision, energy efficiency benchmarking, and other activities to strengthen lean energy management across the board. Through energy-saving measures such as optimizing the operation of key power-consuming pumps during overhaul and hot shutdown periods, optimizing periodic tests, using energy-saving equipment, and controlling the operating time of lighting, electricity consumption has been reduced by 15.316 GW.

YJNPC's task force for energy conservation and carbon reduction continues to improve the operation system of the team, carrying out actions to eliminate high-energy-consumption outdated mechanical and electrical equipment, optimize fan operation modes, and enhance energy utilization efficiency. These efforts aim to continuously improve the management of energy conservation and carbon reduction.

In office

CGN Research Institute has analyzed energy consumption scenarios in office areas and introduced the "smart energy management system." The nuclear-grade equipment identification and testing building at the Daya Bay Nuclear Power Base is used as a pilot office area, and the system is developed and applied in a targeted manner to achieve energy conservation goals. In 2023, the "smart energy management system" saved as high as 22.6% of electricity in the pilot office area, nearly RMB 262,200 in electricity costs.

Comprehensive energy consumption per RMB 10,000 of output value (ton of standard coal)

Case CGN emerges as one of the first central SOEs to achieve 100% zero-carbon electricity usage

CGN actively responds to the policy requirements of the National Development and Reform Commission and other departments to use green electricity by central SOEs. In 2023, CGN promoted the use of zero-carbon electricity throughout the entire group and incorporated it as a strategic task. By the end of 2023, 25 major subsidiaries of CGN within China procured only zero-carbon electricity for the first time through purchasing the company's self-generated nuclear power, green electricity and green certificates. By doing so, CGN became one of the first central SOEs to achieve 100% usage of zero-carbon electricity, acting as a leader in green consumption.

Through the zero-carbon electricity promotion initiative, CGN increased the zero-carbon electricity usage from around 40% to 100%, equivalent to an annual reduction of approximately 260,000 tons of standard coal consumption and a reduction of approximately 730,000 tons of carbon dioxide emissions. The usage rate of green electricity (green electricity + green certificates) jumped to around 40%, higher than the average of 31% (in 2022) in the overall society.

Promoting green electricity consumption for a zero-carbon future

Green electricity consumption is an important measure to promote the transition to the green and low-carbon energy and contribute to China's 30·60 Decarbonization Goal. CGN New Energy leverages its clean energy development to engage in a variety of businesses such as green electricity trading and green certificate trading. The goal is to provide users with green and clean electricity and work together with stakeholders towards a zero-carbon future.

Honor

- CGN New Energy was honored with the IFF Global Green Finance Annual Award as one of the 23 global award-winning entities.

Leading in green electricity trading

- CGN New Energy actively implements the "green electricity+" strategy, trading over 3 TWh of green electricity and issuing 1.38 million green certificates in 2023. It has been ranked as the top seller in green electricity trading by Bloomberg NEF for three consecutive years.
- It also achieved the first batch of cross-border green electricity certificate transactions in the Guangzhou Power Exchange Center, making a breakthrough in the "zero" presence of the Chinese green certificate market in overseas markets.

Polishing the green electricity brand

- CGN New Energy vigorously promotes green electricity and becomes the sole green electricity supplier for major events such as the Boao Forum for Asia Annual Conference 2023, the 20th China-ASEAN Business and Investment Summit, the 3rd China International Consumer Products Expo, the 134th Canton Fair, and the 3rd China-Africa Economic and Trade Expo.

Case CGN New Energy awarded as the sole designated supplier of green electricity for China-ASEAN Business and Investment Summit

In September 2023, the award ceremony for the sole designated supplier of green electricity for the China-ASEAN Business and Investment Summit was held in Nanning. The Secretariat of the China-ASEAN Business and Investment Summit deepened cooperation with CGN New Energy Guangxi through the trading mechanism of green electricity certificate subscription platform. Together, they turned the 20th China-ASEAN Business and Investment Summit into a zero-carbon green conference, assisting in the full coverage of green electricity and zero carbon emissions for the summit.

Yang Yanyan, Secretary-General of the Secretariat of China-ASEAN Business and Investment Summit Secretariat, presents the certificate to Ma Fengyun, CGN New Energy Guangxi, at the award ceremony.

Environmental Management

CGN strictly abides by Chinese laws and regulations such as the *Environmental Protection Law of the People's Republic of China*. We continuously improve the environmental management mechanism and implement environmental management actions, to minimize our environmental impact.

Environmental management guidelines

Prioritizing pollution prevention

- Strictly complying with Chinese laws and regulations governing environmental management, and taking preventive measures such as front-end control to protect the environment from pollution.

Technology first in driving energy conservation and emissions reduction

- Prioritizing the use of technological means to reduce the consumption of resources or energy.

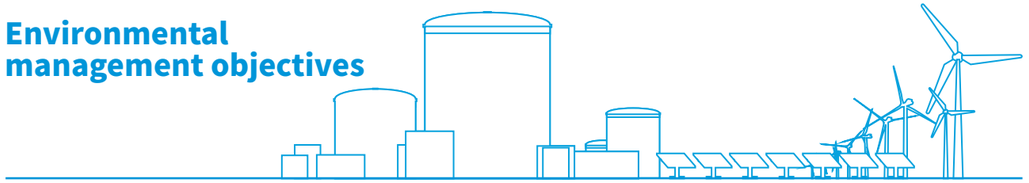
Full participation in reducing emissions

- Calling on every employee to continuously reduce emissions of pollutants in line with Chinese laws and regulations governing environmental management.

Development in harmony with nature for the benefit of humanity

- Coordinating effort in economic growth and environmental protection, to achieve harmonious coexistence between man and nature for the benefit of future generations

Environmental management objectives



	Environmental management objectives	Completion in 2023
Comprehensive objectives	Zero environmental pollution incident	Achieved ✓
	Zero administrative penalties imposed by the government	Achieved ✓
	Lead the industry in overall energy consumption and major pollutant emissions, and stay below national limits in other emissions indicators	Achieved ✓
Short-term objectives	By 2025, the comprehensive energy consumption and the carbon dioxide emissions per RMB 10,000 of output value will decrease by 15% and 18%, respectively, compared to a 2020 baseline.	**The comprehensive energy consumption and carbon dioxide emissions per RMB 10,000 of output value have decreased by 13.09% and 13.58% from 2020, respectively.**

All CGN power plants have been certified by ISO 14001 environmental management systems.

Environmental management system

Committed to green development, CGN keeps improving its internal environmental management system, strictly controls environmental compliance risks, and continuously enhances its environmental governance capabilities, to effectively promote ecological conservation and ensure ecological security.

Environmental risk management

Nuclear power plants

All departments of NPPs determine environmental factor identification and evaluation units based on their business characteristics and activity impact scope. They also formulate control measures to eliminate and reduce risks, and prepare for emergencies. Administrative measures, technical measures, and routine training are combined to ensure the effective implementation of these control measures. Environmental factors are regularly identified and controlled every year in accordance with changes in governing laws and regulations.

Engineering construction projects

Based on construction and commissioning activities, each project team identifies important environmental factors and makes a list of them. In accordance with applicable laws and regulations and existing policies and procedures, control measures or plans are developed and implemented in the operation activities. CGN Engineering has identified 226 environmental factors in accordance with environmental laws and regulations, environmental impact assessment reports, and the characteristics of engineering projects, and updates the list of environmental factors annually.

Environmental supervision and inspection

In 2023, CGN strictly implemented ecological and environmental protection regulations and regulatory requirements of ministries and commissions concerned. We launched a series of special environmental improvement actions, to address environmental issues that were left unaddressed in the approval of engineering construction projects, to ensure environmental compliance of construction projects, and to protect the ecological environment in the Yangtze and Yellow River basins. Internal and external experts were also engaged to help supervise and improve the work. In such way, we significantly improved the environmental compliance and management level across business lines.

CGN orderly advances major environmental protection tasks. For rainwater and sewage diversion, we have established a team and six vanguard teams at NPPs in operation. They will urge all the six NPPs in operation to start separating rainwater and sewage. For the three major nuclear power bases under construction, the requirement of "rainwater and sewage diversion" is fully implemented in the design and construction stages, to ensure that facilities for environmental protection and water conservation facilities are designed, built and put into use simultaneously with the main body of the project concerned, and mitigate major environmental risks in advance.

Protection of Clear Water and Sky

CGN strictly implements laws and regulations on nuclear safety. We have established a sound mechanism and system for the treatment of radioactive and nonradioactive waste, reduced waste generation from the source, and always insisted on resource conservation, and intensive and efficient resource utilization, to protect clear water and sky with concrete actions.

Strict control of pollution emissions

Radioactive waste management

In strict accordance with laws and regulations such as the *Law on Prevention and Control of Radioactive Contamination, Regulation on Safety Management of Radioactive Waste*, and *Administrative Regulation on Safe Transportation of Radioactive Substances*, CGN has formed a set of systematic and efficient radioactive waste control and treatment mechanisms. We also strengthen safety management of radioactive waste to reduce its impact. In line with the *Classification of Radioactive Waste (GB9133-1995)*, radioactive waste should be classified and treated with the most proper methods in a targeted manner, and the principle of as low as reasonably achievable (ALARA) should be followed.

In 2023, the solid, liquid, and gaseous waste treatment systems of NPPs in operation functioned normally, and the discharge of radioactive liquid effluent from the operating units was effectively controlled, with actual emissions below the limits approved by the Ministry of Ecology and Environment (MEE).

Nonradioactive waste management

In strict accordance with the *Law on Prevention and Control of Water Pollution, the Law on the Prevention and Control of Atmospheric Pollution*, and the *Law on Prevention and Control of Environmental Pollution by Solid Waste*, CGN has formulated the *CGN Hazardous Waste Management Standards* and other policies, and supervises their implementation. Through the supervision of nonradioactive waste collection, transportation and treatment, we enhance the targeted control measures, and reduce adverse environmental impacts.

Type	Control and disposal measures
Hazardous waste	› The hazardous waste of the Group includes waste mineral oil, spent organic solvents, and used batteries. › In accordance with the *Notification on Further Strengthening the Standardized Environmental Management of Hazardous Waste* issued by the MEE, we follow the principle of standardized, intensive, and AI-empowered waste management, and urge NPPs to build standard hazardous waste warehouses and temporary storage warehouses. We also promote an information platform for overseeing the management and disposal of hazardous waste, realizing traceability from the source to the end point covering the whole lifecycle of hazardous waste. Meanwhile, research is conducted on radioactive waste volume reduction and hazardous waste reduction in accordance with the principles of reduction, resource utilization, and harmlessness.
Non-hazardous waste	› The non-hazardous waste of CGN mainly includes construction waste, kitchen waste, and used office supplies. › Production and domestic wastewater should be treated by sewage treatment facilities and then discharged or reused in accordance with relevant national standards. For solid waste, after it is sorted and stored on site, it is transported away by qualified and technically capable units. The transportation process will be put under watch, to ensure compliance from the production, transport, storage, and disposal of solid waste.
Atmospheric pollutants	› The atmospheric pollutant emissions of CGN mainly include sulfur dioxide, ammonia nitrogen, smoke (dust), and carbon dioxide. They mainly come from construction dust and spray painting and sandblasting processes of NPPs under construction, and materials processing projects of CGN Nuclear Technology. › Each subsidiary/project is equipped with dust reduction and suppression and air pollution control facilities and equipment. These environmental protection facilities are working normally, meeting the design requirements, and the emissions of all air pollutants are in compliance with national standards.

Environmental monitoring

Each nuclear power base has established a strict environmental monitoring system in accordance with the requirements of national regulatory agencies. We use the KRT (for plant radiation level monitoring) and KRS (for plant radiation level and meteorological condition monitoring) systems of NPPs to monitor and analyze the air, water, soil, terrestrial and marine biological environmental media within a radius of 10 kilometers of the NPP concerned. We also regularly evaluate the environmental level in and around NPPs to make sure that the NPPs have zero impact on the peripheral environment during their construction and operation.

In addition to our own monitoring activities, national regulatory agencies and third-party organizations also monitor the environment of NPPs for supervisory purpose. National regulatory agencies continuously monitor the air-absorbed dose rate around the environment of NPPs in operation in the country, and their data shows that the air-absorbed dose rate in the environment is within the fluctuation range of local background radiation levels. The long-term tracking and monitoring results of Hong Kong Observatory indicate that the environmental radiation levels in the surrounding areas of CGN's NPPs in operation remain normal compared to the background data before operation, and the population of terrestrial and marine organisms in the region has not changed. Therefore, the operations of CGN's NPPs have no adverse impact on the environment.

Resources conservation

CGN continuously optimizes production management, and improves resource utilization efficiency through various means, including reducing waste at the source and upgrading technologies, to contribute to the building of a resource-conserving society.

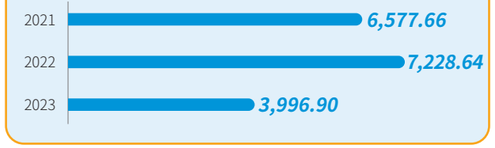
Water resources management

CGN highly values the conservation and protection of water resources. We adopt advanced water-saving technologies, reclaimed water reuse, and other methods to ensure sustainable water supply and efficient water use and reduce water consumption and waste.

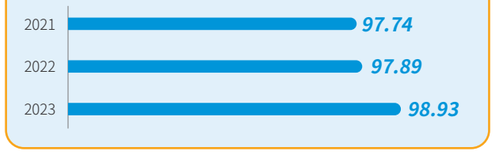
Honor

› Yangjiang Nuclear Power Base has been recognized as a "Provincial Water-saving Benchmark Enterprise" jointly by the Department of Industry and Information Technology and the Water Resources Department of Guangdong Province

Total water consumption (10,000 tons)



Water recycling and reuse rate (%)



Water-efficient equipment

Each project site is equipped with water-efficient equipment to reduce water waste.

Wastewater treatment

Domestic wastewater treatment stations conduct advanced wastewater treatment in plants to meet reuse standards.

Reclaimed water reuse

Wastewater treatment and supporting facilities are renovated and reclaimed water is used for road dust control and greening.

Seawater desalination

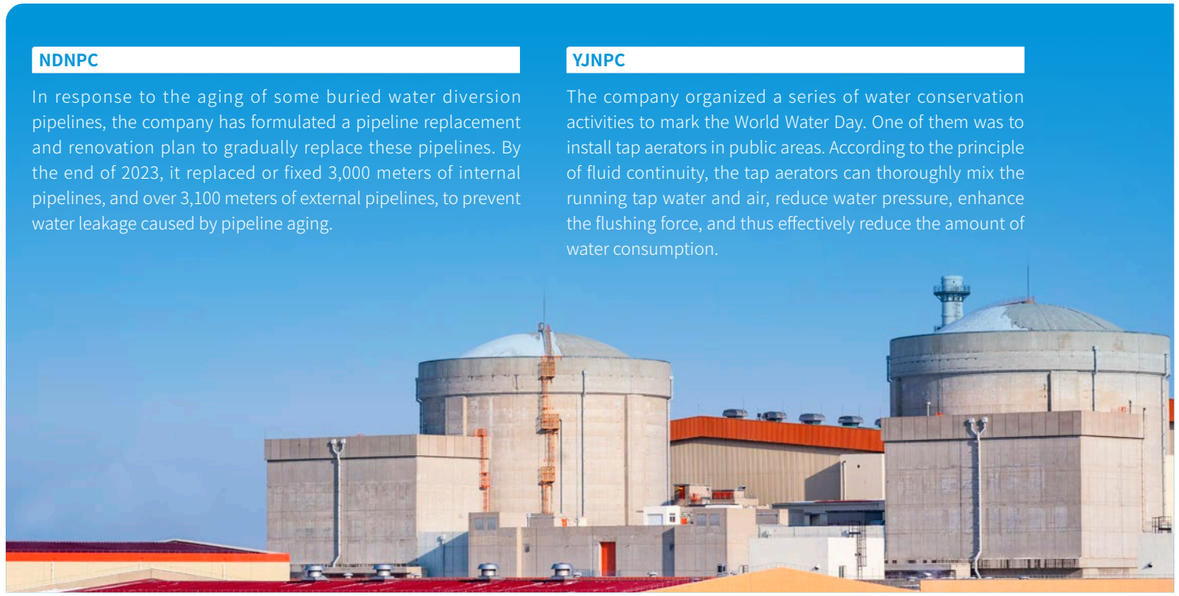
An internationally advanced seawater desalination system is adopted to supply production and domestic water which fully meets the national hygiene standards for drinking water.

NDNPC

In response to the aging of some buried water diversion pipelines, the company has formulated a pipeline replacement and renovation plan to gradually replace these pipelines. By the end of 2023, it replaced or fixed 3,000 meters of internal pipelines, and over 3,100 meters of external pipelines, to prevent water leakage caused by pipeline aging.

YJNPC

The company organized a series of water conservation activities to mark the World Water Day. One of them was to install tap aerators in public areas. According to the principle of fluid continuity, the tap aerators can thoroughly mix the running tap water and air, reduce water pressure, enhance the flushing force, and thus effectively reduce the amount of water consumption.



Use efficiency of nuclear fuel

Improving use efficiency of nuclear fuel is an important way to improve the resource utilization efficiency and reduce resource consumption of nuclear power enterprises. CGN continues to develop technologies to improve nuclear fuel use efficiency and fuel management. After continuous technological iteration, most units have a 18-month refueling cycle, which significantly reduces the number of outages needed, effectively improves the unit availability and the nuclear fuel utilization rate, and reduce plants' cost.

The four units of Ling'ao Nuclear Power Plant have fully switched to the flexible fuel management mode with high and low enrichment levels. At the current load factor level, the utilization rate of core fuel is increased by about 2%, with flexible power generation guaranteed. This fuel management mode, which is currently under argumentation, is also adopted by six units of Yangjiang Nuclear Power Plant.

Environmental Services

Environmental progress would not be possible without technological innovation and R&D. CGN Environment Protection emphasizes promoting technological R&D in five sectors: environmental services, water supply and drainage, treatment of hazardous solid waste, water environment treatment, and comprehensive utilization of biomass at NPPs. It is committed to becoming a leading technology-enabled environmental and ecological protection system service provider in the industry, leveraging its expertise to improve the environment, and making contributions to building a beautiful China.

Breakthrough in the development of core technologies

The demonstration project of "electrooxidation plus" industrial wastewater treatment in Silkworm Industrial Park in Lingyun, Guangxi has been completed. The 168-hour thermal commissioning of the "waste treatment with waste" process with plasma melting technology has also been successfully completed. The pilot plant for "intelligent, small-scale, and decentralized" biomass anaerobic fermentation technology has been developed.

Continuous enhancement of technological strength

The research program of "Key Technologies and Equipment for Plasma-assisted Hydrogen Production from Non-biodegradable Waste" has been listed one of the National Key Technologies R&D Program of the Ministry of Science and Technology. Our " Blockchain-based Intelligent Collection and Storage Platform System for Life-Cycle Management of Hazardous Waste" has reached the "world's advanced level" and passed the evaluation. The R&D Project for Resource Utilization Technology of Photovoltaic Modules has been listed as a key project to be supported and funded by the municipal government of Shenzhen.

Accelerated commercialization of technologies

We have successively implemented projects such as plasma technology for the treatment of wastewater containing organic high ammonia nitrogen and uranium, process development for radioactive waste liquid treatment in nuclear fuel assembly plants, and the application of "electrooxidation plus" technology.

Case | Yangtze River Basin Conservation

Since 2016, following the principle of "promoting well-coordinated environmental conservation and avoiding excessive development," a campaign was launched to renovate chemical enterprises along the Yangtze River. CGN Environment Protection actively participates in the conservation of the Yangtze River basin, and has established six environmental protection projects along the Yangtze River in Zhijiang, Xiangyang, and Huai'an. Specifically, CGN's Zhijiang West Sewage Treatment Plant in Yichang, Hubei has introduced the biological double-efficiency process to improve sewage treatment efficiency, and has become one of the most important infrastructure in the local large-scale chemical industrial park.

Biodiversity Conservation

CGN aligns its long-term development with the protection of the natural environment, and continues to strengthen the administrative mechanism for biodiversity conservation. We propose the principle of "symbiosis, mutualism and regeneration" for developing eco-friendly nuclear power and the unique four-step (avoidance, reduction, mitigation and compensation) approach to conserve biodiversity. We have long engaged in biodiversity conservation, to ensure the harmonious co-existence of project sites and surrounding natural environments.

Unique four-step approach to conserve biodiversity

Avoidance

- Science-based planning to avoid impact

By prioritizing "avoidance" throughout the project lifecycle, we strive to minimize negative disturbances to biodiversity. Especially for projects involving key areas of biodiversity conservation, we strictly identify and respect the red line, and bypass it in a science-based way, to minimize impacts on the biological habitat and species diversity within the construction area.

Reduction

- Comprehensive conservation to reduce disturbances

We keep on monitoring the ecological environment and biodiversity in our production and operation, constantly improve radioactive waste management, and take targeted measures to protect terrestrial and marine species.

Mitigation

- Producing clean energy to mitigate climate change

We promote the energy structure to be clean and low-carbon by developing clean energy. Meanwhile, we adopt innovation management, reduce energy consumption in our operations, and improve the energy efficiency to mitigate the potential risks of climate change on biodiversity.

Compensation

- Ecological restoration and compensation to increase species abundance

During project construction and operations, we actively restore the ecological environment through artificial restoration, technical restoration, vegetation compensation, and animal compensation, to ensure that local biodiversity is not declining, but even increases in abundance.

Case | Planting and protecting mangrove forests, the "coastal guardians"

Mangrove forests are one of the most productive ecosystems in the world and play a crucial role in maintaining coastal biodiversity, known as "coastal guardians." CGN's subsidiaries actively organize mangrove planting activities to protect the ecological environment around their project sites.

In 2023, HZNPC organized five voluntary tree-planting activities, in which, more than 300 employees, residents, and teachers and students planted nearly 300 mangrove saplings. By the end of 2023, nearly 1,000 square meters of mangrove forests had been planted in the beach area.

HZNPC's Mangrove Planting Action

Scientific planning to protect the natural coastline

In line with the principles of "strict control, ecological conservation first, efficient and intensive use of resources, and land-sea coordinated planning," CNNPC comprehensively carries out island and reef protection, and ecological protection and restoration activities, striving to minimize its negative impact on the environment. In order to protect and bypass natural shorelines, the project construction plan has been continuously optimized after multiple rounds of reviews by marine experts. The project site has been relocated from the shallow sea area near the beach to the farther deep sea area. Shoreline restoration and compensation are conducted in accordance with high standards to safeguard the length of natural shorelines. The reclamation plan meets relevant requirements in all sea area control indicators.

Proliferation and releasing to maintain marine ecological balance

CGN New Energy actively carries out marine ecological protection. Its Huizhou project company has prepared the *Implementation Plan for Ecological Compensation (Enhancement and Releasing) of CGN Offshore Wind Farm Project at Huizhou Port*. About 68 million marine organisms have been released in total, including 40 green sea turtles, 47,000 sea bass fries, 2.34 million red snapper fries, 310,000 orange-spotted grouper fries, 60 million sword prawn fries, and 5 million paphia undulata fries.

HYHNPC has carried out two enhancement and releasing activities in the offshore waters of Jiangjunshi Fishing Port and waters near Jinzhou, releasing a total of 1,000 swimming crabs, 1.6 million bastard halibuts, and 600,000 barracudas. In such way, it has restored and compensated for the ecology of the sea area, and optimized the community structure and aquatic ecology.

Case | Turning the "sand sea" into a "blue ocean" through sand control

CGN New Energy actively explores ways of sand control by combining tree planting and solar generation to realize carbon neutrality. It has built solar farms to utilize the solar energy in the Kubuqi Desert of Inner Mongolia, and established a three-dimensional circular economy in these farms, with solar power generation on the solar panels, herb growing below the panels, and breeding between the panels. Hence, an integrated eco-friendly circular industrial chain is formed, covering sand control, ecological restoration and soil improvement, and a mature and replicable sand control system is in place. By the end of 2023, the company had put into operation six solar farms in the hinterland of the Kubuqi Desert, with an installed capacity of 820 MW, benefiting 34,000 mu of desert with its sand control effects. The purpose is to improve the desert environment and facilitate its green and low-carbon transition.

Sand binders and medicinal herbs grow under the solar panels at the CGN's Gesang Photovoltaic Project Site.

Building a First-Class Brand

Safeguarding the beauty of nature

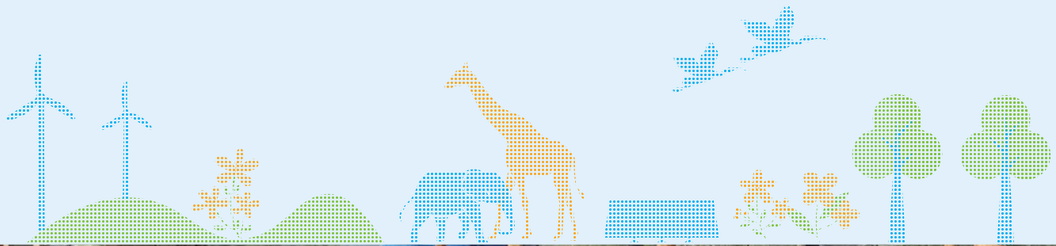
Brazil has very strict environmental laws and policies. During the construction and management process of the TN project, CGN Brazil Energy has always pursued green development and integrated biodiversity conservation into the lifecycle of the project, including site selection, design, construction, operation and maintenance.

98
Veterinary rescues/aids

3,189
Animal relocations

857
Plant relocations

14,544
Seeds cultivated



Before construction

Environmental professionals investigate and keep a file of the distribution of animals and plants within the project's impact area, and relocate the identified animals and plants to protect them.

During construction

Once the trace of wild animals is noticed, it must be immediately reported it to environmental specialists. The site will be isolated depending on the actual situation. Meanwhile, a qualified wild animal rescue team will be notified to handle the situation.

The site greening project is carried out simultaneously with the wind power project. A dedicated seedling field is established for the project, where seedling cultivation is conducted based on the plant species identified before construction to ensure compliance with local plant diversity requirements. After the excavation and other ground works are completed, transplanting and conservation work should be immediately implemented at the construction site.

After put into operation

CGN Brazil Energy has a dedicated environmental management team working in the power plant. They are responsible for monitoring various environmental indicators, and implementing the requirements of the environmental operation permit for NPPs. Botanists regularly observe and record the traces and living conditions of animals and plants. All this is to create a good ecological environment for them.

At present, no sign of the reduction in the species, migration or disappearance of animals and plants has been noticed at and near the TN project site. Its environmental efforts have been recognized and praised by local community, government, and environmental authorities.

The Dedicated Seedling Field at the TN Project Site of CGN Brazil Energy

THE PRINCIPLE OF PEOPLE FIRST

Empowering Employee Growth

The core of CGN strength lies in putting people first

A large workforce of high-caliber professionals and specialists is key for an enterprise to strengthen its development momentum and achieve sustainable development. CGN actively delivers on its commitment to "employee care, employee cultivation, employee growth, and empowering employees to grow with the company." Specifically, we provide employees with a sound career development platform, and cultivate their professional skills and comprehensive qualities, to provide a talent pipeline to power high-quality corporate growth and the sustainable development of China's modern nuclear power industry.

Contributions to UN SDGs

47,121
Employees in total

4.742 million
Employee training hours in total

101
Average training hours per employee

中广核新能源“家国一心·百年好合”青年集体婚礼

Employee Rights

Committed to building harmonious and stable labor relations, CGN respects and safeguards employees' lawful rights, complies with the principle of fair employment, and makes continuous efforts to improve the compensation and benefits system.

Honors

- China Best Employer Nationwide Top 100 Best Employers of Year 2023 awarded by the recruitment platform Zhilian Zhaopin
- 2023 Employer Excellence of China and Top Graduate Employer Brands awarded by 51job
- 2023 Campus Recruitment Excellence Practice Award from Yongyou Dayee

Compliant employment

CGN keeps improving its compliance management system for labor employment. We have issued the *Special Guidelines for Domestic Employment Compliance* and carefully studied the relevant regulatory requirements for overseas labor employment, to ensure compliance in labor employment. In line with the principles of openness, fairness, and equity in recruitment, we prohibit employment discrimination, and implement strict organizational management and unified procedures to ensure recruitment compliance.

According to CGN's policies, recruitment staff should strictly follow the administrative measures on business integrity, and are prohibited from seeking personal gain from their jobs. Management personnel at all levels are forbidden to interfere in the routines of recruitment teams and groups for their own or others' interests. Recruitment team members are not allowed to lower standards without authorization or engage in fraudulent activities. Recruitment should not be interfered by personal considerations, private relationships, under-the-counter deals, and lowered recruitment standards.

Workplace diversity

In compliance with all the internationally recognized policies related to human rights stated in the UN's *Universal Declaration of Human Rights, International Human Rights Conventions* and ILO (International Labour Organization) Core Conventions, and the principle of open, fair and just employment, we provide equal employment and career development opportunities for employees regardless of their nationality, race, gender, age, religious belief and cultural background. We prohibit illegal labor practices such as child labor or forced labor, striving to build an equal and inclusive workplace to attract outstanding talents. Overseas, we uphold localized employment, fully respect local religious and cultural practices, and promote corporate harmony and development with employees from diverse cultural backgrounds.

Rights protection

CGN values employee rights protection. We strictly abide by laws and regulations such as the *Labor Law and the Labor Contract Law* as well as labor employment policies of host countries. We purchase social insurances for employees, including pension, medical insurance, unemployment insurance, work-related injury insurance, and maternity insurance, in addition to supplementary medical insurance and enterprise annuity. Apart from organizing annual health check-ups for employees, we formulate a holiday management policy to offer employees paid leaves, and encourage them take time off, striking a balance between life and work.

Compensation and benefits

CGN builds a competitive compensation management system based on strategic orientation and clarifies the concept of value creation, with a view to stimulating the potential of employees. The compensation system mainly includes the position-based salary policy. Adjustable to reflect one's capability and performance, our compensations are determined by one's job responsibilities and performance, adjusted when one is transferred to another position and linked to job performance. We continuously improve the salary allocation and adjustment mechanism, and lean it toward those engaged in technological innovation and frontline workers in harsh conditions, with a focus on the requirements of "increasing the incomes of low-income earners, expanding the size of the middle-income group, and properly regulating the excessively high income."

100%
Labor contract signing rate

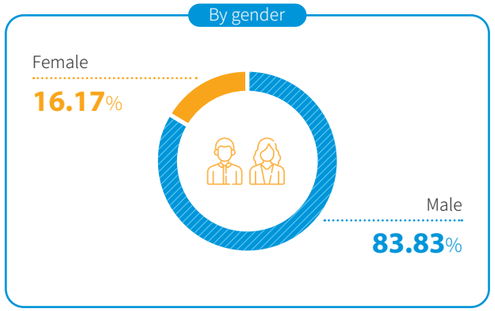
100%
Social insurance coverage rate

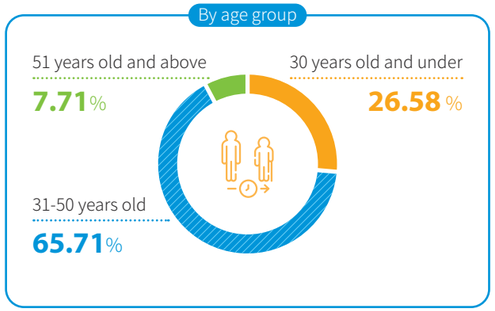
100%
Paid leave policy coverage rate

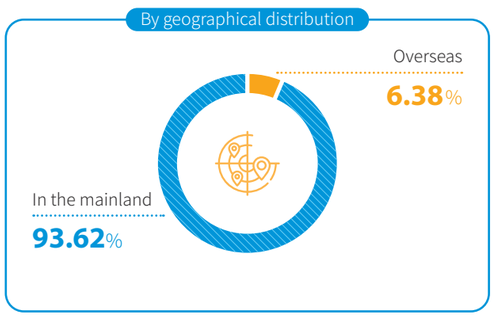
47,121
Employees in total

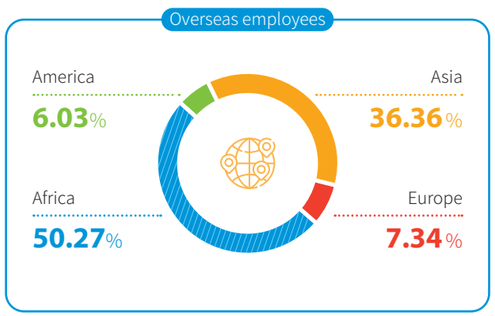
2,847
Employees by localized recruitment of international projects

Employee composition









Case | Instilling in young officials the requirements for integrity

On February 3, 2023, Cheng Yongping, Secretary of the Discipline Inspection Committee of CGN, held an anti-corruption meeting with nine newly appointed managers, to tighten discipline education on the young managers who are in a critical growth period, and instill in them the requirements for integrity.

Employee Growth

Upholding the philosophy that "talent development proceeds corporate development," we work to create a broad career development platform for employees based on our business development and reform landscape as well as strategic development needs. Moreover, we clarify promotion channels and incentive mechanisms, and continuously improve the talent training system, to help employees grow together with CGN.

Career development

Establishing a dual-channel development system

At CGN, professional and technical positions are divided into five levels: junior position, intermediate position, advanced position, senior position, and chief expert; managerial positions are divided into three levels: junior level, middle intermediate, and senior level. Employees in professional and technical positions can switch to managerial positions, and vice versa. There is an internal talent market to encourage and enable the fast growth and orderly flow of employees. In 2023, nearly 700 job announcements and internal recruitment sessions were conducted.

Improving the appointment management of technical positions

To encourage outstanding young employees to stand out and shine, we have established a normalized multi-channel mechanism for identifying them, and formulated special incentive and development policies for employees who made outstanding contributions. For example, employees with widely-recognized outstanding performance may be promoted as an exception, and those who are rated excellent in the annual performance evaluation can have their fixed promotion years shortened.

Employee training

The Egret Leader Program

CGN comprehensively promotes its nuclear power leadership training program, the "Egret Leader Program," to strengthen the awareness of nuclear safety culture, enhance organizational effectiveness of the leadership, and facilitate the application, improvement, and dissemination of leadership in the workplace.

6
Training sessions for certified seed instructors

136
Training sessions implemented by subsidiaries in total

5,136
Trainees

Key quality guarantee of the Egret Leader Program - "a pair of one-two-three"

The White Egret Program

The White Egret Program covers multiple stages of career based on the core skillsets required for managers at all levels. This program tackles the pains and difficulties facing new hires, newly promoted managers at all levels, and management trainees at all levels in their transitional and probationary periods.

Sub-program	Data of 2023
White Egret - Hovering Program	1 session 24 trainees in total
White Egret - Run-up Program	10 sessions 413 trainees in total
White Egret - Wingspreading Program	6 sessions 189 trainees in total

Series of training programs for managers of CGN — White Egret Program

Sub-program	Training recipients
White Egret – Hatching Program	New hires (through campus recruitment and other recruitment channels)
White Egret - Feathering Program	High potential talents at the primary-level positions
White Egret –Run-up Program	White Egret - Newly-promoted primary-level managers
White Egret – Flapping Program	Middle-level high potential talents
White Egret - Wing-spreading Program	Newly-promoted middle-level managers
White Egret – Taking-off Program	Medium and long term reserve
White Egret - Flying Program	Senior management reserve
White Egret – Hovering Program	Newly-promoted senior operation executives

The Egret Across Ocean Program

Honors

- The White Egret - Run-up Program online workshop was awarded the third prize of 2022 Excellent Management Training Programs.
- The Red Egret Program and the Egret Leader Program were awarded the 2022 Brand Learning Program Award by the *Training Magazine*.

4.742 million
Employee training hours in total

101
Average training hours per employee

100 %
Employee training coverage

Meet our model workers

Duan Chengjie, a long-termist seeking breakthrough in nuclear energy technology

Reactor R&D is an arduous challenge that requires persistent effort. Over the past 12 years, Duan Chengjie, Director of the Model R&D Office of the Advanced Reactor R&D Project Department of CGN Research Institute, has undertaken one R&D task after another. In scientific research, he can think out of box but is rigorous in validation. Under his leadership, the R&D team has achieved many excellent results.

Venturing into the "no man's land"

Duan Chengjie and his team were responsible for developing thermal barrier materials that are compatible with advanced reactors, which is one of the important tasks of the advanced reactor R&D project. Based on extensive theoretical and technical research and process design demonstration, he led the team to conduct the first preparation experiment in which the material did not take shape perfectly as expected. Despite the disappointment, he led the team to analyze the reasons with patience, and conducted numerous trials and errors in rounds of process optimization. After several rounds of experimentation and improvement, they finally solved the problem and won the golden prize in the R&D innovation category of the 17th "Revitalization Cup" National Youth Vocational Skills Competition (Employee Group).

> “In massive challenges like the reactor R&D project, good teamwork matters more. Scientific researchers should be good team workers”
>
> says Duan Chengjie

Nurturing the team

As the big brother of the team, Duan always finds time to have bosom talks with young employees to find out what they need. If they complained about the lack of R&D experience in the emerging field, he would invite experts and academicians to give lectures and share experience; if they said the field was too transdisciplinary, he would invite specialists and professionals in other related fields and even chief engineers to give training lectures. He has organized over 10 academic forums, over 20 "Squirrel Club" technical exchanges, and 14 youth teams, etc., which are evidence of his support for employee growth. Over the years, the team has built two youth innovation studios and produced about ten model employees. These fruitful results would not have been achieved without Duan Chengjie's efforts and dedication.

Sincere Care for Employees

CGN launches a variety of employee care activities to meet the actual needs of employees. We help employees solve problems in work and life, organize corporate cultural activities in diverse forms, actively promote cross-cultural management and integration. We are creating a harmonious and warm workplace to enhance employees' sense of belonging and happiness.

Employee care

CGN works actively to create a comfortable workplace for employees. We care about their physical and mental health, and have organized diversified communication and interaction activities.

Spring Festival visits and greetings

Prior to the Spring Festival in 2023, the current leadership paid visits to extend festival greetings and wishes to frontline employees, retired executives, employees in need, and employees in remote areas.

Yang Changli, Chairman of CGN, visits Zan Yunlong, a retired executive

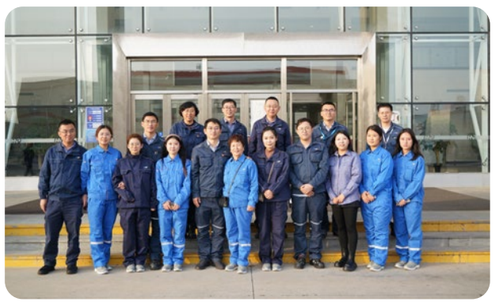
The Employee Home

The DNMC renovates the activity center in the southern area of the base, which serves as an "Employee Home" where employees and their families can exercise, study, bond with others, and relax.

The newly-renovated activity center in the southern area of the DNMC base

Heart-warming service for outage staff

During the outage period, HYHNPC distributes blind boxes containing surprising gifts to families of the outage workers, incentivizing them to work with more passion, and in a more down-to-earth manner.



Group photo of some employees and their family

Childcare services

CGN Suzhou Institute holds a full-time summer childcare program on its own premises, offering courses on handicrafts and traditional culture, and organizing activities such as birthday parties and food festivals. It provides both affordable and high-quality childcare services, to solve the problem facing employees in summer vacation.

A joyful summer vacation for children

Building a First-Class Brand

Taking concrete actions to address concerns and boost high-quality development

Since the launch of the thematic education sessions, all subsidiaries of CGN have conducted serious investigations and research, and continuously advanced the campaigns of "Serving the People with Concrete Actions" and "making position-based contributions," to boost the high-quality corporate development.

Putting up electronic station signs to facilitate the first outage in 30 years

During the outage period of Unit 2 of Daya Bay Nuclear Power Plant after it had been in operation for 30 years, intelligent electronic station signs were installed at the DNMC base. Employees could track the shuttle bus in real time on the screen, or check it on the "Huantong e-Road" mini-program on WeChat, and arrange their departure time accordingly.

An employee responsible for overhaul stands before the electronic board to check the information of shuttle buses

Delivering meals on wheels to the outage workers

During the outage period, the outage workers often missed their meal time due to the busy schedule. In response, YJNPC used a van to deliver the meals to them, which parked just outside Unit 2. The delivery time was scheduled according to the working hours at the outage site.

Thumbs up to the meals-on-wheels service

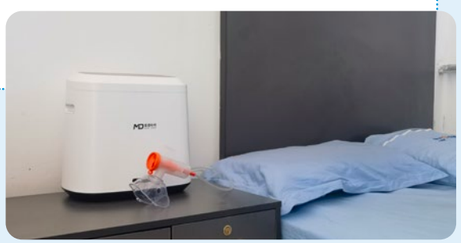
Strengthening institutional support to enhance the welfare of rural-to-urban migrant workers on the construction site

In accordance with the State Council's *Regulation on Ensuring Wage Payment to Migrant Workers*, HZNPC has effectively controlled the whole process of recruitment, labor contract signing, wage payment, and demission and resignation of labor employment by strengthening three primary-level administrative policies: the use of real names in employment, opening of a special account for the wage of migrant workers, and payroll credit by EPC contractors. By doing so, it offers fundamental institutional guarantee for protecting the rights and interests of labor workers, significantly enhancing their sense of gain and security.

A glimpse of rural migrant workers on construction sites

Creating a caring "oxygen bar" at high-altitude project sites

New energy projects located in Qinghai, Xinjiang, Xizang and other high-altitude areas generally have scarce oxygen and low average temperature throughout the year. CGN New Energy launched a pilot project at Haiyan Wind Farm. It conducts landscape planning according to local conditions in the living quarters, plants flowers and fruit trees that are resistant to high altitude and coldness, installs oxygenerators in dormitories and work areas, and renovates heating equipment in living quarters. As a result, the workers' sense of happiness and belonging are enhanced.



The oxygenerator at an employee's bedside

Corporate culture

Corporate culture represents the spiritual strength that holds employees together, and the compass of their thoughts and behavior. CGN conducts various activities to help employees better understand the corporate culture, and enhance their sense of belonging and cohesion.

Honors

- The CGN Hinggan League project won the 2023 National Excellent Engineering Award for Building a Culture of Safety in the Power Industry and the Excellent Case Award for Corporate Culture Building in Engineering Construction.

Case | The CGN Reading Month of 2023

In response to President Xi Jinping's call for the country to "enjoy reading, read good books, and develop reading skills," CGN organized its third reading month campaign, to actively promote reading among employees and build itself into a learning organization with a culture of reading. The reading month campaign kicked off on April 23, 2023, and Li Li, CGN Director, attended the opening ceremony. She made a speech, and presented the *Selected Readings from the Works of Xi Jinping* to the representatives of reading ambassadors.

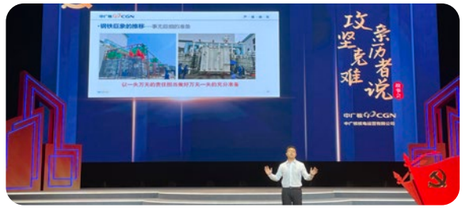
Li Li presents the *Selected Readings from the Works of Xi Jinping* to the representatives of reading ambassadors.

Case | The CGN Culture Lecture

In May 2023, DNMC held a company-culture-themed lecture titled "Inheriting the CGN Culture and Enriching the Cultural Life of the Youth." It invited some representatives, such as, the famous Chinese musician He Muyang who wrote the *Daya Bay, My Love* suite, Liu Jinhua, former general manager of Lingao NPP, and Huang Xiyin, original singer of *Children of Daya Bay* and a young faculty member of Xinghai Conservatory of Music. They shared the stories behind the creation of Daya Bay suite, and reviewed the bumpy road it had traveled so far.

Case | Tell Your Own CGN Stories

In July 2023, CGN Operations held the July 1 Commendation and the Storytelling Event themed "How I Overcame the Challenge." Seven employees who had overcome challenges in different fields were invited to share their personal stories of how they stood up and overcame challenges encountered in work safety, technological innovation, and digital transformation with their teams. They showcased CGN Operations' strong sense of responsibility, practicality, and fight spirit from different perspectives, injecting full enthusiasm into the nuclear power operations.



Cross-cultural communication

Cross-cultural integration is an important guarantee for the high-quality development of CGN. We continue to learn from excellent overseas cultures and promote fine traditional Chinese culture overseas. A series of characteristic cultural activities are held to build a cultural exchange platform for closer people-to-people bond.

Case | Celebrating Chinese Festivals overseas

The Mid-Autumn Festival

Edra Power Holdings Sdn Bhd, organized a cross-cultural integration activity to celebrate the Mid-Autumn Festival. The company's cultural ambassador told the participants the origin and meaning of the Mid-Autumn Festival, a festival for reunions. Additionally, a variety of activities such as singing, calligraphy, and mooncake-tasting were organized. In particular, employees sang the song "May We All Blessed with Longevity" in Chinese, English, and Malay.

The Dragon Boat Festival

CGN Europe Energy held cross-cultural integration activities to celebrate the Dragon Boat Festival. Chinese and foreign employees were dressed in traditional Chinese costumes, appreciated the *guqin* performance, and learned the origin of the Dragon Boat Festival and the stories of Qu Yuan together, which brought their hearts closer.

Case | A cultural journey in China

From October 26 to November 1, 2023, during the 7th CGN Sports Games, nearly 30 employees of CGN Energy International from Malaysia, France, Brazil, Sweden and other countries traveled to Shenzhen. They made field visits and participated in workshops and other activities, deepening their understanding of Chinese culture and the company culture. After returning to their home country, they would become "cultural exchange ambassadors" and scatter around like seeds to disseminate Chinese culture and CGN's corporate culture to people around them.

RESPONSIBILITY FULFILLMENT

Creating a Better Life for All

The core of CGN strength lies in its dedication to society

CGN fully implements Chinese President Xi Jinping's instructions, and actively assumes its responsibility as a central SOE through concrete actions. We steadfastly fulfill our corporate social responsibilities by continuously advancing rural vitalization, giving back to local communities, driving local economic growth and benefiting local people with high-quality projects. Together with all stakeholders, we strive to build a better and sustainable future.

Contributions to UN SDGs

RMB 78.8119 million
Total donations worldwide

9,715
Participants of volunteer activities in 2023

28,583 hours
Volunteer service and social welfare activities

Rural Vitalization

CGN values the guiding role of plans and has introduced new assistance models. Specifically, with focus on rural vitalization in five aspects: the industrial development, ecological progress, talent cultivation, consumption-driven support, and village-level assistance, we have identified 15 priority actions to ensure the high-quality implementation of rural vitalization decisions and plans, and jointly create a magnificent picture for the rejuvenation of rural areas.

Promoting the development of rural industries

Guided by the principle of "doing what we can to meet local needs" CGN deepens the integration of industrial development and rural vitalization, actively finds out local demands, and has developed a targeted strategy to boost rural industries. Accordingly, we support the high-quality development of green energy, ecological conservation, and cultural tourism industries in the targeted areas, and support local characteristic industries to strengthen, supplement, and extend their value chains, empowering the building of a beautiful countryside in all respects.

RMB **58.8119** million
Investment in rural vitalization in total

RMB **28.4** million
Investment in targeted counties for non-reimbursable assistance

RMB **345** million
Investment in paid assistance

RMB **1.6** billion
Investment in new energy projects in Leye and Lingyun

Honors

- CGN has been rated "Excellent" in the performance assessment of central SOEs in providing targeted assistance for five consecutive years
- The project of EBI technology for preservation of agricultural products in Baise, Guangxi, was voted among the "Best Practices" of the 4th Call on Global Solicitation on Best Poverty Reduction Practices.
- Two projects were selected as the "Best Practice of Listed Companies for Rural Vitalization in 2023".
- Two projects were respectively selected as Excellent Case and Demonstration Project in the *BlueBook on Supporting Rural Vitalization by Central State-owned Enterprises (2022)*.
- Banhong, a village receiving our targeted assistance, was included into the 12th batch of national demonstration villages and towns for the "One Village, One Product" initiative and was awarded the title of Excellent Pilot Village for Rural Vitalization and Reform in Guangxi Zhuang Autonomous Region.

The development model of green energy, ecological conservation, cultural tourism and characteristic industries

Green energy illuminates the path of rural vitalization

- In 2023, the CGN wind power project in Leye, Guangxi distributed its dividends of RMB 9.15 million to 110,000 people across 63 natural villages in Leye, marking a year-on-year growth of 99%, or up by about RMB 150,000 for each village collective.
- The first phase of CGN Photovoltaic Project in Xianyi Town, Chengkou County, Chongqing supplies nearly 30 GM of clean electricity to local people annually. The second phase, an 82.2MW photovoltaic project, and the third phase, a 50MW wind power project, are progressing smoothly. In the future, we will develop agrivoltaic farming and the wind farm tourism projects to form a benign cycle between economic development, resource conservation, and environmental protection.
- CGN New Energy has funded a 40 MW agrivoltaic farming project in Pingxiang County, Hebei Province. Solar panels are installed on the rooftop of greenhouses so that greenhouses can be used for farming and energy generation simultaneously.

Ecological conservation creates the most beautiful countryside

- CGN has established the integrated project to adopt electron beam for quantitative landfill leachate treatment in Leye, Guangxi, fundamentally solving the risk of landfill leachate overflow facing local people. By the end of 2023, the project has treated over 11,000 tons of landfill leachate according to established standards, effectively safeguarding the groundwater safety and continuously improving the environment in Leye.
- CGN has begun constructing a wastewater treatment project for sweet potato starch production in Shuilu Village, Lingyun County, Guangxi. We provide the village with a systematic solution for industrial wastewater treatment, and support local agricultural wastewater management. Additionally, we have completed and put into operation a wastewater treatment project for the sericulture industry park and signed a silkworm excrement-for-fertilizer agreement with a local organic fertilizer plant, to reduce the negative environmental impact of the sericulture industry.

The first phase of CGN Photovoltaic Project in Xianyi Town, Chengkou County, Chongqing

The integrated project to adopt electron beam for quantitative landfill leachate treatment in Leye, Guangxi

Cultural tourism industry fuels the growth of rural economy

- CGN has created the landscape of a flower field at the wind farm in Leye County, Guangxi, attracting an average of over 10,000 visitors annually. In 2023, we began constructing a science and technology museum beside the flower field. The museum will offer a wide range of services including popular energy science, technology experiences, exhibitions, and sightseeing. It will exert comprehensive impact and inject new vitality into the local tourism industry.
- CGN has improved infrastructure in Yujing Village, Xiamen She Ethnic Township, Fuding City, Fujian Province, enhanced the village look and environment, developed tourism resources, and promoted characteristic homestays. As a result, Yujing has been awarded "Gold-Medal Tourism Village" in Fujian Province and "Most Beautiful Gold-Medal Tourism Village" of Ningde City. During the 2023 Spring Festival holiday, the village received over 30,000 visitors, generating an income of approximately RMB 5 million.

Characteristic industries create a "prosperity chain" for strengthening villages and boosting local enterprises

- In Yangjiang, Guangdong, CGN has helped Yunbo Village in Dongping Town tap into local resources and advance the construction of a black-bone tea bonsai exhibition and sales center and the deep processing project for seafood products. These efforts aim to transform Yunbo into a comprehensive demonstration village for rural vitalization, characterized by strong industries, a beautiful environment, thriving culture, flexible mechanisms, and prosperous residents.
- CGN has put 900 *mu* of wasteland into good use in Wudongcheng Village, Baisha Town, Yangxin County, Huangshi, Hubei Province, by growing ramie on it. We work to build ramie-farming into an advantageous industry and make the village a major producer of ramie in China. At the same time, we help it develop industries such as shrimp farming in paddy fields, the planting of medicinal herbs, and open shoe factories, with a combined annual output value exceeding RMB 10 million. The village collective's annual income reached RMB 260,000, and villagers can find jobs to increase their income in the village.

The flower field at the wind farm in Leye County, Guangxi

A black-bone tea bonsai farm in Dongping Town, Yangjiang

Case | "Meet Baise, an old revolutionary base area": A promotional session in Shenzhen

On September 5, 2023, a special promotional session dedicated to Baise, an old revolutionary base area was held in Shenzhen. Aiming to promote wide-ranging and high-level cooperation, it introduced Baise to enterprises in Shenzhen, and promoted Shenzhen and Basie to leverage each other's strengths, empower each other, and work together for common development. Huang Rusheng, Party Secretary of Baise, Ge Guoke, Mayor of Baise, and Chan Yaodong, Deputy Secretary-General of the CPC Shenzhen Municipal Committee, attended the event. Shi Bing, Vice President of CGN was invited to the event and delivered a speech.

Building a First-Class Brand

Applying our superior environmental technology to develop "zero-discharge" industrial wastewater projects for rural vitalization

The sericulture industry is a major source of income in Lingyun County which is known as the "Hometown of Sericulture in China." However, processes such as silk reeling and fine processing of sericulture will produce hard-to-degrade organic wastewater, which can cause environmental pollution if not properly treated. To tackle this issue, we have built and put into operation a wastewater treatment facility by combining efficient planning with innovative technology. This project has effectively addressed the industrial wastewater pollution caused by the sericulture industry in Lingyun, promoting the sustainable and healthy development of the local economy.

Planning and designing in a meticulous manner

Lingyun is located in a rocky desertification area, with only a small area of land suitable for farming and living. Given this terrain, the project team has meticulously designed the park layout so that the main environmental facilities occupy only 300 square meters, about 600 square meters less than the original wastewater treatment pond. Thereby, more space is reserved for the sericulture biotechnology industrial park.

Using innovative technology

The industrial wastewater treatment project at the sericulture industrial park adopts a zero-discharge integrated process, with "electro-oxidation plus" technology at its core, complemented by reverse osmosis membrane treatment technology. The project developed the water treatment equipment featuring a short development process and low maintenance costs. The water coming out of the integrated system is of constant quality, meeting the criteria for sewer discharge, direct river discharge, and production reuse.

Reinforcing talent cultivation

Building up student assistance brands

In 2023, CGN spent RMB 4.4 million supporting the "Egret Class" and "Rainbow Project," two student assistance projects. The "Egret Class" has been opened to 27 classes in 10 schools in five provincial regions, and benefited nearly 3,000 students, including approximately 1,500 active students. The "Rainbow Project" has organized 20 offline activities. Employees donated learning materials and other necessities worth over RMB 120,000. The project has benefited 241 students so far, including 175 active students.

In 2023

100 %

Percentage of students in the "Egret Class" who surpassed the cutoff score of National College Entrance Examination

99

Students from the Egret Class admitted into undergraduate programs, setting a new record

Case | The "Soaring Egrets" Study Tour Camp

In December 2023, CGN New Energy hosted a study tour camp in Kunming for 23 teachers and students of ethnic minorities in the Egret Class in Mouding County, Yunnan. The students visited the fossil museum, the aviation base, and the scenic Dianchi Lake and other local sites. An inspiring series of experiential learning broadened their horizons and sparked their passion for nature and science.

Since the "Egret Class" was officially opened in Mouding, and the local Fengtun Central Primary School changed its name to Egret Primary School in 2019:

CGN has invested RMB **2.5** million+ in the school

benefiting **150**+ students from Fengtun Town and surrounding villages

Promoting local employment

HZNPC prioritizes hiring local residents at job fairs and recruitment events for its construction work, and has attracted over 100 college graduates who are natives of Huangbu and more than 3,000 workers from nearby villages and towns to work for construction units.

FCGNPC invites professional technicians to Longhuai Village in Guangxi to train local villagers on mulberry seedling cultivation and culinary skills. It also provides employment opportunities for qualified residents, and has recommended six of them to work at the Fangchenggang Base.

YJNPC coordinates partner companies to stage rural job fairs to facilitate rural vitalization and assisted Yangjiang Yunxing Environmental Engineering Co., Ltd., a village-run enterprise in Yunbo Village in improving operations and expanding its business to cover scenic road cleaning, resulting in 14 new jobs in 2023.

Cases | Enhancing women's employment skills

Leveraging the talent station for rural vitalization in Yunbo Village, YJNPC organized the "Guangdong Housekeeping Services Programme" (Infant Caregiver) skills training program. In collaboration with its partners, JYNPC meticulously designed comprehensive infant care courses that include both theories and hands-on caregiving skills. This highly practical and employment-oriented training enabled local women to seek more job opportunities. Among the trainees are new mothers, villagers planning to work as domestic service providers, women from households lifted out of poverty, and women engaged in casual labor. So far, 71 women have passed the assessment and obtained the Certificate of Occupational Skill Level for infant caregivers.

Boosting the sales of rural agricultural products

CGN has assisted targeted areas in expanding sales channels for agricultural products in multiple ways, and effectively boosted the sales of local agricultural products.

RMB **26.08** million
Sales of agricultural products in 2023

RMB **17.82** million
Spent on purchasing agricultural products from targeted areas

Assistance cases

In the hot summer, CNNPC purchased over 2,500 kilograms of watermelons from local farmers for employees, to help solve the sales problem, and worked with local government to promote local characteristic agricultural products. Additionally, CNNPC purchased more than 1,000 kilograms of corn from the Changsha Village Joint-Stock Economic Cooperative in Xiaguan Town. It also designated a zone in the staff canteen to sell the latter's agricultural and fishery products.

YJNPC has supported Yunbo Village to tap into local resources, and advanced several projects including the "Bona Villa" comprehensive demonstration project, a black-bone tea bonsai exhibition and sales center, and a deep-processing cooperation project for seafood products. The aim is to transform Yunbo into a comprehensive demonstration village for rural vitalization, characterized by strong industries, a beautiful environment, thriving culture, flexible mechanisms, and prosperous residents.

Community Development

CGN is committed to the benign integration between its project sites and local communities. By improving infrastructure and funding educational initiatives, etc., CGN effectively stimulates local economic and social development, and injects vitality into local communities.

Improving infrastructure

- FCGNPC implements a project to harden a 1.4-kilometer road and improve facilities for the village collective's mulberry orchard, and puts the wasteland back into good use. In response to the lack of public facilities and damaged village collective equipment, it has promptly invested RMB 4 million of non-reimbursable assistance fund to address the problem.
- NDNPC donates RMB 300,000 for installing streetlights in Yujing Village.
- HZNPC has completed the expansion of village roads in Shapu Village, the upgrade of roads in Wangjingzhou Village, and the reconstruction of drainage channels in Xiakeng Village and Xinyu Village, improving the appearance of these villages.

Supporting local education

- HZNPC has set up a development fund totaling RMB 3.75 million to vigorously boost the development of local educational, cultural, and health services. Supported by this fund, Huangbu Middle School dramatically improved its academic performance, rising from 15th place in the county in 2015 to 1st place in 2023.
- HYHNPC has donated RMB 150,000 to the Dalian Hope Project for the upgrading of teaching equipment and maintenance of the campus facilities at Liaohe Hope Primary School in Hongyanhe Town.

Supporting vulnerable groups

- HYHNPC has donated RMB 550,000 to the Wafangdian Charity Federation to support various initiatives in Hongyanhe Town. These include providing assistance for major illness relief, aid for families in financial difficulty, maintenance of facilities and purchase of teaching supplies for the local kindergarten, as well as the upkeep of activity room in Pingshan Village, Tuoshan Town.

Transparent Public Communication

In line with the principle of "building friendship with local communities to foster an amicable, secure and prosperous neighborhood," we have established a trustworthy, transparent, and unimpeded two-way public communication mechanism. We continuously carry out diverse popular science activities and actively address community concerns during project development and operations, aiming to nurture a positive social impact.

Three-dimensional and engaging Open Day activities

On August 7, 2023, CGN launched a series of popular science activities themed "Promoting Green Development Together" and officially released the nuclear science popularization brand "Creating the Future Together" in collaboration with educational institutions. Various engaging and interesting study tours were organized simultaneously at several NPPs. Additionally, CGN jointly developed high-quality open courses with mainstream media to enhance public awareness of clean energy.

180 million
Exposures on the Internet

35+
Initial reports

500+
Reprints by 20+ mainstream media

100 million+
Views attracted to the hashtag #Promoting Green Development Together#

200 million+
Views attracted to the hashtag #The CGN Open Day on Aug. 7#

Well-organized study tour activities

CGN has coordinated the six in-operation nuclear power bases to simultaneously organize highly engaging parent-child study tours under one theme, yet in diverse forms and with distinctive features. By fully mobilizing public participation, over 100 parent-child pairs from 13 provincial regions were invited. The tour routes and activities were tailored to their backgrounds – e.g. some parents are doctors, police officers, teachers, and firefighters.

150
Partner schools for collaborative science popularization

14
Provinces, autonomous regions and municipalities directly under the Central Government covered

500 million
Exposures on the Internet

DNMC

The citywalk routes covering the top 10 must-visit spots allow the participants to appreciate the charms of China's first large-scale commercial nuclear power station for its harmonious coexistence with nature.

YJNPC

The parents and children gained a deeper understanding of the company's history, had the sight of the Chinese white dolphin, known as the "giant panda of the water", and felt Yangjiang NPP's commitment to green development.

NDNPC

The study tour was divided into three parts: exploration and learning, interactive experience, and sharing of thoughts, to raise the participants' awareness of nuclear power in an enjoyable and educational way.

HYHNPC

The study tour integrated the local football culture of Dalian into the popularization of nuclear science.

TNPJVC

The study tour offered the participants the opportunity to stroll around Luhu Lake and enjoy local delicacies while deepening their understanding of nuclear energy.

FCGNPC

To encourage learning while playing and exploring, the study tour designed some stamp-collection stops along the route, and awarded gifts to the participants who collected all the stamps, so as to deliver an enriching, diverse visitor experience.

Event Highlights

The joint nuclear science popularization brand – "Nuclear Energy for the Future"

CGN has jointly launched the "Nuclear Energy for the Future" science popularization brand with more than a hundred schools around the nuclear power project sites. Based on this, we have built a high-quality clean energy science popularization service system and continuously improved the large-scale and sustainable collaborative science popularization mechanism. We held an unveiling ceremony for the first collaborative science popularization grade in the nuclear energy industry—six classes of Grade 7 of the Affiliated Shenzhen School of Guangdong Experimental High School in 2023, to build up a demonstration brand of school-enterprise collaboration for science popularization.

"Dialogue with Scientists" held in the Greater Bay Area for an audience of 2 million students

The "Dialogue with Scientists: Feel the Innovation Power in the Greater Bay Area" lecture series, co-hosted by the China Association for Science and Technology, the Ministry of Education, the Ministry of Science and Technology, CCTV, and five other organizations, was held at Daya Bay Nuclear Power Base. Facing an audience of 2 million young people online and offline, Wang Xin, Chief Architect of Hualong One, "Great Artisan" Qiao Sukai, and Yang Yiqiang, Director of the Space Flight Technology Center at the Chinese Academy of Sciences, among other scientists and technologists, shared their personal stories of perseverance for innovation.

Livestreaming science popularization sessions

To mark the 10th anniversary of the commercial operation of Unit 1 of Ningde NPP and other major events such as the Tea Leaves Harvest Festival in Ningde, NDNPC, in collaboration with the China Association for Science and Technology (CAST), CCTV, and other organizations, jointly planned livestreaming sessions and launched short videos online to promote science popularization in new ways. This initiative enriched content and built a science popularization brand.

10+
Sessions held

200 million +
Exposures on the Internet

Corporate Philanthropy

CGN continues to enrich the practice and content of its mission-driven and transparent CSR management model. By carrying out extensive volunteer and non-profit activities targeting elderly groups, left-behind children, and disadvantaged communities, we actively promote our commitment to fulfilling our CSRs as a central SOE.

RMB **78.8119** million
Total donations worldwide

RMB **1.9491** million
Total donations overseas

Disaster relief

Providing assistance to firefighting

In March 2023, a fire broke out on a farmland in Hongyanhe Town, Liaoning. The HYHNPC fire brigade responded immediately upon receiving the alarm, assembling within one minute and arriving at the fire scene within five minutes. They quickly brought the spreading fire under control, thus preventing significant economic losses for local farmers. In recent years, the HYHNPC fire brigade has handled 13 mountain fires in the surrounding areas and participated in 12 firefighting and rescue operations in local communities. Their efficiency and professionalism have contributed to the safety of local communities.

Providing assistance to earthquake-stricken areas

In December 2023, upon learning that Jishishan County, Gansu Province, was hit by a 6.2-magnitude earthquake, CGN promptly organized its subsidiaries stationed in Gansu and Qinghai to respond swiftly. They procured and donated urgently needed winter supplies such as tents, quilts, and cotton clothing to the affected areas. Simultaneously, CGN New Energy mobilized all wind and solar power stations in Gansu, Qinghai, and Ningxia to immediately check the step-up station equipment, buildings, and wind turbine foundations. They closely monitored the operational status of the equipment, and scheduled more staff for emergency response, to ensure the post-earthquake integrity of facilities and stable power supply.

Supporting post-disaster recovery

In July 2023, Typhoon Talim caused significant damage to the coastal roads in Qian'ao Village, Lufeng, Guangdong, eroding the road shoulders and causing collapses in some areas. The local government urgently requested assistance from LFNPC for roadbed repairs. LFNPC promptly responded, dispatching workers to contact the village committee and conducted on-site inspections. Then they quickly developed an emergency reinforcement plan, and specified the specifications and quantity of required stone, transportation routes and unloading locations. A total of 100 truckloads of stone were delivered. LFNPC swiftly repaired the road breaches, helping Qian'ao navigate the typhoon season safely and smoothly.

01

The HYHNPC fire brigade at work

02

CGN staff load aid supplies to the earthquake-stricken areas in Jishishan County, Gansu

03

LFNPC's swift response has received widespread praise from the local villagers.

04

The summer daycare program for left-behind children is popular among parents and children.

05

NDNPC employees visit an elderly man in the surrounding area

06

DNMC employees on the blood donation van

07

TNPJVC employees on the blood donation van

Sincere care

Caring for left-behind children

In collaboration with local schools, CNNPC has launched a summer daycare program for left-behind children from disadvantaged families around its project site. This program pairs one volunteer with one child to provide tutoring and other help to support their lives. The volunteer team not only donates supplies like drawing books and other learning and living essentials, but also employs a variety of methods such as lectures, discussions, case studies, and role plays to teach the children knowledge about nuclear energy. This program not only addresses the urgent needs of parents, but also kindles the children's interest in clean energy.

Caring for the elderly

For many years, during traditional festivals such as the Spring Festival and the Double Ninth Festival, NDNPC has visited the elderly in Niulanggang, Dongcheng, Yujing, and Taimushan Seniors University. By the end of 2023, its sympathy visits had benefited nearly 1,300 elderly people.

Blood donations

Blood donations

In August 2023, the Shenzhen blood bank announced a severe shortage of Type O and Type A blood and called for blood donations from the general public. DNMC promptly responded and called on its employees to donate blood, receiving widespread support. Nearly 70 employees donated a total of 24,200 mL of qualified blood to the blood bank.

In November 2023, TNPJVC, in collaboration with Jiangmen Blood Station and Chixi Town Government, organized a voluntary blood donation event. Over 60 employees signed up. Among them, 39 successfully made blood donation, totaling 10,100 mL.

Outlook

For CGN, 2024 is a crucial year to develop strategic emerging industries, continue with the SOE reform, and realize its major targets for the 14th Five-Year Plan period. We will bear in mind our special mission in the new era and on the new journey as a central SOE. We will strengthen core functions, improve core competitiveness, better leverage the supporting role of technological innovation, industrial control, and safety, and make greater contributions to Chinese modernization.

Continuing to consolidate the foundation and ensuring absolute safety

We will thoroughly study and implement Xi's instructions on nuclear safety and work safety. We will take responsibilities to ensure nuclear safety and see to it that safety responsibilities are fulfilled by all the stakeholders. We will keep improving the safety, quality, environment management system and make every effort to eliminate hazards to lay a solid foundation for development.

Focusing on priority tasks and improving overall effectiveness of technological innovation

We will speed up the transition to innovation-driven development. We will expedite technological innovation and make it our top priority. We will redouble efforts to improve the control of industry and persevere to meet the established goals. With an accurate understanding of main innovation targets, we will build a high-level scientific research platform, take multiple measures to improve the control of industrial chains, and continue to optimize the innovation mechanism.

Striving for perfection and working to advance production to a new level

In the pursuit of excellence, we will continue to improve production, operation, and engineering construction activities, and work to bolster strengths and strengthen weak links. We will continue to pursue excellence in traditional advantageous area, such as production and engineering construction, and reach the world-class level in production and operations. We will advance major engineering construction projects according to high standards and accelerate the digitization of core business.

Ensuring effective implementation of responsibilities and further advancing the reform tasks

We will double down on implementing our main responsibilities with a focus on key areas and key links to ensure all key tasks are completed. We will firmly grasp the direction and focus of reform, coordinate efforts to complete priority tasks, and continue to build a strong workforce.

Performance Data

Safety

Performance Indicators		2021	2022	2023
Maximum personal radiation dose at each nuclear power plant in operation	Daya Bay NPP (mSv)	11.854 ①	9.96	10.48
	Ling'ao NPP (mSv)			
	Lingdong NPP (mSv)			
	Yangjiang NPP (mSv)	8.83	9.49	10.50
	Hongyanhe NPP (mSv)	5.98	8.00	10.50
	Ningde NPP (mSv)	7.33	8.27	10.21
	Units1-3 of Fangchenggang NPP (mSv)	3.61	3.69	7.26 ②
	Taishan NPP (mSv)	8.50	3.88	2.24
Nuclear safety	Number of in-service nuclear power units	25	26	27
	Ratio of units achieving the world's advanced level (the world's top quartile) in WANO indicators (%)	83.0	79.2	77.5
	Unplanned shutdowns (times)	1	2	3
	Number of level-2 or above incidents defined in the International Nuclear and Radiological Event Scale (times)	0	0	0
	Human error in license operating events	8	3	5
Personal safety of employees	Work-related fatalities	2	0	0
	Industrial safety accident rate per 200,000 man hours	0.009	0.005	0.002
	Occupational disease incidence rate	0	0	0

Note: ① Since 2021, data of Daya Bay NPP, Ling'ao NPP and Lingdong NPP have been combined for statistics .
② The Unit 3 of Fangchenggang NPP put into operation in 2023 is included in the statistics

Scientific research

Performance Indicators		2021	2022	2023
Investment in R&D activities (RMB billion)		4.15	5.16	5.67
Total participants of R&D activities		8,909	10,124	10,689
Educational background of R&D personnel	Doctor's degree (headcount)	203	234	260
	Master's degree (headcount)	2,786	3,192	3,351
	Bachelor's degree (headcount)	4,924	5,343	6,274
National talents	Academician (headcount)	2	2	2
	New Century Hundred-Thousand-Ten Thousand Talent Project (headcount)	4	3	4
	Number of recipients of special allowance of the State Council (headcount)	34	44	36
Patent applications	Invention	2,031	1,168	1,456
	Utility mode	538	685	917
	Appearance design	15	11	10
Authorized patents	Invention	470	434	635
	Utility mode	767	772	768
	Appearance design	24	15	8

Operation

Performance Indicators	2021	2022	2023
Total assets (RMB billion)	848	912.7	1,000.9
Total overseas assets (RMB billion)	134.7	139.7	144.3
Operating income (RMB billion)	121.4	137	149.8
Overseas operating income (RMB billion)	22.5	34.2	37.2
Ratio of overseas operating income (%)	19	25	24.85
Total tax payment (RMB billion)	12.6	16.2	19.4
Gross in-service installed capacity of clean energy (GW)	68.5096	77+	84.99
Gross in-service installed capacity of nuclear power (GW)	28.26	29.38	30.568
Gross in-service installed capacity of nonnuclear power (GW)	40.1541	48.3998	50.3928

Environment

Performance Indicators	2021	2022	2023
Carbon dioxide emissions equivalently reduced thanks to on-grid power generated from clean energy (million tons)	210	220	260
Direct energy consumption [gasoline] (ton)	2,809.36	2,752.81	3,519.28
Direct energy consumption [diesel] (ton)	4,476.45	4,690.44	4,940.85
Direct energy consumption [natural gas] (million cubic meters)	2,602.38	2,657.51	2,857.50
Indirect energy consumption [purchased electricity] (TWh)	13.877	1.025	15.089
Comprehensive energy consumption (10,000 tons of standard coal)③	179.5	183.92	191.13
Comprehensive energy consumption per RMB 10,000 of output value (tons of standard coal equivalent)④	0.1486	0.1424	0.1428
Total water consumption (million tons)	65.7766	72.2864	39.969
Total water recycling and reuse rate (%)	97.74	97.89	98.93
Major environmental accidents	0	0	0

Note：③ This indicator refers to the sum of the standard coal equivalent of actual energy consumption in industrial production of an enterprise, and deducts the sum of the enterprise's standard coal equivalent of energy conversion output.

④ This indicator refers to the ratio of comprehensive energy consumption of enterprises to their total industrial output value. The formula is comprehensive energy consumption (tons of standard coal equivalent) divided by industrial gross output value (RMB 10,000).

Staff development

Performance Indicators		2021	2022	2023
Total employees (headcount)		42,972	44,576	47,121
By gender (%)	Male	83.52	83.24	83.83
	Female	16.48	16.76	16.17
By age (%)	30 years old and under	25.14	24.96	26.58
	31-50 years old	67.61	67.70	65.71
	51 years old and above	7.25	7.34	7.71
By region (%)	Employees from China	91.64	92.63	93.62
	Employees overseas	8.36	7.37	6.38
Total training hours for employees (million hours)		2.59	2.808	4.742
Annual training hours per employee (hour)		60	70	101
Employee turnover rate (%)		6.65	5.82	5.79
New employees (headcount)		3,758	4,515	5,310

Community contribution

Performance Indicators	2021	2022	2023
Total donations worldwide (RMB million)	77.6754	46.5974	78.8119
Poverty alleviation investment (RMB million)	59.476	55.5112	58.8119
Number of CGN employee volunteers	26,718	11,659	9,715

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