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2021 | CGN

Corporate Social Responsibility Report

About This Report

This is the 11th annual 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, 2021 to December 31, 2021. 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* issued 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 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 major omission.

Reference

For better expression and readability, 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 "CGNP", 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", CGN's U.K. nuclear project is referred to as "CGN UK", 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", China Techenergy Co., Ltd. is referred to as "China Techenergy", CGN Environment Protection Industry Co., Ltd. is referred to as "CGN Environment Protection", CGN Capital Holdings Co., Ltd. is referred to as "CGN Capital", and CGN Services Group Co., Ltd. is referred to as "CGN Services". Names of CGN's branches are in the form of "Region Name + Branch" and names of nuclear power bases are in the form of "Region Name + Nuclear Base".

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).

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Yangjiang Nuclear Power Base

Message from the Chairman

The year 2021 marked a milestone in the history of the Party and the country. China held grand celebrations for the 100th Anniversary of the Founding of the CPC and achieved the first centenary goal while embarking on a new journey toward the second centenary goal. Faced with global changes unseen in a century and the COVID-19 pandemic, CGN resolutely implemented the decisions and arrangements of the CPC Central Committee and the requirements of the SASAC, calmly responded to risks and challenges, and made significant achievements in this first year covered by the 14th Five-Year Plan. By the end of 2021, our assets totaled RMB 848 billion, our businesses covered 19 countries across the world, the installed capacity of our clean energy power plants in operation exceeded 68.5 GW and we fed 298 TWh of electricity to the grid, actively contributing to China's stable economic growth and social stability.

Keeping in mind the country's most fundamental interests while serving national strategies

Serving the Party and overall national development

In response to major national strategies, we thoroughly implement the new development philosophy and integrate deeply into the new development pattern while planning and advancing our work centering around the nation's overall development. Besides contributing to China's 30·60 Decarbonization Goal (to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060), we actively fuel the transition to green and low-carbon energy. As a world-leading clean energy supplier and service provider, we strive to develop clean energy, including nuclear power, wind power, and solar power, and promote the transition to a low-carbon energy mix, to support China's green development. Since Unit 1 of Daya Bay Nuclear Power Plant was put into operation in 1994, we have generated 1,944.358 TWh of on-grid electricity, equivalent to reducing the consumption of 590.678 million tons of standard coal, cutting carbon dioxide emissions by 1,621.953 million tons, or planting 4.375 million hectares of forests, contributing to peaking carbon emissions and achieving carbon neutrality. We have also aligned the effort to consolidate and expand the achievements made in poverty alleviation with that to drive rural vitalization. We have been commended as a national model in fighting poverty and won more than ten awards at the provincial/ministerial level or above for it. As we moved to drive rural vitalization, we resolutely followed the requirement that even though the poor counties have been lifted out of poverty, the responsibilities, policies, assistance, and supervision shall still exist, and continued our assistance to them. In 2021, CGN spent more than RMB 38 million in 15 targeted assistance programs in Lingyun and Leye counties to help them develop local industries. The "Egret Class" education aid project was expanded to ten schools in five provincial regions, benefiting 2,132 students in need. We worked with stakeholders to consolidate our poverty alleviation achievements, get the rural vitalization drive to a good start, and achieve common prosperity.

Promoting the "Strict Compliance, Prudent Decision-making, Detail-oriented and Fact-based Approach" ("SPDF") work style to coordinate development and ensure safety

Continuing to promote the development of clean energy

We consider the safety and high quality of nuclear power projects as our primary political responsibility, promote the working style of "strict compliance, prudent decision-making, detail-oriented principle and fact-based approach", work relentlessly to shore up our weaknesses, and coordinate resources to ensure the sustainable development and safety of clean energy. The safety situation has been improving. In 2021, the 25 nuclear power units of CGN maintained safe and stable operation. The ratio of units achieving the world's advanced level of WANO (World Association of Nuclear Operators) indicators reached 83%; the average capacity factor of in-service units achieved the world's excellent level in WANO for the fourth consecutive year and 23 CPR units realized zero automatic shutdowns, the best record in CGN's history. As of December 31, 2021, Unit 1 of LingAo Nuclear Power Plant had secured safe operations for 5,622 days, a world record for generating units of similar types. Our on-grid power generation also reached a new high, with 201.15 TWh, 5.15 TWh more than the planned generation. The average utilization duration of the 23 CPR units reached 8,058 hours, crossing the 8,000 threshold for the first time. At home, CGN generated 49.2 TWh of on-grid electricity using clean energy, 1.05 TWh more than the planned generation. 2 TWh of electricity was sold through the pilot scheme for green power trading, which accounted for 25% of the total trading volume, ranking the first nationwide. CGN also made breakthroughs in business operation and development. Unit 5 of Hongyanhe Nuclear Power Plant (NPP) was put into operation successfully, the construction of Unit 3 of Fangchenggang NPP and Unit 1 of Taipingling NPP advanced smoothly, and Ulba-FA LLP (nuclear fuel assemblies plant co-funded by CGNPC Uranium and Kazatomprom) was officially put into operation, marking the official start of the production of nuclear fuel assemblies by the plant.

Deepening reform and enhancing technological innovation

Providing inexhaustible driving forces for high-quality corporate development

We fully implement the three-year action plan for SOE reform and have made significant breakthroughs in the reform of the industrial layout, the property rights system, the investment system, the governance system, and the organizational system. At the same time, we deepen the institutional reform for R&D and have formed a "three-in-one" layout for technological innovation to gather momentum for reform and innovation and for building a world-class clean energy group with global competitiveness at an earlier date. We press ahead with the reform. Through the integration of specialized businesses, we created a "6+1" industrial layout covering nuclear power, nuclear fuel, new energies, non-power nuclear technology, digitization, tech-based environmental protection, and industrial finance. We work hard to build a modern enterprise system with Chinese characteristics. We have always taken the Party leadership over SOEs as a major political principle and the establishment of a modern enterprise system as the direction of the reform of SOEs. Party leadership has been deeply integrated into corporate governance. We urge our subsidiaries and branches to establish Party organizations as required, so as to heighten the Party committee's role in charting the course, crafting master plans, and promoting the implementation of policies, and the Board's role in laying down strategies, making decisions, and guarding against risks. By 2021, we completed 90% of the tasks in the three-year action plan for SOE reform, and opened new ground in technological innovation. The Generic Design Assessment (GDA) of Hualong One was completed on schedule. The South China Atomic Energy Science and Technology Innovation Center and other major national science and technology projects advanced smoothly. We have 15 demonstration projects completed or under construction for using the electron beam (EB) technology to treat special in ten areas. In 2021, CGN won six China Patent Awards, and ranked 31st among all central SOEs in terms of patent quality. Our valid patents have totaled 6,450.

Strengthening Party building and staying committed to its founding mission

A new journey of leading high-quality corporate development with high-quality Party building

We continue to strengthen political guidance. We have fully rectified problems identified during the inspection tours of the Party Committee of the SASAC, and continuously enhanced the Party leadership and Party building to gather strength for high-quality corporate development. Regarding Party history education as an important political task, we have achieved remarkable results in carrying out history study activities with the characteristics of CGN, and helped employees better understand the Party's theories, do practical work, and make new advances. By organizing themed reading sessions for members of the Party Committee and rotational training sessions on Party history, we strengthened Party members' consciousness of the need to maintain political integrity, think in big-picture terms, follow the leadership core, and keep in alignment with the central Party leadership, so that they would stay confident in the path, theory, system, and culture of socialism with Chinese characteristics, and remain committed to upholding General Secretary Xi Jinping's core position on the CPC Central Committee and in the Party as a whole, and upholding the CPC Central Committee's authority and its centralized, unified leadership. The "Serving the People with Concrete Actions" campaign has made solid progress, and solved many pressing concerns of the employees. In 2021, we earmarked over RMB 50 million to the campaign, and completed over 570 tasks for improving employees' well-being, including building small kitchens, bathrooms, sports and cultural rooms and vegetable gardens for employees, and offering special benefits for overseas workers. We continued to enhance Party building, and saw to it that studying on Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, the guiding principles of the 19th CPC National Congress and Xi's major policy addresses as "the first item on the agenda" of all meetings in strict accordance with the "four standards." We refined the list of the "two responsibilities" for exercising full and strict Party self-governance, strengthened the examination and evaluation of the accountability system for Party building, and improved the performance of the responsibility for exercising self-supervision and practicing self-governance. We developed a list of tasks for the standardization of primary-level Party branches, launched the Red Egret Program for the training of Party members, and continued to enable primary-level Party branches to play their part. We have further exercised full and strict Party self-governance, and comprehensively promoted the system under which officials do not dare, are not able, and have no desire to be corrupt. Focusing on combating existing corruption, and taking a zero-tolerance approach to potential corruption, we have strengthened deterrence so officials don't dare to commit acts of corruption, and significantly improved the effect of full and strict Party self-governance.

The year 2022 is crutial for China to embark on a new journey towards the Second Centenary Goal of building China into a modern socialist country in all respects. As a national key player in the clean energy sector, CGN, adhering to the guidance of the Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, will press ahead with technological innovation with concerted efforts. We will continue to contribute to the realization of the carbon peak and carbon neutrality goals, the building of a modern socialist country in all respects, and great national rejuvenation, and set the stage for the upcoming 20th CPC National Congress with outstanding achievements.

杨长利

Secretary of the Party Committee and Chairman
China General Nuclear Power Corporation

CSR Feature

Staying True to the Party's Founding Mission and Following Its Leadership in the New Era

The 100-year journey of the CPC has surged forward with great momentum, and its original aspiration remains even firmer one hundred years later. To mark the centenary of the CPC, CGN launched a campaign on Party history education, earnestly implemented the Party building tasks assigned to central SOEs by the SASAC Party Committee, and effectively rectified problems identified during inspections organized by the SASAC Party Committee. CGN worked hard to promote full and strict governance over the Party, and comprehensively strengthened Party leadership and Party building to gather momentum for the Group's high-quality development.

Studying the Party history, understanding its theories, doing practical work, and making new advances

Under the strong leadership of the Party Committee of the Group, Party organizations at all levels took Party history education as an important political task, and organized study activities with the characteristics of CGN. Following the requirements of "studying the Party's history, understanding its theories, doing practical work, and making new advances", CGN guided all Party members to bear in mind the national rejuvenation strategy within the wider context of once-in-a-century changes taking place in the world and remain mindful of the country's most fundamental interests, and further strengthened their consciousness of the need to maintain political integrity, think in big-picture terms, follow the leadership core, and keep in alignment with the central Party leadership. We have always stayed confident in the path, theory, system, and culture of socialism with Chinese characteristics; upheld General Secretary Xi Jinping's core position on the CPC Central Committee and in the Party as a whole, and upheld the CPC Central Committee's authority and its centralized, unified leadership; and resolutely safeguarded General Secretary Xi Jinping's core position on the CPC Central Committee and in the Party as a whole, and the guiding role of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era.

CGN has been commended by the No.8 guidance group of the SASAC for Party history education at central SOEs several times

CGN engineer Zhou Chuangbin was awarded the title of **National Outstanding Party Member**

Understanding the Party's theories more deeply

Reading sessions and rotational training on Party history were organized for members of the Party Committee of CGN. The Standing Committee of the Party Committee conducted thorough safety inspections at nuclear power bases, and checked on the progress and effect of Party history education. CGN thoroughly studied the important speech made by General Secretary Xi Jinping on July 1 and the guiding principles of the Sixth Plenary Session of the 19th CPC Central Committee, and continued to implement Xi's instructions on the development of the nuclear power industry and CGN on 18 different occasions.

Boosting confidence to be more determined

The Party Secretary of CGN took the lead in giving lectures on the Party's history, theories and policies, setting off a wave of learning Party lectures across the Group. Members of the Party Committee of CGN gave a total of 26 Party lectures, and guided secretaries of primary-level Party organizations to give more than 850 Party lectures centering around the 14th Five-Year Plan, the annual central work and job responsibilities. More than 2,450 Party lectures were given by ordinary Party members, including more than 10 given by Zhou Chuangbin, a national outstanding Party member, to government agencies, universities, and enterprises.

Improving moral characters to inherit the heritage

We studied and publicized the stories of the older generation of entrepreneurs such as Peng Shilu, a recipient of the "Model of the Times", and launched the campaign of "retracing the route of the Long March". The subsidiaries of CGN, based on local revolutionary legacy, organized more than 870 history study activities. Yang Changli, Secretary of the Party Committee and Chairman of CGN, published signed articles on the study of Party history on the *People's Daily* and the official website of Party history education, and the Party secretaries of CGN's secondary subsidiaries published 19 articles on Party building and theoretical research.

Doing more vivid practical work

All 138 members of the leading groups at all levels of the Group participated in themed meetings of Party branches as ordinary Party members, and primary-level Party branches identified 3,368 corrective actions. We also built 903 task forces composed of 9,651 Party members to tackle problems in areas such as work safety and project construction. They overcame numerous difficulties, and closely combined the study of Party history with their central work, holding high the banner of the Party on the front line. In addition, the "Serving the People with Concrete Actions" campaign made solid progress, with 570 items completed for improving employees' well-being.

15
Times cited by the leading group for Party history education of the SASAC in its bulletins

50
Articles published on the *People's Daily* and other central mainstream media

86
News articles published on new media platforms such as xuexi.cn.

50 million
Reposts of the hashtag - #Retrace the route of the Long March together# - on Weibo

Featured activities

On April 14, 2021, Yang Changli, Secretary of Party Committee and Chairman of CGN, gave the lecture titled "Study the Party's History, Understand Its Theories, Do Practical Work and Make New Advances, and Fully Promote the High-Quality Development of the CGN" .

On June 18-20, 2021, the CGN Party Committee organized reading sessions on the Party's history in Shanwei, Haifeng county, and LFNPC in Guangdong, and reviewed the Party admission oath in front of the statue of Peng Pai in the Red Palace and Red Square in Haifeng. Members of the CGN Party Committee took the lead in studying the history of the CPC and focused on making progress in key projects. The construction of Units 5 and 6 of the Lufeng Nuclear Power Project was approved by the central government on April 20, 2022.

From May to August 2021, CGN New Energy launched the campaign of "retracing the route of the Long March", where representatives of Party members visited former revolutionary sites in Jiangxi, Fujian, Guangdong, Hunan, Hubei, and Shanxi, sustaining the Party's revolutionary legacy, and carrying forward its founding spirit.

The Party Committee of NDNPC, a nuclear power base inspected by General Secretary Xi Jinping in person, leverages its unique strengths and local revolutionary legacy to develop four red education routes connecting the site of the Gutian Conference, Xiadang township, Pingnan county and Guanling town.

To support outage operations, YJNPC opens a makeshift employee lounge where food, drinks, tables and chairs, and air conditioning are offered for repair workers to take some break.

CGN Juner New Materials Co., Ltd., a subsidiary of CGN Nuclear Technology, educates the staff on Party history on shuttle buses and in workshops and dormitory buildings, covering all front-line employees.

Celebrating the centenary of the CPC

CGN studied and implemented the speech made by General Secretary Xi Jinping on July 1 at the grand celebration of the centenary of the CPC. Employees expressed their love for the Party through singing and dancing, flash mobs, stage plays, calligraphy and painting exhibitions, etc., and their determination to work hard for high-quality development.

On June 30, 2021, CGN held a conference to celebrate the 100th anniversary of the founding of the CPC and commend national outstanding Party members, national outstanding Party affairs workers, and national advanced primary-level Party organizations.

CGN holds a singing & dance flash mob to celebrate the Party's centenary.

On July 1, 2021, nearly 29,000 Party members and employees of CGN watched the live-broadcast ceremony marking the centenary of the CPC together, and responded enthusiastically to Xi's speech at the ceremony.

CGN Engineering solicits works of calligraphy, paintings and photos from employees, and selects more than 100 works for exhibition.

The central group for theory study under the Party Committee of CGN summons an enlarged meeting on studying and implementing Xi's July 1 speech.

Employees of CGN Research Institute shoot 13 programs to celebrate the Party's centenary. The picture is a scene from *The Great Turning Point*, a story about the Zunyi Conference.

On the eve of July 1, Yang Changli, Secretary of Party Committee and Chairman of CGN, visited comrade Zan Yunlong who had been a Party member for more than 50 years.

An employee recites a poem written by Mao Zedong on stage at NDNPC's celebration of the centenary of the CPC.

Role models

30 years of dedication to the nuclear power industry

——Zhou Chuangbin, a national outstanding Party member

On the eve of the Party's 100th anniversary, the CPC Central Committee announced a list of national outstanding Party members, national outstanding Party affairs workers, and national advanced primary-level Party organizations on June 28, 2021. Zhou Chuangbin, a senior expert in purpose-specific tests of the Commissioning Center of CGN Engineering and a senior engineer (at the researcher level), was awarded the title of National Outstanding Party Member.

Zhou joined Daya Bay Nuclear Power Plant in 1991 right after graduation, and has devoted to nuclear power operation and commissioning in the past three decades. He has grown from a technician to an expert and a leader in the field of nuclear power operation and commissioning. He has solved many major technical problems, and is known among business insiders as the Master of Creation and Worker Academician. In recent years, he has served as the deputy chief engineer (commissioning) of the Hualong One (HPR1000) demonstration project. Under his leadership, the team overcame technical problems and established the HPR1000 commissioning standards, promoting the development of China's third-generation nuclear power technology.

With all the awards he has won, Zhou is still working hard on the front line. With more honors comes greater responsibility. "That means I need to do a better job," he said. In recent years, Zhou has also served as an on-the-job instructor, serving more than 200 teaching hours at most a year, to cultivate more nuclear power professionals for the Group and for the country. In the position of nuclear power operation and commissioning, Zhou Chuangbin has kept the promise he made while applying for the Party membership:

Honors and awards

- In 2005, the *Operation Risk Analysis and Control of the Ten-year Outage Project* received the third prize of the National Defense Science and Technology Progress Award.
- In 2006, Zhou Chuangbin was awarded the title of "Knowledge-Based Model Worker of Central SOEs" by the SASAC of the State Council.
- In 2006, the I*ndependent Implementation of Hydraulic Test of the Primary Loop of M310 Pressurized Water Reactor* received the third prize of the National Defense Science and Technology Progress Award.
- In 2007, Zhou Chuangbin was awarded the "National May 1st Labor Medal" by the All-China Federation of Trade Unions.
- In 2008, Zhou Chuangbin received the title of "National Technical Expert" from the Ministry of Human Resources and Social Security.
- In 2009, Zhou Chuangbin was awarded special government allowance from the State Council.
- In 2014, the "nuclear power plant accident monitoring system and its monitoring methods" received the gold award of the China Patent Award.
- In 2018, Zhou Chuangbin received the China Skills Award from the Ministry of Human Resources and Social Security.
- In 2020, Zhou Chuangbin received the title of "National Model Worker" from the CPC Central Committee and the State Council.
- In 2021, Zhou Chuangbin was awarded the title of "National Outstanding Party Member" by the CPC Central Committee.

"Nuclear power is a great achievement of economic development since the reform and opening up. I am determined to dedicate my life and ability to the nuclear power industry of my motherland."

——Zhou Chuangbin

The "Serving the People with Concrete Actions" campaign

Party organizations at all levels of CGN fully combined Party history education with the central work, and focused on solving the most pressing concerns of the employees to ensure solid and continuing progress with the "Serving the People with Concrete Actions" campaign.

RMB 50 million+
Spent on the "Serving the People with Concrete Actions" campaign

570 +
Tasks completed for improving employees' well-being

Serving local community

CGN always upholds the people-centered development philosophy, and makes full use of project resources to benefit local community. We try our best to address the needs of nearby residents, and enhance their sense of security, happiness and gain.

Drought relief

In the spring of 2021, the eastern part of Huizhou in Guangdong was hit by a serious drought, resulting in a significant fall of the water level in local reservoirs. Villages and towns such as Huangbu were faced with shortages of water supply. In response, Taipingling NPP sent its fire brigade to deliver water to local people for 64 consecutive days, transporting 2,680 tons of water in 268 tankers, effectively alleviating local water shortage.

Charity sale of lychee

CGNPC Uranium held the third charity sale of lychee for farmers in Guangxing village, the town of Dongping in Yangjiang, Guangdong, to consolidate achievements made in poverty alleviation. Its employees and their families purchased a total of 1,750kg of lychee, worth over RMB 30,000.

Fighting COVID-19

To support the COVID-19 fight, CGN Services sent 191 volunteers to help communities in Longgang and Futian districts of Shenzhen with 17 rounds of nucleic acid testing of over 27,000 residents, and won praises from the local sub-district offices and residents.

Caring for employees

CGN attaches great importance to the work and life of front-line employees, S&T workers, and those working in remote project sites, and continues to do practical and good things for them with an effort to create an atmosphere where all employees are united for the rejuvenation of the Chinese nation.

The 5e community service project

Design Institute of CGN Engineering launched the 5e community service project, offering five categories of services meeting employees' needs for ideological education, culture & entertainment, lifestyle services, fitness and psychological health, to create a strong synergy for the central work.

Reducing workload and increasing efficiency of front-line employees through technical innovation

Focusing on "upgrading outage operations, improving and updating the process, reducing the workload of front-line personnel, and reducing safety and quality risks", CGN Operations achieved dozens of technological innovations and applied them to nuclear power overhauls. The new techniques have been widely praised by front-line employees for reducing their workload.

Building small kitchens, bathrooms, sports and cultural rooms and vegetable gardens for employees

CGN New Energy has opened small kitchens, bathrooms, sports and cultural rooms, and vegetable gardens for front-line employees at 280 new energy sites and plants under operation. The initiative has greatly improved employee satisfaction, making them more enthusiastic at work.

Leading and ensuring high-quality corporate development with high-quality Party building

CGN works hard to meet the requirements put forward by General Secretary Xi Jinping for state-owned enterprises to improve "six strengths", and continuously improves Party building and deepens full and strict Party self-governance, thereby leading and guaranteeing high-quality corporate development with high-quality Party building.

Vigorously improving the quality of Party building

Implementing the "first item on the agenda" system

In strict accordance with the "four standards", the Party Committee of the Group organized 171 sessions under the "first item on the agenda" system, and 859 sessions for Party committees of subsidiaries , and took corresponding practical actions.

Strengthening the performance of responsibility for exercising self-supervision and self-governance

The Group improved the list of the "two responsibilities" for exercising full and strict Party self-governance, and strengthened the leadership members' awareness of exercising effective self-supervision and strict self-governance. We also enhanced the supervision over the "top leader" and leadership members, and ensured that the Party Committee fulfilled its comprehensive supervision responsibility. In addition, we strengthened the performance evaluation of the Party building work to produce effective synergy with the accountability system for production and operations.

Building strong primary-level Party branches

CGN prepared a list of tasks for the standardization of primary-level Party branches, and launched the Red Egret Program for the systematic training of Party members.

Effectively rectifying problems identified in inspections

Cooperating with inspections by the Party Committee of the SASAC

In 2021, the Standing Committee of the Party Committee convened 10 meetings to discuss how to support the inspections, what the problems were, and how to rectify them. A rectification working group under the Party Committee was set up to comprehensively promote rectification. Last year, CGN was highly praised by the inspection team from the SASAC for completing 90% of its rectification tasks.

Promoting internal inspections

With focus on key tasks such as exercising full and strict Party self-governance, promoting high-quality development, and acting upon the Party's organizational line, we conducted internal inspections on the Party committees of five secondary subsidiaries, and identified 147 issues related to high-quality development, thus promoting corporate development.

Exercising full and strict Party self-governance

Addressing problems in specific areas

In 2021, we revised more than 30 regulations in key and sensitive areas such as the selection and appointment of personnel, tendering and bidding, and capital management, continued with our corrective actions to address problems in four areas, and implemented 228 corrective measures.

Strengthening anti-corruption education

In 2021, CGN held two anti-corruption cautionary education conferences for more than 3,000 employees, including the management at all levels and employees in key positions in key fields; all subsidiaries held a total of 35 such meetings based on their actual conditions.

CSR Feature

Remaining True to the Original Aspiration and Contributing to China's 30•60 Decarbonization Goal

The 14th Five-Year Plan period (2021-2025) is a key window for peaking carbon dioxide emissions, the key to which is developing low-carbon and green energy. As a world-leading clean energy supplier and service provider, CGN takes the initiative to align business operation and development with national development, vigorously develops clean energy, and continues to work on the supply side, production side, and consumption side, to contribute to carbon peak and carbon neutrality.

On the supply side

Developing clean energy and reducing carbon emissions at the source

Energy provides a material basis for economic and social development and is a major source of carbon emissions. Upholding the brand slogan of "natural energy powering nature", CGN actively develops low-carbon and clean energy, such as nuclear power, wind power, and solar power, aiming to reduce carbon emissions at the source and drive China and even the world to shift to a low-carbon energy mix.

High-quality development of nuclear power

Nuclear power, as a safe, controllable, environmentally friendly, low-carbon, and cost-effective modern energy source, is a practical choice for responding to climate change, delivering on carbon reduction commitments, and realizing low-carbon development. As a clean energy enterprise with nuclear power as the principal business, CGN has always been committed to promoting high-quality development of nuclear power, and has become China's largest and the world's third largest nuclear power company.

25 units
in operation

28.26 GW
total installed capacity

53 %
ratio of the total in the Chinese mainland

7 units
under construction

8.3 GW
total installed capacity

41 %
ratio of the total in the Chinese mainland

Key projects

July 31, 2021

Unit 5 of Hongyanhe NPP in Liaoning completed the 168-hour test run and was approved to be put into commercial operation, bringing the number of CGN's nuclear power units to 25.

Putting Unit 5 of Hongyanhe NPP into operation

December 24, 2021

Unit 1 of CGN's Taipingling NPP in Guangdong completed the hoisting of the dome. After the completion of all its 6 units, the project's annual power generation capacity will reach 50 TWh.

Construction site of Taipingling NPP, Guangdong

December 30, 2021

The first tank of concrete was poured on the nuclear island of Unit 2 of CGN's San'ao Nuclear Power Project, Zhejiang. After the completion of all its 6 units, the plant's annual power generation capacity will reach 52.5 TWh.

Construction site of San'ao Nuclear Power Project, Zhejiang

Carbon footprints of nuclear power bases

	Daya Bay Nuclear Power Base	Yangjiang Nuclear Power Base	Ningde Nuclear Power Base	Hongyanhe Nuclear Power Base	Fangchenggang Nuclear Power Base	Taishan Nuclear Power Base	Total
	1994-2021	2014-2021	2013-2021	2013-2021	2016-2021	2018-2021	
In-service installed capacity	6.122 GW	6.516 GW	4.356 GW	5.595 GW	2.172 GW	3.5 GW	28.261 GW
On-grid power generation	846.518 TWh	238.624 TWh	210.855 TWh	194.458 TWh	85.357 TWh	56.922 TWh	1,632.734 TWh
Equivalent to the reduction of standard coal consumption	256.072 million tons	72.184 million tons	63.784 million tons	58.824 million tons	25.82 million tons	17.219 million tons	493.903 million tons
Equivalent to the reduction of CO_2 emissions	704.303 million tons	198.535 million tons	175.431 million tons	161.789 million tons	71.017 million tons	47.359 million tons	1.358434 million tons
							3.674 million hectares (Equivalent to afforestation)

Note: The above data are cumulative statistics since the commercial operation of each nuclear power base.

Accelerating the development of new energies

In 2021, CGN created a "6+1" industrial layout, with new energies as a pillar, and worked actively for the sustainable, high-quality, and progressive development of new energy businesses at home and abroad. By the end of 2021, the installed capacity of domestic clean power projects in operation controlled by the Group reached 28.02 GW, while that of overseas clean power projects reached 12.229 GW, supplying clean energy for 29 provincial regions in China and 15countries and regions overseas.

Key projects

May 16, 2021

CGN's Daishan No.4 Offshore Wind Power Project, the largest offshore wind farm project in Zhejiang province, was officially connected to the grid for power generation. The project has a total installed capacity of 234 MW and can feed about 618 GWh of electricity to the grid each year.

August 16, 2021

CGN New Energy started the construction of the 200 MW solar farm and desert control project in Hanggin Banner, Shanghaimiao Economic Development Zone, Inner Mongolia. After put into production, the project will deliver an estimated 350 GWh of electricity to the grid.

The solar farm in Kubuqi Desert, Inner Mongolia

December 11, 2021

Rudong H8 Offshore Wind Power Project, the farthest offshore wind farm with the most types of wind turbines in China, has achieved full-capacity operation and connected to the grid. The project has a total installed capacity of 300 MW and can deliver about 959 GWh of electricity to the grid every year.

December 29, 2021

CGN's Dalian 240 MW offshore wind farm in Pingtan has connected to the grid for full-capacity operation. The project can deliver about 960 GWh of electricity to the grid each year and is recognized by the industry as the hardest to build in China.

Dalian offshore wind farm in Pingtan

Carbon footprints of new-energy projects

At home

2007-2021

- **28.02** GW
  In-service installed capacity
- **285.9** TWh
  On-grid power generation
- **86.485** million tons
  Equivalent to the reduction of standard coal consumption
- **237.869** million tons
  Equivalent to the reduction of CO_2 emissions

Abroad

2018-2021

- **12.229** GW
  In-service installed capacity
- **25.724** TWh
  On-grid power generation
- **10.29** million tons
  Equivalent to the reduction of standard coal consumption
- **25.65** million tons
  Equivalent to the reduction of CO_2 emissions

Total

- **40.249** GW
  In-service installed capacity
- **311.624** TWh
  On-grid power generation
- **96.775** million tons
  Equivalent to the reduction of standard coal consumption
- **263.519** million tons
  Equivalent to the reduction of CO_2 emissions
- **701,000** hectares
  Equivalent to afforestation

Note: The above data are cumulative data.

Case
CGN Wind Energy completes the signing of a capital increase agreement at BSE

On November 26, 2021, CGN Wind Energy signed a capital increase agreement at Beijing Stock Exchange (BSE) to support the development and construction of wind power and solar power storage projects, and the development of new businesses, including energy storage, integrated smart energy, and electricity sales. The agreement set a number of records in the domestic capital market, including being the largest equity financing project in the renewable energy power generation sector.

"By signing the capital increase agreement, CGN Wind Energy aims to build itself into a strategic emerging enterprise with diverse stockholders. It also marks CGN's efforts to serve China's 30·60 Decarbonization Goal as a central SOE in the clean energy sector, and is a key measure for state-owned capital investment companies to diversify and optimize the functions of state-owned capital. It thus deserves recognition."

——Weng Jieming, member of the CPC Committee and Vice Chairman, SASAC

"Riding on the momentum created by China's 30·60 Decarbonization Goal and advance the SOE reform, CGN will persist in the development of new energy businesses, adhere to market-oriented approaches, explore innovative business, continue to optimize resource allocation, and promote higher-quality development of new energy businesses."

——Yang Changli, Secretary of the Party Committee and Chairman of CGN

33%
Proportion of the equity released

14
Strategic investors introduced, including the Social Security Fund

RMB 30.53 billion
Fund raised

On the production side

Promoting energy conservation and consumption reduction, reducing operational carbon emissions

CGN continues to strengthen energy management in operations, and strives to improve energy efficiency, reduce energy consumption and carbon emissions by conducting energy-saving renovations and developing technologies for higher energy efficiency.

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

2017	0.2019
2018	0.1899
2019	0.1872
2020	0.1643
2021	0.1486

Strengthening energy efficiency management

- CGN launched a research project on the methods and indicators of measuring the energy-saving effect and established a corresponding set of indicators to further strengthen energy-saving supervision and management.
- Daya Bay Nuclear Power Plant set up an energy-conservation team and established an energy management center to carry out energy-saving projects with high standards, strict requirements and full coverage. Through these efforts, the plant saved electricity consumption by 15.316 GWh in 2021.

Promoting green office

- Daya Bay Nuclear Power Base electrified all its canteens, replaced 14 fossil fuel-powered vehicles with electric ones, and installed charging piles in the base.
- CGN Juner New Materials Co., Ltd., a subsidiary of CGN Nuclear Technology, won the honorary title of Green Factory in Wenzhou in 2021, with all lights used at workshops, offices, and other areas being energy-efficient. The company recycles waste heat generated in the production process to minimize energy consumption.

Conducting energy-saving renovations

- HYHNPC and YJNPC obtained the certification to ISO 50001 Energy Management System, identified electromechanical equipment that needed to be phased out, replaced them with energy-efficient alternatives or renovated them in batches.
- TNPJVC upgraded the software controlling fans in the ventilation system of steam turbine plants. When the upgrade of all units is completed, the total fan power will be reduced by 262 kW and the four units can save nearly 2.3 GWh of electricity per year.
- FCGNPC replaced conventional lighting facilities in the plants with energy-efficient and environmentally friendly LEDs, which is expected to save 500,000 kWh of electricity per year.

Developing energy-efficiency technologies

- HYHNPC masters the pattern of the ocean tides and uses it to help the operators responsible for main control room to control the power of the primary circuit, so as to realize delicacy and planned management of the units on a daily basis. This has helped increase the electric power of the four units in the first phase of the project by about 2.4 MW, which means the units can generate 20 GWh more of electricity per year.
- With the support of CGN Suzhou Institute and other research institutes, YJNPC launched a research project on the feasibility of the pump frequency conversion energy-saving technology for the condensate extraction system and the power platform control of single-train operation units of the circulating water system, to provide technical support for reducing operational energy consumption.

On the consumption side

Delivering clean energy and contributing to building a carbon neutral society

Based on its strengths as a clean energy supplier, CGN is active in green electricity trading, green certificate trading, carbon trading etc. to meet users' needs for clean, low-carbon, safe, and efficient energy, continues to provide high-quality clean electric energy, improves the energy consumption structure, and helps build a low-carbon society.

Case

CGN New Energy participates in the green power trading pilot scheme

On September 7, 2021, at the launch ceremony of the green power trading pilot scheme in Beijing, CGN New Energy successively signed green power trading agreements with more than 20 power users such as Yangzi Petrochemical BASF, Wanguo Data, Linde, Sunshine Power, Shell China and Guangdong Yili, and completed the first cross-provincial green power transaction for the grid of southern China. By then, our green power traded totaled 1.972 TWh, accounting for 25% of the national total, and we ranked first in China in terms of clearing energy.

Signing ceremony of a green power transaction for the grid of southern China

Case

CGN and Sinopec Maoming Petrochemical Company signing a power transaction contract

On September 14, 2021, CGN and Sinopec Maoming Petrochemical Company signed a market-oriented electricity transaction contract for 2022, which was CGN's first contract for the supply package of "zero-carbon clean energy (nuclear power) plus renewable energy (green power)." Accordingly, CGN's units in Guangdong will supply all the nuclear power (99%) and renewable energy (1%) to the latter for 2022.

CGN and Sinopec Maoming Petrochemical Company signing the 2022 electricity supply contract

Case

CGN attending the Tenth Guangdong-Hong Kong-Macao Power Industry Summit

On September 23, 2021, Gao Ligang, President of CGN, attended the Tenth Guangdong-Hong Kong-Macao Power Industry Summit and shared a case study of how the Group facilitated the Greater Bay Area's transition to green and low-carbon energy with smart nuclear power facilities.

CGN, as one of the most important clean energy suppliers in the Greater Bay Area, currently runs four nuclear power bases, with 14 nuclear power units and 12 new energy projects in operation there.

Daya Bay Nuclear Power Plant delivers 80% of its electricity to Hong Kong, accounting for about 25% of the total electricity consumption in the SAR. It is an important mainland-based power supply base for Hong Kong.

Gao Ligang, President of CGN

Case

Powering a green Beijing 2022 with clean energy

On February 4, 2022, the XXIV Olympic Winter Games opened in Beijing, the first in the Olympic history with all venues 100% powered by green electricity, part of which was supplied by five wind farms, namely Xinsheng Wind Farm in Zhangbei county, Chabei Wind Farm, Swan Lake Wind Farm in Guyuan, Shangyi Wind Farm, and Jiuliancheng Wind Farm.

Among them, CGN's Xinsheng Wind Farm is connected to the world's first flexible DC power grid project –Zhangbei ±500kV renewable energy flexible DC grid test and demonstration project. It delivered nonstop renewable-energy electricity to venues of Beijing 2022.

CGN's Xinsheng Wind Farm delivering green electricity for Beijing 2022

CSR Feature | *Rising to Challenges and Striving to Be the Vanguard of SOE Reform*

CGN always regards reform and innovation as an important driver of high-quality corporate development, fully implements the decisions and plans of the CPC Central Committee and the State Council, and strives to solve the pain points and difficulties that restrict high-quality development in the medium and long term. While improving the modern enterprise system, we have formulated a three-year action plan for deepening SOE reform. In 2021, we completed the reform tasks in accordance with high standards, and made breakthroughs in reform in key areas. As a result, the state-owned capital investment company featuring nuclear energy has become more mature, and the foundation for high-quality development more solid.

12
12 meetings of the group for deepening SOE reform held

32
32 reform policies formulated

90%
Over 90% of the listed reform tasks completed

80%
Over 80% of the subsidiaries' listed reform tasks completed

Three model projects were selected by the SASAC into its list for the action to create management models.

CGN Operations and DNMC were awarded as **"model enterprises".**

CGN's "four-standardization" of policy and process was voted as a **"model project".**

Significantly improving corporate governance efficiency by optimizing the governance system

CGN regards improving the modern enterprise system as the key to deepening SOE reform, and aims to modernize itself with strong governance capabilities, flexible operating mechanisms, and high operational efficiency. We have taken specific reform measures to improve the modern enterprise system, and significantly improved the governance efficiency.

Integrating Party leadership into corporate governance

In order to strengthen the Party committees' role in charting courses, crafting overall plans, and promoting implementation, 19 major subsidiaries formulated lists of major business and management matters to be considered and decided by the Party committees, improved the Party committees' rules of procedure, and refined their powers and responsibilities and their ways of exercising powers.

Strengthening the building of boards of directors

We formulated criteria for setting up boards of directors in eligible subsidiaries and designated 56 such subsidiaries, most of which have established boards of directors consisting of multiple directors, with external directors in the majority. In 17 secondary subsidiaries, the board chair serves concurrently as Party secretary and legal representative, shouldering the main responsibility for corporate reform, operation and development.

Improving the organizational and management system

CGN launched a new round of reform of the organizational and management system at the headquarters to streamline its departments and personnel, and build a lean and efficient headquarters that effectively oversees subsidiaries. We improved the "parent-subsidiary" governance mechanism which fully delegates the six functions and powers to the board of directors of subsidiaries, and established a dynamic authorization adjustment mechanism.

19
Major subsidiaries guaranteed their board exercised six functions and powers

56
Subsidiaries established their own boards of directors

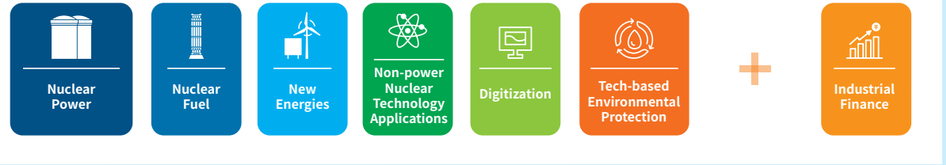
30%
Matters that needed approval from the headquarters cut

Consolidating the foundation for high-quality development by optimizing the industrial structure

CGN has optimized its business layout, vigorously developed strategic emerging industries, and built the "6+1" industrial layout while building up the strength, quality, and size of its main business, thereby comprehensively enhancing our competitiveness across business segments and consolidating the foundation for high-quality development.

Developing the "6+1" industrial layout

In order to address the imbalanced and insufficient industrial layout and better serve national strategies, we adjusted our industrial layout and structure and moved faster to build the "6+1" industrial layout consisting of nuclear power, nuclear fuel, new energies, non-power nuclear technology, digitization, tech-based environmental protection, and industrial finance. For example, we have consolidated the environmental protection business, environmental technology, and companies specializing in energy conservation to create a tech-based environmental industry platform, so as to better serve national strategies for environmental protection. We consolidated China Techenergy and Shanghai Engineering Science & Technology Co., Ltd. into a digital industry platform, to cultivate a new growth pole aimed at the high-end industrial control market.



Building up the strength, quality, and size of main business

We have enhanced the innovation capability in nuclear power technology, developed a number of core products such as the Hualong One (HPR1000), actively extended along the upstream and downstream of the industry chain and stretched our core capabilities. We have also explored the joint operation of nuclear power and pumped-storage power plants, and made full use of the core technologies and capabilities gained through the development of nuclear power in offering a range of services such as nuclear power design, engineering, operation and maintenance, and electric power sales to external institutions.

Developing strategic emerging industries

To meet the development needs of the nuclear power industry, we have developed core technologies and products such as the nuclear digital instrument & control (I&C) system, nuclear power instrumentation and control system, and nuclear security, and optimized the wind power instrumentation and control system and integrated solutions for smart factories. We have built up certain capabilities in automation, digital and intelligent technologies.

Building a high-quality investment system

We revised the investment management policies and standards, improved the scientific and efficient investment system that balancing returns in the short, medium and long terms, and implemented management based on the negative list by category and the country-by-country list, both of which are updated dynamically according to changes in national strategies and industrial layouts, in order to maximize the returns on limited resources.

Fully stimulating vitality and efficiency by optimizing the market-based mechanism

Focusing on the goal of stimulating vitality and improving efficiency, CGN has strengthened team building and talent cultivation, and pressed forward with the reform of the systems for employment, human resources, and income distribution.

Implementing the tenure system and contract-based management of managerial staff

Attaching great importance to the tenure system and contract-based management, we organized several meetings to discuss relevant issues, urged their implementation, and tracked the effect. In addition, we set the goal to accomplish all the tasks under the three-year action plan for SOE reform by the end of October 2021. By August 31, 2021, all our 139 subsidiaries had adopted the tenure system and contract-based management for their management, 10 months ahead of schedule, effectively boosting the internal momentum for development.

Optimizing the selection and appointment mechanism

Optimizing the structure of cadres

We have improved the system and mechanism that help high-caliber young cadres stand out, and selected two batches of them to join the Party committees. The first group of 19 cadres thus selected has taken leading roles in major subsidiaries. In 16 of our subsidiaries, more than 40% their Party committee members are aged 40 or under.

Recruiting high-end specialists

We have launched special projects to introduce high-end specialists, such as the Yinling Program, Zhuanggu Program, the star of egret and sought talented people from all over the world via a flexible recruitment mechanism that stresses "contribution, not employment status". In 2021, CGN have signed appointment agreements with a number of outstanding academicians.

Improving the incentive and constraint mechanism

We have formed a mechanism that allows for both promotion and demotion; 24 key secondary subsidiaries have established a mechanism for transferring bottom-ranking employees and demoting incompetent personnel. In addition, subsidiaries organized open competitions for more than 170 management positions and senior technical jobs, which effectively stimulated the passion of employees, and injected vitality into corporate development.

Improving the income distribution mechanism

We strengthened to benchmark the compensation for key R&D positions against the market level, and established an income distribution mechanism centered on job value. In order to boost employee engagement and enthusiasm, we developed the "1 plus 7" toolbox of medium and long-term incentives, and guided subsidiaries to flexibly introduce incentives that adapt to the market and their vitality.

2
Listed companies with equity incentives

3
High-tech companies offer job-specific dividends

75%
Ratio of employees' income from job contribution to their total income at most

Effectively releasing the potential of science and technology in driving development by optimizing the scientific research system

CGN has vigorously implemented the innovation-driven development strategy, actively reformed systems and mechanisms for scientific research, and optimized the technological innovation system and research management mechanism. Through these efforts, the Group has effectively released the potential of technological innovation, and injected inexhaustible impetus into high-quality development.

Building an open innovation system featuring "one center and two circles"

We have remained "self-centered" while pursuing innovation, and firmly kept the initiative of innovation in our own hands. With a close cooperation circle and a loose cooperation circle, we have formed a scientific research system featuring "a small core and a large network" that brings together enterprises, universities, research institutes and end-users.

Building project teams

We have selected eight leaders for strategic projects, signed the letter of commitment with them, delegated more powers to them, and held them accountable for the outcomes.

Increasing investment in scientific research

We issued the *Measures for Assessing Investment in Scientific Research*, and incorporated R&D investment into the business performance assessments to encourage subsidiaries to increase investment in their research projects.

Case
Creating future-oriented high-tech engines by building two centers

The South China Atomic Energy Science and Technology Innovation Center

Focusing on the development of the nuclear power industry, CGN has launched a number of infrastructure and demonstration projects for atomic energy research in the Guangdong-Hong Kong-Macao Greater Bay Area, to build the region into a global hub for atomic energy science & technology innovation and emerging industries innovation, as well as an agglomeration area for cutting-edge research projects, high-tech industries, and high-end specialists. The center is mentioned as a major project in Guangdong's outline of the 14th Five-Year Plan for Economic and Social Development.

The Yangtze River Delta Emerging Industry Technology Innovation Center

Focusing on digitization and non-power nuclear technology application, the center will make full use of the rich scientific research resources and favorable policies in the Yangtze River Delta region to facilitate the incubation and high-quality development of CGN's emerging industries. The center plans to open two research bases in Shanghai and Jiangsu.

Rendering of the South China Atomic Energy Science and Technology Innovation Center

CSR Feature

Promoting Common Prosperity and Building a Beautiful Countryside in the New Era

The year 2021 saw China start to align efforts to consolidate and expand the achievements in poverty alleviation with efforts to promote rural vitalization . In that year CGN fully assumed the role of central SOEs as the "Team China" and "main force," continued to improve the mechanism for promoting the development of areas that had been lifted out of poverty, and leveraged its business network, expertise and manpower to provide customized assistance to paired-up areas. The Group has also dispatched outstanding officials to the front line, and effectively aligned efforts to consolidate and expand the achievements in poverty alleviation with efforts to promote rural vitalization, so as to promote local economic and social development, and help improve local living standards.

In 2021, CGN invested **RMB 59.476 million** in rural vitalization , including **RMB 38.27 million** for **15 projects** in Lingyun and Leye.

CGN offered **474 training opportunities** for primary-level officials, **112** for rural vitalization pioneers, and **441** for specialized and technical personnel trained.

The Egret Class program has been launched in **10 schools in 5 provincial regions.**

FCGNPC has been awarded the title of **"National Outstanding Collective in Poverty Alleviation"**.

The Office of the Leading Group for Poverty Alleviation of CGN was one of the two winners of the **"Model Unit in Poverty Alleviation in Guangxi"** award.

Four employees, namely Lei Yiming, Zhong Liang, Cao Wenfei and Wang Zhi, were honored with **"Outstanding Individuals in Poverty Alleviation"** in Guangdong, Hubei, Guangxi and Xinjiang.

From November 8 to 10, 2021, Yang Changli, Secretary of the Party Committee and Chairman of CGN, visited Lingyun and Leye, two counties of Baise in Guangxi, exchanged ideas with local leadership, checked on the progress of local targeted assistance projects, and sent sympathy to employees serving temporary positions in Baise.

On October 11-12, 2021, Li Li, Deputy Secretary of the Party Committee of CGN, led a delegation to Lingyun and Leye to check on the work of "Serving the People with Concrete Actions" campaign for rural vitalization .

Taking a multi-pronged approach to stimulate rural vitality

Guided by Party building, CGN has given full play to its own business network and expertise, and launched projects for rural vitalization in five aspects: the development of industries, ecological progress, talent cultivation, consumption of products from areas that have been lifted out of poverty and village-level assistance, sparing no effort to support the villages to embark on a new journey toward rural vitalization .

Promoting the development of rural industries

Combining its own strengths with local resources, CGN has successfully created a market-based assistance model for promoting the development of industry chains in Lingyun and Leye, and promoted integrated development of local primary, secondary and tertiary sectors.

- In Lingyun, we guided farmers to grow mulberry trees and raise silkworms, and gradually put in place a circular industry chain where mulberry leaves are used to feed silkworms, silkworm cocoons are used to produce silk, mulberries are picked and sold or used to brew wine, mulberry branches are used to cultivate edible fungi, and fungus residue and silkworm excrement are turned into fertilizers. The silkworm cocoon industry has generated more than RMB 220 million of income for farmers. We also actively developed tourism based on the local silkworm industry, to diversify villagers' source of income.
- In Leye, we have expanded the industry chain of the red kiwifruit, a national geographical indication (GI) product. We launched the organic fertilizer project in Leye and the electron beam technology for food preservation project in Baise, and created an eco-friendly cyclical model covering "agricultural waste, organic fertilizer and green agricultural planting" in the upstream, and improved the regional industry chain of "fruit and vegetable preservation, cold-chain logistics and sales" in the downstream. The organic fertilizer project achieved the goal of producing 14,000 tons of products in 2021, and created more than 100 jobs in the upstream and downstream of the industry chain.

Our employee taking a local temporary position and a local villager are pollinating the kiwifruit tree and tying the tree branches in a CGN-funded plantation

CGN's wind power demonstration project in Leye

RMB 1.2 billion
Total investment

200 MW
Installed capacity

118,000 tons per year
Standard coal equivalent consumption reduced

289,000 tons per year
CO_2 emissions equivalent reduced

Supporting ecological progress

Giving full play to its advantages in clean energy, CGN has explored a new model of generating "green wealth" through ecological conservation and produce both economic and environmental benefits.

We funded wind power projects in Leye, and grew a flower field at the wind farm in Quanda Village to beautify the local environment. Meanwhile, we have developed apiculture and tourism in the county to help the locals improve their living standards.

We have signed with Lingyun a forestry carbon sequestration cooperation agreement focusing on enhancing the carbon absorption capacity through forest management, and paid advances for early-stage implementation of the project. We also provided free technical assistance to help tap the economic value of environmental and ecological products through market-based approaches.

Supporting talent cultivation

CGN actively builds the dual paths of "consolidation" and "expansion" and the dual platforms of "volunteering" and "public welfare," and strives to empower rural vitalization by supporting rural education.

CGN has pressed ahead with the Egret Class program, pooling resources to support rural education and help students from poor households increase confidence in their own ability to shake off poverty and access education and vocational training they need to do so. By the end of 2021, 18 Egret Classes were launched in primary, middle and high schools, benefiting 2,132 students in total.

A lecture on the protection of girls against sexual harassment is given in the Egret Class.

Boosting consumption of products from rural areas

CGN has utilized both online and offline channels to help sell agricultural products, and actively brought in external charitable platforms to extend paired assistance and help farmers increase income.

In centralized sourcing, we give priority to agricultural and sideline products from rural areas lifted out of poverty, and organized our staff cafeterias to sign direct-supply and long-term purchase contracts with their producers. We also mobilize employees and external units to purchase or help with the sale of agricultural products from these areas.

A charity sale of tea

More than RMB 17.7 million
Worth of products from paired-up counties purchased

More than RMB 400
Worth of products purchased per capita

nearly RMB 24 million
Worth of rural products sold with the help of CGN in 2021

Village-level assistance

When providing assistance, CGN focuses on ensuring stable poverty alleviation and preventing the fall back to poverty, and draws on its corporate governance experience to customize strategies for different villages. We have sent employees to work as resident village secretaries and develop rural vitalization demonstration sites, in an effort to build rural areas with thriving businesses, pleasant living environments, social etiquette and civility, effective governance, and prosperity.

- In Longhuai, a village in Lingyun, we have developed pillar industries such as mulberry farming and sericulture and the Pekoe (Baihao) tea industry, transforming a former "empty shell" village with zero income into a demonstration village with an annual net income of RMB 200,000. We have also upgraded the rural infrastructure. In 2021, we installed 500 solar-powered street lights, covering all the settlements of 75 villagers' groups and main crossroads.
- In Banhong, a village in Leye, we built one villager activity square, one sightseeing trail, two public mini-gardens, and eight mini vegetable gardens, and renovated the toilets of 21 households, improving the village environment and benefiting 136 people of 33 households in the village.

Case
Supporting the development of rural children with the Dream Realization Project

The Dream Realization Project is a purpose-specific initiative under the Rainbow Project, a CGN education aid program for left-behind children at Lanjin Primary School in Lingyun. Under this project, we score the students in such dimensions as academic performance, discipline, morality, labor, habits, interests, and reward those whose points have met the requirement with a personalized dream experience journey, and thus encourage students to dream and take actions to make it come true. In 2021, the project helped 9 students in the Egret Class at the school realize their dreams.

"I want to thank you for this is my first time on a plane and to an aviation museum. Thank you for bringing me so much joy. I'm confident that I'll become a pilot in the future and fly in the sky!"

——Luo Yuanfu, a student of the first Egret Class

Visiting the aviation museum

"I went to the Tiananmen Square and saw the portrait of Chairman Mao. They fought for their ideals in such difficult times. I have to study hard and pursue my dreams!"

——Wei Caidi, a student of the first Egret Class

"I hope that every student in the Egret Class are always after the sun and remain positive like sunflowers, and have colorful dreams. I hope we will make our dreams through hard work in the future."

——Zhao Yixin, a student of the first Egret Class

Visiting a museum

Visiting the aquarium

Dispatching outstanding employees to promote rural vitalization

In 2021, CGN sent a total of 22 officials to work on paired assistance across the country. They worked on the front line in aligning efforts to consolidate and expand the achievements in poverty alleviation with efforts to promote rural vitalization, and writing a new chapter of rural vitalization at a new starting point.

Liu Huagan —— *Exploring new paths for ecological progress*

Lingyun is a county in the northwest of Guangxi, boasts a beautiful ecological environment, and 84.35% of its land is covered by forests. It is home to the main source of the Chengbi River that flows through Baise and the source of the Pearl River. Liu Huagan is a CGN cadre taking a temporary position here. A native of Nanning, he speaks with a strong Guangxi accent, and is devoted to rural vitalization in his home region. In Lingyun, considering the abundant forests and other advantages of the county, he actively explores new ways to effectively align rural vitalization efforts with China's 30·60 Decarbonization Goal, and works to establish a long-term and stable mechanism for rural vitalization . He helps the county develop forestry carbon sequestration resources that could be used for national carbon emission trading. As the owner, Lingyun can generate revenue by selling the surplus carbon credits to companies that need them.

"
We do solid work to pursue development, and fulfill our duties for rural vitalization .
"

——Liu Huagan, Deputy Secretary-General of Baise Municipal Party Committee, member of the Standing Committee of the Party Committee and Deputy Mayor of Lingyun County

"
The forestry carbon sequestration project developed in cooperation with CGN will bring new possibilities for the sustainable development of the forestry economy in Lingyun, and give inexhaustible impetus to our ecological progress and economic and social development.
"

——Xie Danxing, Mayor of Lingyun County

Liu Huagan (third from the left) on a field trip to the project site

Jin Wanbing —— *Serving the people*

In April 2021, Jin Wanbing left Beijing for the loess land in Leye, and started his journey of rural vitalization . Since then, Jin has always upheld the people-centered development philosophy, and worked hard to solve difficulties and problems that are of great concern to the people. In 2021, as the CPC celebrated its 100th birthday and as China kicked off the 14th Five-Year Plan, Jin educated villagers on General Secretary Xi Jinping's instructions during his inspection trip to Guangxi and on the Party's history in Renlong Village, Luosha Township. He also visited old Party members and presented them with memorial medals for 50-year Party membership in the township, sending them the care of the CPC Central Committee with Comrade Xi Jinping at its core.

"
If you care about the people, you will win their heart.
"

——Jin Wanbing, a member of the Standing Committee of the Party Committee and Deputy Mayor of Leye County

"
I'm 90 years old now, and I have been a Party member for over 50 years. I will continue to carry forward the fine traditions of the Party!
"

——Yang Shengrong, an old Party member in Renlong Village

Jin Wanbing (first from the right) issuing the memorial medal for 50-year Party membership to Yang Shengrong

Lu Wenbin —— *Lighting up hopes for the villagers*

Elembulung, meaning "the corner of the world" in Uyghur, is a remote village deep in the desert in Hotan Prefecture, Xinjiang. Lu Wenbin has served as its first secretary since early 2021. Under his leadership, 78 solar street lamps have been installed on the main roads in the village, summer jobs and temporary relief funds offered to college students from local poor families, and kindergarten uniforms and schoolbags donated to children of all ethnic groups. By lighting up the street lamps in the village, Lu has also lit up the hopes of the villagers.

"
When I told the villagers that the street lights were about to be installed, they cheered excitedly! I will never forget that moment.
"

——Lu Wenbin, first secretary of Elembulung Village

"
Our village never had a street lamp before, which I only saw in the seat of the township. This is the first time that we have our own street lamps. Now I don't need to worry about the darkness on my way home after learning standard Chinese at the village committee at night.
"

——A resident of Elembulung Village

Lu Wenbin (right) giving out schoolbags to local students

Wang Kaiyuan —— *Letting every villager become shareholders*

Yunbo is a village in the east of Dongping Town, Yangjiang, Guangdong, adjacent to the Yangjiang Nuclear Power Base, and has a considerable amount of idle labor force. Wang Kaiyuan is the first secretary of the village. He has personally handled many affairs related to the registration of the village-run enterprise, Yangjiang Yunxing Environmental Engineering Co., Ltd., whose business license has been issued. This is the first village-run enterprise in the village, and will provide jobs and increase the income of the village collective, bringing about a shift in poverty alleviation from simply injecting help into the poor to enabling them to help themselves.

"
The development and prosperity of the village is a political responsibility of CGN as a central SOE for contributing to rural vitalization , a mission of fulfilling social responsibility, and moreover represents a vision of government-enterprise collaboration for co-governance and common development.
"

——Wang Kaiyuan, first secretary of Yunbo Village

"
Since the establishment of the village-run enterprise, I can work without leaving the village, and I can take care of my family and make money at the same time. My life will get better.
"

——Rong Yunxi, a stay-home mom in Yunbo Village

Wang Kaiyuan speaking at the groundbreaking ceremony of the village-enterprise cooperation project

Lu Sen —— *Bringing green income to local villagers*

Leye, located in the Dashi Mountains in the southeast of the Yunnan-Guizhou Plateau, used to be a county of extreme poverty. In September 2019, Lu Sen was assigned to Leye to serve as the project manager of the CGN wind power project there. The project has brought dividends to 63 impoverished villages, directly benefiting about 110,000 people. The per capita income of Quanda Village increased from RMB 3,500 in 2017 to RMB 13,000. Lu and his colleagues mobilized the villagers to sow Galsang flower seeds under the windmills in Caowang Mountain. Now the "flower field under the windmill" has attracted a larger number of tourists and driven the consumption of products such as honey and bottled water.

Lu Sen (left) helping a local farmer in the field

"
In order to align efforts to consolidate and expand the achievements in poverty alleviation with efforts to promote rural vitalization , we must develop sustainable industries.
"

——Lu Sen, a project manager dispatched to Leye County

"
I saw the beautiful flowers on Douyin, so I come here with my family today. The flowers are beautiful and the air is fresh, too. It is so enjoyable.
"

——Zhu Zhanfu, a tourist

About CGN

Company Profile

China General Nuclear Power Group (CGN) is headquartered in Shenzhen, Guangdong Province and controlled by the State-owned Assets Supervision and Administration Commission(SASAC) of the State Council. Committed to "developing clean energy to benefit mankind", CGN upholds the working style of Strict compliance, prudent decision-making, detail-oriented, and fact-based approach and strives to create a "6+1" industrial layout covering nuclear power, nuclear fuel, new energies, non-power nuclear technology, digitization, tech-based environmental protection, and industrial finance. As a leading clean energy supplier and service provider in the world, the Group has three Hong Kong listed companies and two mainland listed companies. The installed capacity of clean power in operation worldwide controlled by the Group exceeds 68.5 GW, including 28.26 GW of nuclear power and 40.249 GW of new energy.

Status in the industry

- **The largest** nuclear power enterprise in China
- **The third largest** nuclear power enterprise in the world
- Ranks **106th** among China's Top 500 Brands
- Ranks **18th** among the top 100 multinational companies of China
- Ranks **13th** among the world's top 50 most valuable utilities brands

Listed companies

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

Nuclear power

Core pillar industry

- Created a number of core products represented by HPR1000
- **25** in-service units with an installed capacity of **28.26 GW**, accounting for **53%** of China's total
- **7** nuclear power units under construction with a total installed capacity of **8.3 GW**，accounting for **41%** of China's total
- On-grid power generation from nuclear power in 2021: **201.15 TWh**

Nuclear fuel

Strong support for the development of nuclear power industry

- The total uranium resources under control can meet the **30-year** refueling demand of **30** gigawatt-level nuclear power units
- The controlled production capacity exceeds **4,000 tons / year**, ranking among the **top five** in the world
- **6** uranium mine projects

New energies

Key pillar industry

- **487** new-energy projects in China with a total installed in-service capacity of **28.02 GW**, ranking in the first echelon in China
- Invested in **47** new-energy projects overseas with a total installed in-service capacity of **12.229 GW**, providing clean electricity to **15** countries and regions
- In 2021, **49.238 TWh** of on-grid power generated by new energy, including **38.675 TWh** of wind power, **9.5 TWh** of solar power and **742 GWh** of other clean energy

Non-power nuclear technology

Pillar industry

- Produced **450** electron accelerators cumulatively since its inception
- Has **15** electron beam irradiation centers in China, which accommodates **60** accelerators, with a total power of **4,632 KW.**
- Two proton therapy center projects were signed and implemented in Shanghai and Nanjing.

Digitization

Prioritized potential pillar industry

- Automation business: nuclear power digital instrument & control system (DCS) has been applied to 17 new units and many in-service units, marking that China has entered the stage of the home-grown "central nervous system" of nuclear power plants.
- Digital business: it provides overall solutions for the development of CGN's digital economy and the digital transformation of various industries.
- Intelligent business: it conduct R & D of and promote core technologies and products such as digital twins, intelligent perception, intelligent cognition and intelligent deduction.

Tech-based environmental protection

Priority industry

- Treated **45,180 tons** of hazardous solid waste in 2021
- The capacity of in-service water supply and drainage projects is **515,000 tons/day**.
- The capacity of water supply and drainage projects under construction is **135,000 tons/day**.

Industrial finance

A "booster" to industrial development

- Focusing on new technologies, new business forms and new models of clean energy, it will provide high-quality capital guarantee, asset management and financial services, and explore new opportunities for the coordinated development of industrial finance, main business and industry

Overview of global business layout

16%
Ratio of overseas assets

19 countries worldwide
Business coverage

Note: Those listed above are all in-service projects, unless otherwise specified.

China
- Nuclear Power Units: 32 (25 in-service projects; 7 projects under construction)
- Wind Power Projects: 310
- Solar Power Projects: 177
- Energy Saving Projects: 5 (2 in-service projects; 3 projects under construction)

Malaysia
- Gas-fired Power Projects: 3
- Coal-fired Project: 1
- Solar Power Project: 1

Total: 3,592 MW

Korea
- Hydropower Projects: 4
- Gas-fired Power Projects: 2
- Biomass project: 1
- Fuel Project: 1

Total: 2,165.1 MW

Sweden
- Wind Power Projects: 2

Total: 1,463 MW

Egypt
- Gas-fired Power Projects: 2

Total: 1,364.8 MW

Brazil
- Wind Power Projects: 7
- Solar Power Projects: 2

Total: 1,264.8 MW

Bangladesh
- Gas-fired Power Projects: 2

Total: 810 MW

France
- Wind Power Projects: 4
- Solar Power Project: 1

Total: 375 MW

Ireland
- Wind Power Project: 1

Total: 235.6 MW

The United Arab Emirates
- Gas-fired Power Project: 1

Total: 200 MW

Pakistan
- Gas-fired Power Project: 1

Total: 157 MW

UK
- Wind Power Projects: 2

Total: 110.5 MW
- Energy Saving Projects: 5 (2 in-service projects; 3 projects under construction)

Belgium
- Wind Power Project: 1

Total: 81.9 MW

Netherlands
- Wind Power Project: 1

Total: 49.5 MW

Senegal
- Solar Power Project: 1

Total: 22 MW

Namibia
- Solar Power Project: 1
- Uranium Mine Project: 1

Total: 12 MW

Kazakhstan
- Uranium Mine Projects: 4
- Fuel Assembly Plant: 1

Canada
- Uranium Mine Project: 1 (in exploration)

Australia
- Uranium Mine Project: 1 (in exploration)

- Nuclear Power Unit
- Gas-fired Power Project
- Wind Power Project
- Fuel Project
- Solar Power Project
- Biomass project
- Uranium Mine Project
- Thermal power project
- Energy Saving Project
- Hydropower Project
- Hydropower project
- Fuel Assembly Plant
- Coal-fired Project

CGN in 2021

Comprehensive cost investment

Financial assets

Total assets: **RMB 848.0 billion**

Ratio of overseas assets:**16%**

Safety investment

Three-tiered safety inspection by subsidiaries at all levels: nearly **1,000**

Emergency drills by subsidiaries at all levels: **5,822**

Human resources

Number of employees:**42,972**

Total employees by localized recruitment of international projects: **3,264**

Social relations

Rural vitalization investment: **RMB 59.476 million**

Total global donation: **RMB 77.6754 million** (including for rural vitalization)

Total tax payment: **RMB 12.6 billion**

Working style

Strict Compliance

Always work with strictness

Prudent attitude

Strict implementation

Stringent discipline

Prudent decision-making

Prudent decision-making

Cautious operations

Detail-oriented

Considerate

Careful

Fact-based Approach

Down-to-earth

Fact-based approach

Do practical work

Seek actual effects

Brand connotation

Brand vision

Build a world-class clean energy group with global competitiveness

Brand mission

Developing clean energy to benefit mankind

Core brand mission

Safeguard nuclear safety

Brand foundation

Self-reliance in science and technology

Brand advocacy

Natural energy powering nature

Brand spirit

Dare to take responsibility

Comprehensive value creation

While creating business value, CGN also attaches importance to the creation of environmental value and social value.

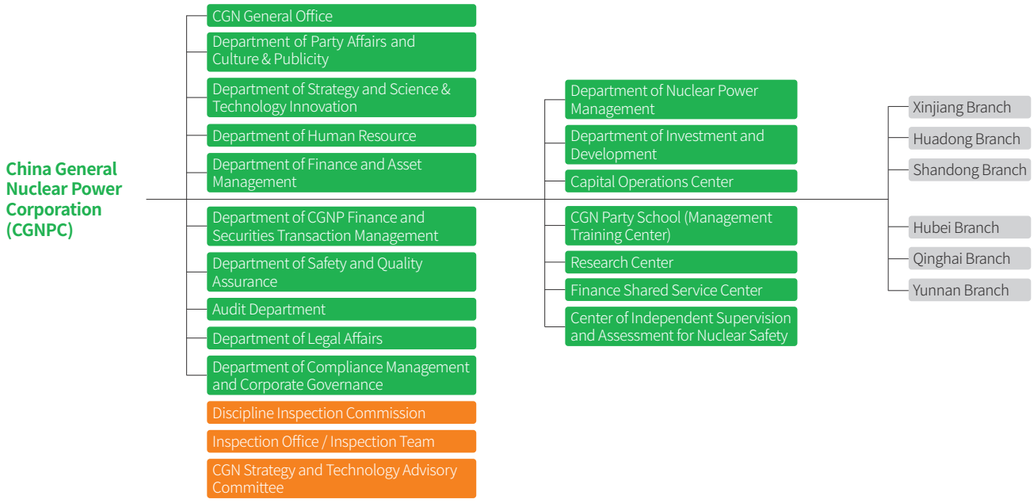
	Value creation	Stakeholders
Business performance	Operating income: **RMB 121.4 billion** Overseas operating income: **RMB 22.5 billion** Ratio of overseas operating income: **19%**	Shareholders and employees
Safety performance	Average capacity factor of in-service units: **91.6%**, achieving the world's advanced level in WANO for the **4th** consecutive year 23 CPR units realized **0** unplanned shutdown Number of level-2 or above incidents defined in the International Nuclear and Radiological Event Scale: **0** Safety accident rate per million man hours: **0**	Employees
Environmental performance	On-grid power generated from clean energy: **1,944.358 TWh*** On-grid power generated from clean energy equivalent to reduction of **590.678 million tons** of standard coal consumption* Total CO2 emissions reduced converted from on-grid power generated from clean energy: **1,621.953 million tons***	All
Employee development	Proportion of female employees: **16.48%** Average training hours per employee: **60** Employee training coverage: **100%**	Employees
Community development	Primary-level cadres on rural vitalization trained: **474** participants Training opportunities offered for rural vitalization pioneers: **112** Specialized and technical personnel trained: **441** participants Number of electronic processing workshops established for target assistance: **2**	Communities

***Note:** The data above is the cumulative data since Daya Bay Nuclear Power Plant Unit 1 entered into commercial operation in 1994.

Hongyanhe Nuclear Power Base

Corporate Governance

Governance Framework



Board of Directors

Board operation

In accordance with laws and regulations such as the *Company Law of the People's Republic of China*, the Board of Directors of CGN has established a scientific and sound operating mechanism, with clear structure, rights and responsibilities, laying a solid foundation for the standardized operation of the Board. 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 expertise and advantages to effectively support the decision-making of the Board.

The Board puts into practice the guiding principles from General Secretary Xi Jinping that we must adhere to the Party leadership over SOEs, develop a modern enterprise system and treat it as the direction of SOE reform, and strives to build a modern SOE system with Chinese characteristics. To this end, the Board earnestly fulfills its roles assigned by the shareholders' general meeting, especially in "strategy making, decision making, and risk prevention" based on its comprehensive judgment and prudent decision-making.

Priorities in 2021

- CGN coordinated long-term development, formulated the Group's medium and long-term development strategy and the planning set for the 14th Five-Year Plan period, completed major project investment decisions, and adjusted and optimized the layout of financial business.
- We further improved the governance mechanism, established a dynamic adjustment mechanism for the authorization list, strengthened the supervision of authorization operation, and optimized the organizational structure to build a headquarters that strategically oversees subsidiaries.
- We continued to strengthen risk prevention and control, urged the management to deepen the development of risk management system and further optimized the investment management mechanism.
- We introduced external equity funds, diversified investment risks, realized in-depth regional cooperation and coordination, and promoted the disposal of projects related to non-main business, non-advantageous business and inefficient and invalid assets.

6
Board meetings (including 2 interim board meetings)

8
Director special briefings

12
Specialized committee meetings

34
Proposals reviewed and approved by the Board

Board composition

According to the Articles of Association, the Board of Directors consists of nine directors, of whom there are seven directors recommended by the SASAC, including four outside directors; one director is recommended by Guangdong Hengjian Investment Holding Co, Ltd.; one is an employee director elected at the workers' congress.

There was no change in outside directors in 2021, and the Board members are as follows.

Yang Changli
Chairman

Gao Ligang
Director and President

Li Li
Director

Wen Wenxing
Director

Li Dingcheng
Outside director

Ma Li
Outside director

Zhang Xiaolu
Outside director

Xu Haihe
Outside director

Chen Sui
Employee director

Note: All of the positions above were effective as of the end of 2021.

Management Team

In strict accordance with the requirements of relevant national laws and regulations, we have established a standardized management system to promote the Group's sustainable development through scientific and effective decision-making.

Yang Changli
Secretary of the Party Committee and Chairman

Gao Ligang
Deputy Secretary of the Party Committee, Director and President

Li Li
Deputy Secretary of the Party Committee, Director

Shi Bing
Member of the Standing Committee of the Party Committee, Vice President

Cheng Yongping
Member of the Standing Committee of the Party Committee, Secretary of the Discipline Inspection Commission

Pang Songtao
Member of the Standing Committee of the Party Committee, Vice President

He Haibin
Member of the Standing Committee of the Party Committee, Chief Accountant

Guo Limin
Member of the Standing Committee of the Party Committee, Vice President

Li Yilun
Member of the Standing Committee of the Party Committee, Vice President

Compliance Management

CGN keeps enhancing compliance management and aims to establish a compliance management and operation system that covers all departments, and emphasizes the implementation of responsibilities, synergies, collaboration, independence, and objectivity, so as to continuously improve compliance management and the efficiency of risk management.

Embedding compliance management into all business processes

We have embedded compliance audits into all business processes and have initially established three lines of defense for compliance risk prevention and control where business departments take full responsibility, the compliance management department carries out regulation, and the internal control and evaluation department conducts evaluation independently.

Routine inspections of compliance risks

We check our subsidiaries' risks of administrative penalties on a monthly basis. By including compliance risks into the top 20 risks affecting CGN's business development for unified management, we ensure that risks are identified and prevented, processes are under control, and inspections are effective.

Improving the compliance system for export control

According to the *Guiding Opinions on Establishing Internal Compliance Programs for Export Control by Exporters of Dual use Items* released by the Ministry of Commerce, we piloted the compliance management system for export control in eight subsidiaries.

Stepping up efforts to prevent compliance risks related to sanctions posed by multilateral banks

As required by the campaign to "fight corruption in overseas projects with all efforts and establish a long-term mechanism for fighting corruption and upholding integrity in overseas institutions," we actively responds to sanctions imposed by the World Bank and other multilateral banks.

Internal Audits

In strict compliance with the requirements of the SASAC on internal audits, CGN continues to deepen risk-oriented internal audits and further improves the management of the audit plan. We ensure full coverage of internal audits, rectify problems found in internal audits, enhance the application of audit results, and make all-out efforts to promote the application of information technology in audits. By enhancing the accountability system targeting overseas operational violations and tightening the control over key links, we realize independent and efficient internal audits, thus ensuring sound corporate governance, internal control, and risk management on a continuous basis.

274
Audits conducted by internal auditors at all levels

471
Rules and regulations introduced and revised

Supplier Management

CGN has constantly enhanced cooperation and exchanges with suppliers and adheres to open and transparent procurement. We improve supplier management continuously, provide training for and share resources with suppliers, aiming to achieve common growth with suppliers.

Open and transparent procurement

Competitive bidding is prioritized in the selection of suppliers. We review bidders' bidding documents and announcements prior to the bidding process and accept public supervision by publicizing the procurement results.

Improving supplier management

In the *CGN Procurement Management Policy and the CGN Supplier Management Measures*, we clarify the requirements for supplier management, supplier introduction, qualification review, performance evaluation, supplier elimination, etc., to achieve classified, centralized, and unified supplier management.

Organizing supplier training

To strengthen cooperation with new independent equipment suppliers and construction and installation contractors, we assign full-time personnel to offer on-site guidance, conduct quality assurance monitoring, and organize business exchanges and training to raise suppliers' quality awareness.

Growing together with suppliers

Based on the results of supplier performance evaluations, we develop long-term partnerships with excellent suppliers and share information on the inventories and demands with outstanding suppliers of core equipment and services. We also set up a mechanism for regular communication with upstream and downstream suppliers according to the categories and scope of procurement.

10,441
Suppliers in total

100%
Coverage of dynamic quantitative assessments (evaluations) of suppliers

Sustainability Management

CSR fulfillment is in the DNA of CGN. We align the sustainability philosophy with the corporate strategy, and have established the CSR fulfillment promotion mechanism and a specialized and regular CSR information disclosure mechanism. Based on them, we will continuously improve our capability to create comprehensive value, and promote the sustainable development of the Group and society.

Sustainability Strategy

Opportunities and challenges

- China's economy has entered a new normal, shifting from a stage of high-speed growth to a stage of high-quality development.
- Global energy demand continues to grow and the supply structure undergoes fundamental changes; the proportion of fossil fuels continues to decrease while the sector of renewable energy is growing rapidly.
- During the 14th Five-Year Plan period (2021-2025), China will accelerate its pace to build an energy supply system dominated by clean and low-carbon energy, and improve the construction and operation mechanism of the new electric power system.
- China's digital economy has entered the fast track of development.
- China is committed to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060 to the world.

Strategic path

- Implement the "clean energy plus" strategy.
- Promote layout optimization, structural adjustment and efficient coordination of 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 development space through internationalization and enhance global resource allocation capacity and international influence.

CSR promotion

- Focusing on the vision of "building a world-class clean energy group with global competitiveness", we continue to strengthen our CSR management, practices and communication.
- Two of our branding CSR practices, *CGN: Natural Energy Powering Nature* and *CGN's Transparent Communication: Toward a More Complete Transparency 3.0*, have been selected into the China Business Administration Case Center of the School of Economics and Management of Tsinghua University and the Management Case Research Center of Guanghua School of Management of Peking University, respectively.
- CGN has been awarded "GoldenBee Excellent CSR Report • Evergreen Award" for six consecutive years.
- The 8·7 Open Day has been held for nine consecutive years to promote biodiversity conservation and build a "Eco-friendly Nuclear Power Demonstration Base".

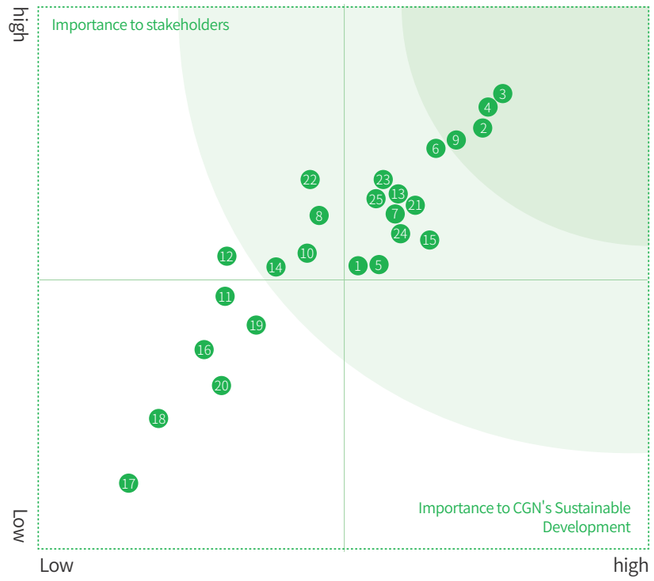
Aerial view of CGN Chabei Wind Farm in Hebei

Materiality Management

In order to better understand the expectations and demands of stakeholders, we conducted a questionnaire survey on stakeholders following the material topic analysis process, and collected 11,657 valid copies of the questionnaire in 2021. We screened out key material topics 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 economic, environmental and social issues, the Board of Directors is responsible for identifying and managing 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 of sustainability operations. The Board adheres to the reporting and review procedures, and guides the centralized management departments to conduct review to improve the quality and efficiency of the reporting of topics.

Materiality matrix



1. Safety management
2. Engineering quality and safety
3. Safe operation
4. Technological innovation
5. Win-win cooperation
6. Environmental management
7. Tackling climate change
8. Resource saving
9. Environmental risk management
10. Ecological protection
11. Environmental services
12. Protection of employee rights
13. Occupational health and safety
14. Career development
15. Employee care
16. Rural vitalization
17. Joint development of infrastructure overseas (supporting overseas community development, cross-cultural exchanges, etc.)
18. Community engagement
19. Transparent communication
20. Corporate philanthropy
21. Party building
22. Compliance management
23. Risk management
24. Deepening reform
25. Sustainability management

Stakeholder Engagement

Stakeholders	Expectations and Demands	Communication and Response
Government	❖ Compliance 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	❖ 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 ❖ Formulating scientific development mechanism ❖ Carrying out employee care and cultural activities
Environment	❖ Tackling climate change ❖ Waste management ❖ Protecting biodiversity	❖ Promoting clean energy development ❖ Continuously optimizing environmental management ❖ Protecting biodiversity ❖ 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 ❖ Actively engaging in rural vitalization
Media	❖ Transparent and open information	❖ Transparent information disclosure ❖ Regular communication

SAFE OPERATIONS

Safety is the foundation of CGN' s survival and development. Adhering to General Secretary Xi Jinping' s important expositions and instructions on nuclear safety and work safety, we regard the safe and high-quality operation of nuclear power projects as the most important political responsibility. Being tenacious like a bamboo deeply rooted in the rocks, we have improved the safety management system and strengthened risk management constantly to guarantee safe operations.

Our Achievements

CGN nuclear units achieved the world' s advanced level in over

80%

of WANO' s indicators, a year-on-year increase of 10 percentage points

The average capacity factor of the 25 in-service units reached

91.6%

achieving the world' s advanced level in WANO for the fourth consecutive year

23 CPR units realized

0

unscheduled shutdown

Contributions to UN SDGs

» LingAo Nuclear Power Plant

Safety Management

Attaching the greatest significance to "nuclear safety is our overriding priority", we always adhere to the basic principle of "safety first, quality foremost and pursuit of excellence". While implementing the work style of "Strict Compliance, Prudent Decision-making, Detail-oriented and Fact-based Approach", we keep improving our safety management system, promote safety culture building, enhance emergency response, and lay a solid foundation for the Group's safe operations.

Safety management system

Earnestly implementing the *Nuclear Safety Law, the Work Safety Law*, and other relevant laws, regulations, guidelines, and standards, we continue to improve the safety management system, facilitate the implementation of work safety responsibilities, and strengthen safety supervision and special rectification work, so as to build strong lines of defense for work safety.

Ensuring the implementation of work safety responsibilities at different levels

In compliance with the revised *Work Safety Law*, our subsidiaries have newly developed or improved their original responsibility system and evaluation methods, which clarify the responsibilities of personnel at all levels and positions. We have established the mechanism of supervising and evaluating the safety performance of the management. Each year, we make sure to conduct random inspections of no fewer than 5% of high-level, middle-level, and primary-level management.

Implementing four basic safety management systems

Focusing on risk management and hazard investigation and elimination, we have developed four basic systems, namely the system of daily hazard investigation, management, and publicity, the system of daily reporting and control of high-risk operations, the system of daily on-site inspections by the leadership, and the system of grid-based management of minimum areas. We have reached the best level in history in some safety indicators.

Rectifying safety hazards

According to the requirements of the National Energy Administration, we formulated the *Three-year Action Plan for Special Rectification of Safety Hazards*, in which we proposed 214 specific actions and identified 4,802 problems to be rectified. We have formed a checklist of hazards and a checklist of systems and measures respectively. Technical and management measures are adopted to tackle sporadic prominent hazards, and long-term rectification plans are made to solve generic, systematic, and deep-seated problems.

Optimizing SQE supervision

Targeting typical deviations in nuclear safety work, we activated the early warning and braking mechanism promptly, included the deviations into the annual safety, quality and environmental (SQE) assessments of subsidiaries, and urged them to make analysis and investigation promptly, hold relevant personnel accountable and put forward rectification measures. In 2021, 44 nuclear safety supervision reports were issued, identifying 186 nuclear safety issues to follow up.

DNMC, NDNPC, and HYHNPC have obtained the SHE Standardization and International Benchmark **9 Certificate** issued by Det Norske Veritas, a world-leading risk management agency and third-party international certification agency. It marks that CGN has achieved the international first-class level in SHE management.

Regulating safety management of overseas subsidiaries

We compiled our first safety, health, and environmental (SHE) management system manual for overseas institutions. Based on the framework of ISO systems, we borrowed SHE-related laws and regulations in countries where our projects are located, international general standards, and referred to the Group's good practices and management, and formed a standardized SHE management system for overseas subsidiaries.

Case

Applying smart technologies to safety management

By applying advanced technologies to safety management, including cloud computing, big data, Internet of Things, mobile internet, and artificial intelligence, CGN has facilitated smart and information-based safety management and ensured the safe operations of nuclear bases with high-tech solutions.

Promoting smart construction sites of nuclear power projects

With the support of AI, big data, and other technologies, we have built an electronic management platform for high-risk operations to guide the correction of deviations in real time. Also, we have promoted real-name management of construction crews involved in multiple projects throughout the lifecycle and enhanced on-site safety management capabilities including monitoring, early warning, response, and evaluation.

Building an intelligent new-energy safety cloud system

We have applied information technology to the implementation of four basic systems, namely the system of hazard investigation and governance, the system of safety inspections, the system of the management of high-risk operations, and the system of grid-based management. Through the collection, analysis, and integration of safety information, we provide strong support for SQE management.

Creating an intelligent traffic management platform

With dynamic vehicle monitoring at the core, CGN Services has integrated the traffic management system, the all-weather operation mechanism, the digital screen display technology, and the active defensive driving system to realize intelligent traffic management and real-time monitoring, thus effectively preventing traffic accidents.

The intelligent traffic management platform of CGN Services

Enhancing emergency response

CGN continues to improve the across-the-board emergency response management system and has built a "1 plus 6" (1 master plan plus 6 special plans) system for 18 types of emergencies. By combining preventive, rescue and relief efforts while prioritizing prevention, we keep building up our capabilities of disaster prevention, mitigation, resilience, and relief. In 2021, CGN properly responded to severe floods in southern regions as well as ice and snow disasters in northern and low-temperature regions of China, and ensured zero disaster-related casualties or serious property losses.

Improving guidelines on emergency response management

We prepared and released emergency response procedures and documents, such as the *Regulation on the Evaluation of Emergency Response Capacity Building*, the template of emergency response drills, the template of emergency summary reports, the template of tabletop drills, etc., to better regulate CGN's emergency response capacity building and drills.

Effectively responding to natural disasters

To cope with frequent extreme weather events, our subsidiaries have made arrangements in advance and organized emergency drills against typhoons. Project departments and sites/plants have all designated staff to monitor the weather, identify the type of risks, and make efficient response. In 2021, CGN effectively responded to several natural disasters, including the heavy rain in Henan and the strong typhoon In-fa.

Enhancing nuclear emergency response management

CGNP and six in-service nuclear power bases strictly implement a 24/7 duty system and carried out emergency response training and drills as planned. In 2021, CGN organized three joint nuclear emergency drills, 20 comprehensive emergency drills, and 421 drills targeting specific risks; the emergency response training covered 99% of the staff, and no nuclear emergency state was reported by nuclear emergency response organizations.

Case

Standing with Henan against torrential rains

In July 2021, many places in Henan were hit by torrential rains. Henan Branch of CGN New Energy immediately organized and sent emergency response teams to guarantee power generation and normal operation at its 26 sites and plants, providing stable and reliable power supply for 12 prefectures/cities, including Zhengzhou, Kaifeng, Xuchang, and Anyang.

Building a safety-conscious culture

CGN has built an all-encompassing safety-conscious culture that involves every employee, led by senior management and advocated by model employees personally. We hope to foster an environment where everyone cares about safety, participates in and supervises safety management.

In 2021, we organized "The Management On-site", "I Want Safety", "Nuclear Safety and Leadership", and "Precautionary Education on Safety" events to enhance employees' safety awareness. Meanwhile, under the leadership of the Party Committee, CGN carried out special safety inspections for the second consecutive year. Focusing on addressing weaknesses with equipment reliability, nuclear engineering construction, and environmental protection, we deepened the rectification of hazards and identified and effectively controlled major risks.

A team led Yang Changli, Secretary of the Party Committee and Chairman of CGN, on a safety inspection trip to Fangchenggang Nuclear Power Base

A team led by Gao Ligang, Deputy Secretary of the Party Committee, Board Director, and President of CGN on a safety inspection trip to Hongyanhe Nuclear Power Base

Li Li, Deputy Secretary of the Party Committee of CGN, on a safety inspection trip to Taishan Nuclear Power Base and Yangjiang Nuclear Power Base

A team led by Shi Bing, member of the Standing Committee of the Party Committee and Vice President of CGN, on a safety inspection trip to Ningde Nuclear Power Base

Cheng Yongping, member of the Standing Committee of the Party Committee and Secretary of the Discipline Committee of CGN, on a safety inspection trip to China Techenergy, CGN New Energy, and CGNPC Uranium successively

A team led by Pang Songtao, member of the Standing Committee of the Party Committee and Vice President of CGN, on a safety inspection trip to Daya Bay Nuclear Power Base

A team led by Guo Limin, member of the Standing Committee of the Party Committee and Vice President of CGN, on a safety inspection trip to Taishan Nuclear Power Base

Li Yilun, member of the Standing Committee of the Party Committee and Vice President of CGN, on a safety inspection trip to Yangjiang Nuclear Power Base

CGN with U

Keeping a measurement accuracy within 0.01mm to guarantee nuclear safety

CGN's pursuit of an accuracy within 0.01mm in measurements and perfection provides a guarantee for nuclear safety.

A nuclear power unit must go through an overhaul at the end of each fuel cycle. When it comes to the power turbines, the biggest challenge is to measure and adjust the flow gap between the rotating and stationary components. Because the flow gap is so small, the measurement accuracy must be within 0.01 mm, as any deviation larger than that may cause immeasurable consequences.

The most widely adopted approach in the industry is pressing lead wires, which is labor intensive, time consuming and poor in accuracy. That spurred Zheng Huabing, a young backbone technician of CGN Operations, to find a better measurement solution through independent innovation.

Finally Zheng and his team decided to adopt laser measurement, a technology that had never been applied to steam turbines at home or abroad and needed to be tested in overhauls first. When they finally landed a chance of testing after much communication and coordination, the deviation between the result of the laser measurement and the traditional measurement method was as big as 0.5 mm, which meant that the test failed.

What was the problem? Though frustrated, the team did not give up; they pulled themselves together quickly to go over the laser measurement step by step and finally, identified the root cause. In the following one year or so, Zheng and his team managed to test the laser measurement solution in three outages, conducted over 6,000 experimental measurements and collected more than 50,000 sets of data. Through careful comparison and verification, they finally made the accuracy of laser measurement down to 0.01 mm, which proved the feasibility of the laser approach in measuring the flow gap.

After the outage, Zheng and his team continued to improve the measurement process and the laser measurement technology, used it for the first time in steam turbine overhaul in China and established its leading position.

So far, the laser measurement approach has been widely adopted across our nuclear power plants. It has shortened the time for measuring and reducing the flow gap of steam turbines from 280 hours to 95 hours, and the number of hoisting operations from 24 to 8, making hoisting operations and outage much significantly safer.

Zheng Huabing (left) from CGN Operations

Project Quality

Good quality lays the foundation for safety, and safety is impossible without good quality. With the goal of "zero violations and zero quality defects", CGN adheres to lifecycle project quality management, continues to strengthen quality management throughout the entire industry chain, to ensure safe operations in the long term.

Quality management

Upgrading quality evaluation standards

In accordance with the international safety rating system (ISRS), we upgraded our SQE evaluation standards to better meet environmental requirements, protect local community and public interests, and evaluate projects under construction.

Applying advanced construction technologies

We have continuously researched the application of advanced construction technologies, such as modular construction, roof opening, automatic welding, and comprehensive testing in nuclear power projects, and are applying them to Hualong One, to enhance the project quality.

Management of quality and integrity risks

To prevent and handle quality and integrity risks, we have promoted the application of information technology, such as facial recognition and electronic quality checks, and realized efficient management of quality and integrity risks in important nuclear safety items and key areas of activities.

SQE management of all CGN's projects under construction has

reached the international advanced level

Dangtu Fishery and Light Complementary Solar PV Park, Anhui Province, won the

National Quality Project Award

The nuclear island steel liner project (special steel structure) of Unit 4 of Fangchenggang Project won the Guangdong Steel Structure

Gold Award "Guangdong Steel Award"

Construction scale

7
Nuclear power units under construction

8.3 GW
Installed capacity

30
New energy projects under construction at home

5.0344 GW
Installed capacity

Fangchenggang Nuclear Power Base

Key projects

Key projects are important drivers for steady growth and sustainable development of the Group. Focusing on targets of the year, CGN went all out to advance projects in a steady, efficient manner.

Nuclear power projects

- Unit 5 of Hongyanhe NPP, Liaoning was put into commercial operation after 67.83 days of construction starting from fuel loading, setting a record for the shortest construction period of CPR units.
- Unit 3 of Fangchenggang NPP, Guangxi completed the containment pressure test and made advances in all work in an orderly manner.
- Unit 1 of Taipingling NPP completed dome hoisting and entered the assembly phase.
- Unit 2 of San'ao NPP, Zhejiang started the construction of the main nuclear island, marking that the construction of the two units was in full swing.

Nuclear fuel projects

- A nuclear fuel assemblies plant co-funded by CGNPC Uranium and Kazatomprom was officially put into operation, starting to produce nuclear fuel assemblies.

New energy projects

- At home, CGN overcame the difficulties of tight supply of offshore wind power and complex conditions, and connected all projects with guaranteed electricity prices to the grid.
- Abroad, CGN put into operation two greenfield projects - one gas power project and one wind power project, amid the pandemic.

Other projects

- CGN Nuclear Technology built China's first demonstration facility for harmless treatment of antibiotic bacteria residues using electron beams in Xinjiang, with a daily treatment capacity of 100 to 200 tons.
- CGN Environment Protection built the Chengnan Sewage Treatment Plant in Jinxi County, Jiangxi, which applies the vertical smart sewage treatment technology and is the company's first "tech-based environmental protection" project.

Unit 5 of Hongyanhe NPP put into commercial operation

On July 31, 2021, Unit 5 of Hongyanhe Nuclear Power Plant in Liaoning completed the 168-hour trial operation test and was approved for commercial operation, bringing the total of CGN's nuclear power units in operation to 25.

A nuclear fuel assemblies plant built by a Chinese-Kazakh joint venture put into operation

A nuclear fuel assemblies plant co-funded by CGNPC Uranium and Kazatomprom was officially put into operation in East Kazakhstan Province. The project is designed to produce 200 tons of uranium nuclear fuel assemblies per year, which can meet the refueling needs of eight GW-level nuclear power units.

Houhu 500,000 KW offshore wind power project, Shanwei put into operation

By November 25, 2021, all the 91 wind turbines of Houhu 500,000 KW offshore wind power project in Shanwei had been connected to the grid for power generation. The project can deliver 1.489 TWh of electricity to the grid each year.

Safe Operations

Following the principle of standardized, specialized and centralized management, CGN continues to strengthen its nuclear power operations, lean benchmarking, and equipment management to ensure the safe operations of all in-service nuclear power plants and new energy projects, to and the stable and reliable power supply for economic and social development.

Fujian Ningde Nuclear Power Base

Indicators	2019	2020	2021
Number of in-service nuclear power units	24	24	25
Ratio of units achieving world's advanced level (the world's top quartile) in WANO indicators	76.4%	72.6%	83.0%
Ratio of units achieving the world's excellent level (the world's top decile) in WANO indicators	72.2%	69.8%	80.3%

Operations of nuclear power projects

In 2021, CGN put one nuclear power unit into commercial operation and all the 25 in-service nuclear power units maintained safe and stable operations.

91.6 %
Average capacity factor of in-service units

23 CPR units had **zero** unplanned shutdown, **a record high**

16 nuclear power units scored **full mark** in the WANO composite index

As of December 31, 2021, Unit 1 of LingAo NPP had secured safe operations for **5,622 days**, the longest among generating units of the same type in the world and nearly **15 months** longer than the runner-up abroad

Total operating hours of 6 nuclear power units in Daya Bay Nuclear Power Base exceeded
100 reactor years

Since the first unit was put into commercial operation in 1994, Daya Bay NPP has maintained safe operations for
28 years

Fleet Management

Standardized

We standardized the organizational structure and human resources allocation of nuclear power base companies to further improve overall nuclear safety and organizational management, and enhance the efficiency of human capital input and output. Through the SRT (the IT-enabled operation screening team), we strengthened the coordination of information technology, developed the plan for the application of information technology to nuclear power operations 2021-2025, and developed new intelligent application scenarios in operations, boosting the excellent performance of the nuclear power industry.

Specialized

We enhanced our core capabilities to conduct outage activities. By developing tools such as the non-drawing rotor robot for the examination and maintenance of generators, the intelligent calibration device for instrumentation and control panels, and thimble tube cutting devices, we improved overhaul efficiency and the essential safety of personnel, thus ensuring safety and reducing the costs of outage at the same time. With the professional strength of the technical management platform and by integrating resources of multiple plants, we scientifically and properly solved equipment safety hazards such as the wear and tear of the large end shaft shank of the diesel engine connecting rod of H3 unit and high acetylene of the main transformer of L1 unit to ensure the safety and stability of the unit.

Centralized

With the help of big data, we optimized the strategy model of spare parts inventory, expanded the scope of centralized procurement, and improved the concentration and accuracy of spare parts demand. We enhanced our bargaining power in centralized procurement of spare parts and optimized procurement channels to reduce the overall procurement cost of spare parts. Our average inventory of single unit maintained the world's leading.

Outage Management

CGN completed 16 outages in 2021, with excellent performance in terms of safety and quality. The number of quality incidents per 100 outage days decreased year by year and human-factor IOE events fell by 20% compared to 2020. The average annual outage duration was 30.8 days. In particular the Y304 outage of Yangjiang NPP only took 20.58 days, the shortest record for CPR1000 units; L409 outage of Ling Ao NPP Phase II only took 48.8 days, refreshing the record of 10-year outage for CPR1000 units; and total calendar days of refueling outage in 2021 was 556.8 days. We had zero shutdown, fallback status or major equipment damage due to poor maintenance.

Equipment management

CGN carried out "8 plus 1" major equipment management centering on "defect elimination, improvement, and value creation", and reached the best level in the past five years in relevant indicators. In 2021, we had zero unplanned shutdown due to damage of major equipment or arising from major equipment, the forced loss rate caused by major equipment was 0.02%, and all our emergency diesel generator units reached the world's advanced level of WANO-SP5 index for the first time. We approved the solutions to five major generic technical problems by technical review, solved 30 major equipment hazards, eliminated 201 equipment defects in multiple bases, and improved the status of major equipment in multiple plants steadily.

Operations of new-energy projects

In the face of a grim safety situation, CGN New Energy continued to summarize experience, make improvements and rectifications, strengthened risk control and doubled efforts on identifying and eliminating safety hazards to effectively control major risks. We also fought against COVID-19 outbreaks vigorously, and resolutely met the target of "two zeros".

Average utilization hours of wind power and PV power exceeded the industry average by
4.5 %

Year-on-year drop of long equipment shutdowns
31.8 %

Wulianhu Wind Farm, Heilongjiang was listed as the
"Model Enterprise for Equipment Safety Management"
by China Association of Plant Engineering.

CGN Europe Energy won
the RoSPA Gold Award for 2021

CGN Korea Daesan Power Station won the
7 Zero Accident Certificate
from the Korea Industrial Safety Association

Spotlight

Serving the overall situation and ensuring energy security

Since September 2021, China's energy supply has remained tight due to a combination of factors. Bearing in mind the country's most fundamental interests, CGN resolutely implemented the decisions and plans of the CPC Central Committee and the State Council, regarded power supply as an important political task, and took a series of measures to ensure the safety and stability of the units and power generation at full capacity in accordance with the highest-level and strictest requirements. We made every effort to guarantee energy security, so as to support economic and social development and meet people's needs.

Making arrangements to secure power supply

CGN setup a task force, formulated working plans, and held meetings to ensure power supply.

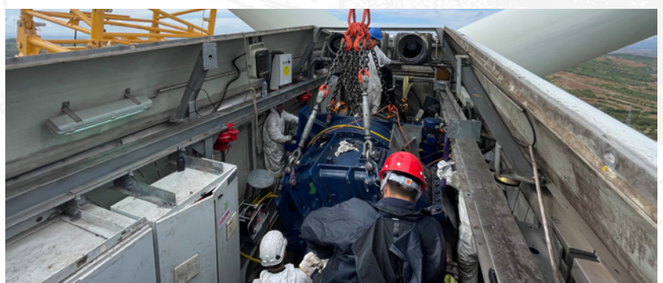
- The task force at the Group level was headed by Secretary of the Party Committee and Chairman of CGN Yang Changli and that at the plant level by the director of each power plant. They issued work plans for ensuring power supply and demanded plants in operation to meet the highest-level and the strictest requirements.
- Each power plant formulated their own power supply working plans, with specific requirements for daily production and operations including risk analysis, hazard investigation and identification, operation management, key activities, epidemic prevention and control, public opinion, information security, anti-terrorism and security, emergency response and other aspects to ensure zero unplanned shutdown and safe and stable operations of in-service power units to strive to reach their full capacity.

Eliminating safety hazards and ensuring stable power generation at maximum capacity

CGN's power plants and sites have enhanced production management, implemented measures to ensure power supply, monitored the status of units, eliminated equipment hazards, ensured zero unplanned shutdowns of in-service units and stable operation of new energy projects, and strove to meet the challenges of power shortage with stable generation at full capacity.

- With the help of the anti-shutdown facilities of multiple plants, each nuclear power plant has increased the frequency of daily inspections of units and equipment to detect and eliminate defects and hazards on the spot, and taken effective countermeasures for those that cannot be removed immediately. During guaranteed power supply for major events, multiple plants organized special activities and identified 1,853 defects and eliminated 2,019 newly-identified and outstanding defects in time.
- Taking safety and power supply as the theme, CGN New Energy's plants and sites have implemented the key requirements of safety control, and made every effort to carry out overhauls properly, to ensure that generating units can generate power at full load.

HYHNPC has developed and implemented a plan and put Unit 5 into operation accordingly on schedule. Its annual power generation was 8.2% higher than the annual target in 2021, effectively alleviating power shortage in Northeast China.



In Changgao Wind Farm, Liaoning Province, the GE2MW gearbox is utilized for the first time in China, solving the problem of long shutdowns of the unit and generating 1 GWh of electricity.

Optimizing outages and tapping power supply potential

To serve the overall national development, we consider guaranteed energy supply as our primary duty. To this end, we improved the overhaul plan in accordance with outage plans of the power grid, and increased input to shorten the time needed for overhaul as much as possible on the premise of ensuring high quality, and thus to increase power generation.

The outages of Unit 4 of Ling Ao NPP Phase II, Unit 1 of Ningde NPP and Unit 2 of Hongyanhe NPP were postponed in accordance with power supply plans, and all four outages were completed and the units were connected to the grid ahead of schedule. In order to minimize the impact on the power grid, the outage of Unit 4 of Ling Ao NPP Phase II, which was postponed twice, was completed and the unit was connected to the grid about two days ahead of schedule, thanks to the deep integration of Party building with the central tasks and process optimization and innovation, setting a new record for the shortest 10-year outage of the same type of units in China.

On-grid nuclear power and utilization hours of power generation units reached ***the highest*** *in the last three years*

CGN, as the only company that has ***100*** *%* *met its power generation commitment,*

was commended by the Energy Administration of Guangdong Province

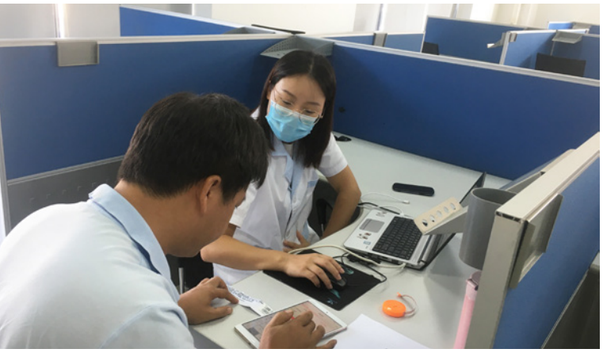
In Zixing Solar Farm, Jilin Province, employees conduct special inspections on the PV panels to check the tightness of the component brackets to ensure their normal operation.

Employee Safety and Health

CGN always puts the safety and health of employees first, and strictly abides by relevant national regulations on occupational safety and health. The Group has continued to improve the occupational health and wellness management system, and protected the safety and health of employees through technical measures, awareness initiatives, occupational health examinations, health monitoring, etc.

Institutionalizing occupational health management

- Each subsidiary has its own occupational health management department equipped with full-time personnel, among which, the occupational health management personnel in the nuclear power sector are all medical professionals.
- We have set up wellness corners/stations in the workplace for first aid, pre-work health confirmation, rest at work, popularization of occupational health related knowledge, etc.; meanwhile, we offered TCM-based health management for staff and special occupational health management for drivers.



Offering TCM physiotherapy services to employees

A wellness corner in the workplace

Keeping occupational hazards under strict control

- For nuclear power projects, we work to ensure that the occupational disease protection facilities are designed, built and put into use simultaneously with the main body of the project concerned, to control occupational hazards at the source, and meet the objectives of radiation source management and personal radiation dose control.
- Each nuclear power plant strengthens control of radiation sources during construction, and uses materials with minimal activation products. After putting into operation, they will immediately set up special teams for managing radiation sources, and apply new shielding to control on-site radiation levels.
- Always following the ALARA principle, which stands for "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.

Exploring new technological solutions to prevent workplace injuries

We have developed wearable real-time health detection equipment, and occupational hazard detection equipment and its application system. Based on the real-time health status of employees and visualized personal radiation doses, the system will make intelligent assessments of employees' health status, and issue warnings whenever abnormality is detected. We also strengthen process control to prevent work-related injuries caused by illness and occupational diseases caused by excessive exposure. The technology has been applied in NDNPC and CGN Operations.

Strengthening supervision over contractors' occupational health management

We encourage subsidiaries to gradually integrate their occupational health management system with that of contractors, thereby to better regulate the latter, expand its coverage and increase its protection. Each nuclear power plant uses the "Occupational Health Monitoring System" independently developed by CGN for comprehensive occupational health management of employees (including contractors) exposed to occupational hazards, review their occupational health examination results, and digitize the occupational health monitoring process.

CGNPC Uranium's infirmary at the Husab Uranium Mine, the first ever built by a central SOE in Africa, which is equipped with medicines, oxygen generators, and oximeters to protect the employees from COVID-19

0.009
Accident rate of 200,000 man-hours in the engineering construction of nuclear power projects

All subsidiaries (except newly established ones) have obtained the certification of the
ISO 45001
occupational health and safety management systems

0
Occupational disease incidence rate

Cybersecurity

In the face of rising cybersecurity threats, CGN strictly follows relevant laws, regulations and policies, such as the *Cybersecurity Law and the National Cyberspace Security Strategy*, and conducts cybersecurity monitoring and early warning, emergency response, and security protection. In 2021, we had no major cybersecurity incidents.

Strengthening cybersecurity

We have exhorted nuclear power plants to strengthen network security in accordance with the requirements of hierarchical protection, completed the construction of private networks for CGN Design Institute and CGN Research Institute, and strengthened network security throughout the design and R&D stages of nuclear power plants.

Raising awareness of cybersecurity

We released the updated version of the 14 R*egulations on Cybersecurity for CGN Employees*, and organized lectures on enhancing cybersecurity. We also organized a cybersecurity skills competition that was based on real scenarios and aimed at improving personnel competence, effectively raising employees' awareness of cybersecurity and improving their ability in this regard.

A cybersecurity drill

TECHNOLOGICAL INNOVATION

Technological innovation lays the foundation for national prosperity and progress. CGN has always regarded technological innovation as the major engine of development. Guided by principles proposed by the CPC Central Committee, we are working to seek technological innovation that targets the global science frontiers, serves the main economic battlefield, strives to fulfill the significant needs of the country and benefits people's lives and health. We continue to improve the technological innovation system, unlock the creativity of employees, and develop key and core technologies, to produce strong synergies for technological innovation, thus build it into a world-class clean energy enterprise with global competitiveness at an earlier day, and contribute to building China's strengths in science and technology.

Contributions to UN SDGs

Our Achievements

Investment in S&T activities

RMB **4.15** billion

Year-on-year increase

9.5 %

S&T personnel

8,909

Year-on-year increase

3.8 %

Valid patents

6,450

Technological Innovation System

We also put technological innovation at the core of overall development, and have developed a "three-in-one" system to boost technological innovation. We continue to optimize the system from institutional arrangements, platform construction, talent cultivation, etc., consolidating the foundation for technological innovation.

RMB 4.15 billion
Investment in S&T activities

9.5%
Year-on-year increase

Scientific research mechanism

CGN continues to reform mechanisms and systems for scientific research, thus further optimizing the innovation system to boost innovation.

Optimizing the R&D system

We launched a specific reform of the scientific research system with a focus on optimizing the top-level design of technological innovation in the field of nuclear power, to build an R&D system with clearly defined division of responsibilities covering R&D of new technology, engineering design, and operational technology.

Delegating powers and increasing incentives

We set up a special project team for each project of strategic importance, selected the project leader through open competition, and delegated the powers of recruitment, fund use and incentive allocation to the team leader. We signed the contract with the team leaders, appropriated the money needed in lump sum, and issued corresponding incentives and restraints according to key milestones, with extra incentive payments excluded from the gross payroll.

Optimizing the management process

According to the principles of effective management and vitality stimulation, we optimized the process of research project management, cutting 40% of administrative items which were redundant or had zero value-added. We also streamlined the management of research funds, delegated the power of funds allocation, reduced the items of the project budget, and allowed the undertaking unit to keep surplus funds.

Scientific research platforms

CGN has built R&D platforms and facilities including two major centers, nine state-level R&D centers, several provincial/ministerial-level and Group-level R&D centers, and Longgang Experiment Base in Shenzhen, gradually building a high-level R&D platform system.

2 centers

- The South China Atomic Energy Science and Technology Innovation Center
- The Yangtze River Delta Emerging Industry Technology Innovation Center

9 state-level R&D centers

Key State Laboratory

- Key State Laboratory of Nuclear Power Safety Monitoring Technology and Equipment

National Engineering Technology Research Center

- National Nuclear Power Plant Safety and Reliability Engineering Technology Research Center

National Energy R&D Centers

- Nuclear-class Equipment R&D Center of National Energy Nuclear Power Station
- National Energy Solar Thermal Power Generation Technology R&D Center
- National Energy Ocean Nuclear Power Platform Technology R&D Center
- R&D Center of Digital control system for National Energy nuclear power plant
- National Energy Nuclear Power Operation and Life Management Technology R&D Center
- National Energy Advanced Nuclear Fuel Element R&D Center
- National Energy Nuclear Power Engineering Construction Technology R&D Center

Collaborative innovation

Dedicated to further scientific research collaboration, CGN has maintained good cooperation with research institutes including the Chinese Academy of Sciences (CAS), China Academy of Engineering Physics (CAEP), the National Natural Science Foundation of China (NSFC), Tsinghua University, Harbin Institute of Technology, University of Science and Technology Beijing, and French Alternative Energies and Atomic Energy Commission (CEA). Through joint ventures, joint research institutes and joint laboratories, we are developing closer bonds of collaboration, and gathering strength for building a win-win technological innovation ecosystem to jointly overcome challenges hindering the development of the industry.

01 Via the Enterprise Innovation and Development Fund, we have co-launched with the NSFC, we announced our R&D needs to domestic research institutes, and over 20 top research teams are working on some of the fundamental issues we raised.

02 We have built the Joint Laboratory for Applied Accelerator Technology together with the Institute of Modern Physics, CAS, established an open technological innovation platform for accelerator R&D led by Zhao Weihong, an academician of CAS, and built a high-level scientific research team for electron beam applications and environmental technology led by Wang Jianlong, associate dean of the Institute of Nuclear and New Energy Technology of Tsinghua University.

03 We have established the Joint Institute for Nuclear and New Energy Technology with Harbin Institute of Technology and mobilized scientific research personnel's creativity by providing them with special research funds, granting them considerable autonomy, thus leaning to them in the distribution of income from technological achievements.

Scientific research team

The source of technological innovation is talent. CGN continues to optimize mechanisms and systems for talent cultivation, employment, assessment, HR service and support, and incentives, in an effort to build a competitive scientific research team.

Recruiting chief experts

We have established a chief expert system to leverage the role of team leaders for technological innovation projects. We recruited 40 chief experts through open procedures in various technical fields, allocated special research funds to them, and granted them autonomy in fulfilling duties and choosing research subjects.

Promoting brain gain

We have introduced measures specifying how to introduce talented people from what areas, and how to serve and retain high-level specialists. We developed long-term partnerships with two academicians, and confirmed a list of high-level specialists to recruit from at home and abroad. To attract more fresh graduates, we provide differentiated salaries and housing subsidies to graduates from top universities.

Increasing incentives for research personnel

The salary of research personnel has outgrown that of common employees and managers in the past three years. We have set up post allowances, rewards for key research projects, and rewards for the application of S&T achievements for key research units. Moreover, we vigorously promote dividend incentives among tech enterprises, with post-based dividend schemes implemented by CGN Suzhou Institute, CGN Design Institute, and China Techenergy. We have also set up special incentive schemes for key projects in which evaluation and rewards are carried out according to key milestones.

8,909
Scientific research personnel

40
State-certified specialists

CGN with U

Independent R&D of nuclear power technologies

"Across the globe, nuclear-related technologies are all regulated and controlled by governments. Only by mastering key and core technologies can we ultimately guarantee the security of national nuclear safety, and gain autonomy in core technologies."

——Wang Xin, chief designer of Hualong One, CGN

Wang Xin, who worshiped the spirit of "Two Bombs, One Satellite", entered the nuclear power industry after graduating from university. At that time, China's nuclear power industry was quite young, lagging behind major players which had developed third-generation nuclear power technologies with an installed capacity of millions of kilowatts. Wang vowed to dedicate his career to help China catch up.

The Hualong One project was launched against this backdrop. It leverages what we have learned from the construction, production, and operation of nuclear power plants over the past 30-plus years, and is the fruit of experience and wisdom accumulated in China's nuclear industry over decades.

As the chief designer of Hualong One, Wang took the lead in setting up an innovative technical decision-making system. Safety is the most important performance indicator for a nuclear power plant. During the design and construction phases, Wang and his team remained committed to the working style of "strict compliance, prudent decision-making, detail-oriented principle and fact-based approach" to ensure safety. Adopting the most stringent safety requirements and the latest technical standards worldwide, they made every effort to ensure safety in case of any emergency by its design of "in-depth defense" and "multiple redundancies".

Since the beginning of R&D, the project team had aimed to develop reactors with independent intellectual property rights, paving the way for Hualong One to "go global". For example, various calculation software is needed in the R&D process. In order to ensure that the technology output will not encounter obstacles in terms of intellectual property rights, the R&D team planned ahead and arranged for the independent development of 31 software models. In recent years, Hualong One has got more attention from the global market, and become a symbol of China's high-tech industry.

Wang Xin, chief designer of Hualong One, on the TV program *Building China into a High-tech Powerhouse* jointly produced by People.cn and China Association for Science and Technology

Research in Key Technologies

CGN insists on science and technology innovation as the first driving force to lead development, and makes every effort to promote key scientific research projects and key technologies to actively master the advanced productivity of the future.

Advances in scientific research projects

01

Hualong One completed the Generic Design Assessment (GDA) and the European User Requirement (EUR) certification, and obtained the certificates on schedule, laying a solid foundation for the export of China's nuclear technologies.

02

CGN accelerated the research on key and core nuclear power technologies. More than 30 proprietary technologies have secured procurement contracts or been applied, playing an important role in the construction and operation of nuclear power projects and in safeguarding the safety and stability of the industry chain and supply chain.

03

In the field of new energy, CGN has completed the R&D of the proprietary fan control system and the development of predictive health management system for key new energy equipment based on big data and artificial intelligence. These results have been put into demonstrative application in multiple new energy sites and plants.

13
Science and technology awards at the provincial/ministerial level (including those awarded by Shenzhen Municipality)

50+
Science and technology awards conferred by national industry associations

The "Development and Industrialization of Nuclear-Safety-Level Digital Control and Protection System for Large Nuclear Power Stations" won
the first prize of Beijing Municipal Science and Technology Progress Award

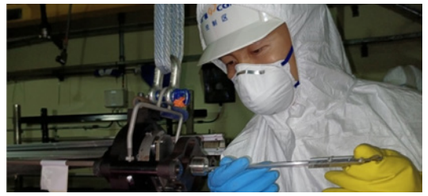
The "R&D and Application of the Key Technologies and Intelligent Equipment for High-Efficiency and Safe Refueling Overhaul Robots in NPPs" won
the first prize of Guangdong Science and Technology Progress Awards

The "R&D and Application of the Technology for High-Precision Testing of the Airtightness and Strength of Containment Buildings of Nuclear Power Plants" won
the first prize of Shenzhen Science and Technology Progress Awards

Case

CGN's new solution for thimble tube maintenance at nuclear power plants

To meet nuclear power plants' urgent needs for new technical solutions for the maintenance of thimble tubes, CGN Operations took the lead in forming a project team for the research on the treatment of abrasive wear of thimble tubes. Through long, hard work, the abrasive wear treatment process the team developed independently was applied to the tenth overhaul of Unit 3 of Ling Ao NPP on May 25, 2021. The new process can extend the service life of thimble tubes, reduce the replacement frequency of thimble tubes, shorten the time needed for a single outage, and thus generate considerable economic benefits.



Size measurement before the cutting of the thimble tube

Daya Bay NPP

Key scientific research results

HPR1000

- A proprietary third-generation nuclear power technology of China.
- Projects using HPR1000:

  Units 3 and 4 of Fangchenggang NPP, Guangxi; Units 1 and 2 of Taipingling NPP, Guangdong; Units 1 and 2 of San'ao NPP, Zhejiang; Units 5 and 6 of Lufeng NPP, Guangdong.
- Single-unit layout, nominal power of 1.2 GW, double-shell containment, an active and passive containment heat removal facility, and a higher factor of safety.
- HPR1000 completed the European User Requirement (EUR) certification in October 2020 and Generic Design Assessment (GDA) in January 2022.

FCGNPC

FirmSys

- China's first nuclear-class distributed control system (DCS) with proprietary intellectual property rights.
- The system is compatible with Generation II+, Generation III, and Generation IV nuclear power technologies and has been applied in 17 nuclear power units under construction and many in operation in China. CGN is one of a few suppliers in the world that have mastered the nuclear-class DCS technology and able to guarantee stable supply.
- FirmSys marks that China has entered the stage of industrial application of home-grown nuclear-class DCS, "the central nervous system" of nuclear power plants.
- CGN has made multiple breakthroughs under the National High-tech R&D Program (863 Program) and other major scientific and technological programs, and mastered more than ten key technologies. By the end of 2021, CGN had obtained 291 patents and 195 software copyrights, and published 387 papers in total. Besides, we had led and participated in the compilation of 7 national standards and 21 industry standards.
- CGN has passed South German CE certification: the products get the pass to enter the market of EU and European Trade Free Zone countries.

Proprietary nuclear fuel assemblies (STEP series)

- CGN's advanced nuclear fuel assemblies with proprietary intellectual property rights will be able to meet the needs of Generation II and III large commercial pressurized water reactors and other types of reactors in the future.
- CGN has completed commercial reactor irradiation tests of several batches of STEP fuel assemblies, laying a solid foundation for the mastery of key and core technologies as soon as possible.

Smart robotics for nuclear power plants

- Focusing on the operation and maintenance of nuclear power plants under operation and the need for building new intelligent nuclear power reactors, we have conducted research in core technologies in key fields, and made an effort to develop robots for special operations to make nuclear power plants safer, more economical, friendly and intelligent, and meet the urgent demand for intelligent robots in China's nuclear power sector.
- We have launched dozens of national-level scientific research projects with approval, and boast more than 40 robot products used in nuclear island main equipment overhaul, fuel assembly operation and repair, conventional island and cooling source system maintenance, nuclear emergency exploration and operation, etc. Many of them are the first of their kind in the country and even the world.

The underwater robot developed by CGN for the cooling source of nuclear power plants won

the second prize at the national finals of the 2021 China Innovation Methods Competition

hosted by the China Association for Science and Technology and the Ministry of Science and Technology of China. The research team overcame many technical problems to develop this highly corrosion- and water-proof robot, with high-resolution underwater camera, and accurate positioning for underwater cleaning.

The nuclear fuel assembly detection robot

Electron-beam technology for special waste treatment

- We jointly developed this world-leading technology with Tsinghua University, owning complete intellectual property rights for core equipment and processing technology and more than 30 invention patents. It marks a major breakthrough in environmental pollution control.
- The technology is applied in 10 fields such as cold-chain food, industrial wastewater treatment, medical wastewater treatment, antibiotic residues treatment, etc., and 15 demonstration projects are built or under construction.

Proton therapy

- Proton therapy is one of the world's most advanced radiation therapy technologies for cancers. It kills tumor cells while protecting normal tissues and organs, with few side effects and a low recurrence rate.
- By establishing cooperation with Ion Beam Applications S.A. in Belgium, a world leader in proton therapy, CGN Nuclear Technology has entered the field of proton beam therapy systems. CGN is building a proton medical equipment manufacturing base and a medical isotope production base in Mianyang City, Sichuan Province, to directly benefit medical institutions and more tumor patients.
- Shanghai Concord Cancer Center has signed a contract to purchase the Group's first proton therapy system; this was the CGN's first order for its medical equipment. After put into use, the system will treat more than 1,200 cancer patients every year.

Rendering of the proton therapy system

Spotlight

Developing the EB technology for a better life

In the international market, non-power nuclear technology has generated an annual market value of nearly RMB one trillion yuan, but it is still in its infancy in China. Over the years, CGN Nuclear Technology and Tsinghua University have jointly developed the electron-beam (EB) technology for special waste treatment, which is applied in 10 fields such as cold-chain food, industrial wastewater treatment, medical wastewater treatment, antibiotic residues treatment, etc., and 15 demonstration projects are built or under construction. They have pushed China to the forefront of the EB field, contributing to building a beautiful China and meeting people's growing needs for a better life.

CGN Nuclear Technology has taken the lead in undertaking 5 nuclear energy research projects funded by the China Atomic Energy Authority (CAEA), and is approved to establish the Nuclear Technology (Environmental Application of Electron-Beam Technology) R&D Center, CAEA.

Inactivation of virus on cold-chain food packaging surfaces

China's first demonstration device for the disinfection of cold-chain food packaging surface

On March 29, 2021, the CGN's EB project for the inactivation of virus on cold-chain food packaging surface passed the review of an expert panel of seven including Zhan Wenlong, an academician of the CAS, marking the completion of the research for China's first demonstration device for the disinfection of cold-chain food packaging surface. The device is equipped with a low-energy self-shielded electron curtain accelerator, which only penetrates paper products with a thickness of about 0.3 mm, and will not affect the food inside. It is a more environmentally friendly and efficient disinfection solution for cold chain packaging surfaces.

"**The research into the use of electron beams to kill coronavirus on the packaging surface of cold-chain food is a brand-new technological innovation and attempt. It will play a unique role in building a solid line of defense against the pandemic and safeguarding the health of the people.**"

——He Qinghua, a senior official of the Bureau of Disease Prevention and Control, National Health Commission

The field simulation experiment of the first prototype

Scan to learn more about how electron beams kill coronavirus on the outer packaging of cold-chain food

Antibiotic residue treatment

The first demonstration project for the harmless treatment of antibiotic residues using electron beams in China

On July 23, 2021, China put its first demonstration project for the harmless treatment of antibiotic residues using electron beams into operation in Yining City, Ili Kazakh Autonomous Prefecture, Xinjiang, with the daily capacity of 100 to 120 tons. The treated antibiotic residues are then turned into fertilizers, which is conducive to creating a green circular economy for modern industry and modern agriculture.

"**This project not only sets a benchmark for the harmless treatment and reuse of antibiotic residues in China, but also provides strong technical support for environmental protection in Yili and even the whole Xinjiang.**"

——Ablikim Nurambek, member of the Party Leadership Group of the People's Government and Deputy Governor of Ili Kazakh Autonomous Prefecture

The first demonstration project for the harmless treatment of antibiotic residues using electron beams in China

Medical wastewater treatment

The first demonstration device for treating medical wastewater with electron beam irradiation in China

On May 19, 2021, the demonstration project passed the NAEA's acceptance review in Shiyan, Hubei Province, with the highest grade of "Excellent". The project is able to treat up to 400 tons of wastewater per day. Compared with the traditional method of adding chemical disinfectants such as sodium hypochlorite into the sewage, the project is superior as it has higher sterilization efficiency and requires no additional disinfectants. Residual substances such as antibiotics in the treated sewage are degraded, and no chemical reagents remain, thus avoiding secondary pollution to the environment.

Printing and dyeing wastewater treatment

The demonstration project for the treatment of printing and dyeing wastewater from Jihua Group using electron beam irradiation in Xiangyang, Hubei

By the end of 2021, the installation of water treatment equipment and electron accelerators was completed, and met the conditions for commissioning according to water quality. Compared with the traditional advanced oxidation technology, the EB technology is superior in degradation, requires low operating cost and causes zero pollution. After put into operation, the project will be able to treat up to 5,000 tons of printing and dyeing wastewater daily.

Landfill leachate treatment

The first demonstration project for full quantitative treatment of landfill leachate using electron beams in China

On December 7, 2021, the demonstration project started construction in Mianyang, Sichuan. With one electron accelerator, the project is designed with a daily treatment capacity of 330 tons, and will discharge 330 tons of water per day. After several tests and rounds of expert review and verification, it will provide stable and reliable technical support for the fully quantitative discharge of landfill leachate.

Digital Transformation

As the digital economy has become a new driver of China's high-quality development, CGN follows Xi Jinping's instructions on the development of a digital China, actively plans for and promotes digital transformation, and deeply integrates digital transformation with the development of clean energy to promote high-quality corporate development.

The digitization strategy

Our headquarters has established a leading group for network security and informatization, followed suit by all business units and subsidiaries. We have begun a series of efforts to facilitate digital transformation in accordance with the three-step strategy for promoting the application of information technology, digital technology and intelligent technology, and to empower CGN's high-quality development with strategy planning and intelligent technology.

CGN has set up a company to serve as a digital industry platform, responsible for CGN's digital development, including the R&D of technologies needed.

We have made arrangements for data governance by benchmarking our performance against best practices while staying focused on strengthening the foundation, making up for shortcomings, and attaching importance to application.

We have promoted pilot demonstration projects for integrating the digitization of business management, the development of digital industry and the transformation of traditional industries with digital technologies to drive comprehensive digitization.

We have developed a cross-line and cross-industry digital collaboration mechanism to ensure the stable operation of the basic application platform and promote the effective operation of the digital industry.

Achievements of digitization

We vigorously promote digitization in various fields to improve operational efficiency and facilitate industry transformation and upgrading, and fully stimulate new drivers of the digital economy.

Digitization of business management

- We have put in place an online supervision system for overseas state-owned assets, to effectively control and collect data on the decision-making on major matters, appointment and dismissal of employees in key positions, decision-making on investment in major projects, and use of large amounts of funds on overseas markets, as well as mergers and acquisitions, project approval and contract signing, and materials procurement, etc.
- We have built the e-commerce platform and shopping mall which cover all internal business processes, and enable the full online interaction with clients.
- We promote the global coverage of financial sharing, and have built a digital platform as an important tool for financial regulation.

Transforming traditional industries with digital technologies

- **Nuclear power industry**

  We coordinate the digitization of multiple bases following the principles of "specialized, standardized and centralized management," and work to build a nuclear power information system with our own characteristics. Meanwhile, we empower nuclear power production and operations with digital technology, and use our own big data platform to realize the interconnection of all information of the 8 plus 1 major equipment.

- **Other fields**

  We built the second phase of nuclear fuel management information system to realize the digital management of fuel assembly supervision and construction. In the field of new energy, three years of data governance wrapped up to achieve full coverage access to centralized control and improve safety supervision. We have built smart factories in the non-power nuclear technology industry, and turn them into new examples of smart manufacturing with the entire production process under control. In the tech-based environmental protection industry, we have built the "Hemei" smart water system and the integrated management platform for environmental and water business. In the financial industry, we have developed a collaborative customer management platform as a new model of "smart finance".

Developing digital industry

- CGN focuses on the development of clean energy, and is building an industrial internet platform for clean energy that is automated, digital, and intelligent. We are developing comprehensive, end-to-end life-cycle solutions to achieve the cross-industry development to high reliability domains.

IPR Protection

Always attaching great importance to the protection of intellectual property rights (IPRs), CGN has established a sound IPR management system, and fostered a culture that respects knowledge and science, and protects IPRs.

We have revised the *Intellectual Property Rights Management Regulations, Trademark Management Standards, International Intellectual Property Application Process*, etc., to regulate the IPR creation, application, protection and management.

We have formulated the standards for patent classification management, strengthened the management of technological innovations, and applied for high-value patents in key technological fields; promoted key subsidiaries to identify proprietary technologies and protect proprietary technologies and patent portfolios.

We have strengthened IPR communication and training, improved the research integrity system and enhanced employees' awareness of IPR protection.

470 Invention patents obtained

767 Utility model patents obtained

24 Appearance design patents obtained

6 China Patent Excellence Awards granted

2 Guangdong Patent Gold Award and Silver Award obtained

Formulation of Industry Standards

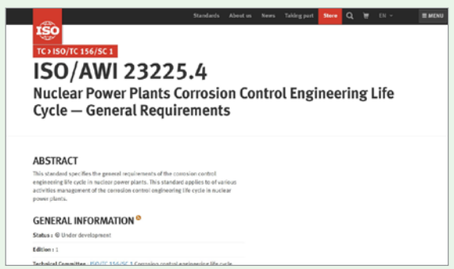
CGN gives full play to its own advantages, and actively participates in the formulation of industry standards to promote the integrated innovation of the entire industry chain, build up home-grown nuclear power brands and promote the rapid development of the industry.

- The international standard ISO AWI/23225.4 *(Nuclear Power Plants Corrosion Control Engineering Life Cycle - General Requirements)*, with CGN Suzhou Institute as the lead applicant, has been officially approved by ISO. This is the first approved international nuclear power standard, with CGN as the lead applicant, and will help China to have a bigger say in the international nuclear power market.

1 International standard formulated in 2021

8 National standards formulated in 2021

72 Industry standards formulated in 2021



The international standard whose application was led by CGN

GREEN DEVELOPMENT

Mother Nature is the cradle of all living beings, including humans. It provides everything essential for humanity to survive and thrive. Adhering to the principle of harmonious coexistence between man and Nature, CGN makes continuous efforts to improve the environmental management system, make more efficient use of resources and better guard against and control environmental risks. We vigorously explore innovative measures to control pollution and new business models for ecological conservation in our endeavor to foster a new relationship where man and Nature can both prosper and live in harmony and build a beautiful China with blue sky, green land and clean waters.

Our Achievements

On-grid power generated from clean energy equivalent to the reduction of

590.678 million tons

of standard coal

On-grid power generated from clean energy equivalent to the reduction of

1,621.953 million tons

of carbon dioxide emissions

Environmental pollution incident

0

Contributions to UN SDGs

Zhejiang Ninghai City Wind Farm

Environmental Management

CGN strictly abides by laws and regulations such as the *Environmental Protection Law of the People's Republic of China*. We follow the environmental management principle of "prioritizing construction system, promoting construction through inspection and supervision, and striving for excellence," and constantly improve the environmental management system, aiming for more efficient use of resources, energy transformation and waste recycling, and minimal environmental impact.

0
Major environmental pollution and ecological damage incident reported by CGN

CGN power plants have all been certified by
ISO 14001
environmental management system

Environmental management policy

Prioritizing pollution prevention

Taking preventive measures such as front-end control to protect environment from pollution.

Technology first in driving energy conservation and emissions reduction

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

Full participation in reducing emissions

Calling on every employee to continuously reduce emissions of pollutants in compliance with relevant environmental laws and regulations.

Development in harmony with Nature for the benefit of humanity

Adhering to coordinated development of economy and environment, to achieve harmonious coexistence between man and Nature for the benefit of future generations.

Environmental management system

The "1-1-1-2" Top-level Environmental Management System of the Group

- 1 *CGN Environmental Management Policy*
- 1 *CGN Implementation Rules for Environmental Management*
- 1 *CGN Work Plan for Improving the Environmental protection Work*
- 2 *Guiding Standards for Energy Conservation*
  Guidance on Environmental protection Management

Environmental Management System of Subsidiaries

- Based on the identification and analysis of environmental factors which have or could cause serious environmental impact, formulating an environmental management system in compliance with ISO 14001 and laws and regulations governing energy conservation, ecological conservation and environmental protection.
- Integrating with requirements of the company's other management systems (such as safety and quality, occupational health and economic systems), to ensure the environmental management goal is in line with other goals.

Resource Conservation

CGN actively explores advanced technologies and management model to improve energy efficiency and promotes water conservation, contributing to building a resource-efficient society.

Improving the nuclear fuel utilization rate

LingAo NPP uses both low-enriched uranium (LEU) and highly-enriched uranium (HEU) and can operate under the model of single LEU, the combination of LEU and HEU and single HEU. This flexible fuel management can adapt to different load requirements of the grid.

2 %
Improved core fuel utilization at current load factor levels

Conserving water resources

Water source conservation

- YJNPC uses drones to patrol Pingdi reservoir, re-greens areas with exposed rocks caused by severe erosion and monitors the water quality on an ongoing basis.
- DNMC conducts safety evaluation and assessment for reservoir dams and water-intake culvert, cleans up river channels and eliminates other safety hazards, resulting in significant improvement in the river environment.

Improving the wastewater recycling level

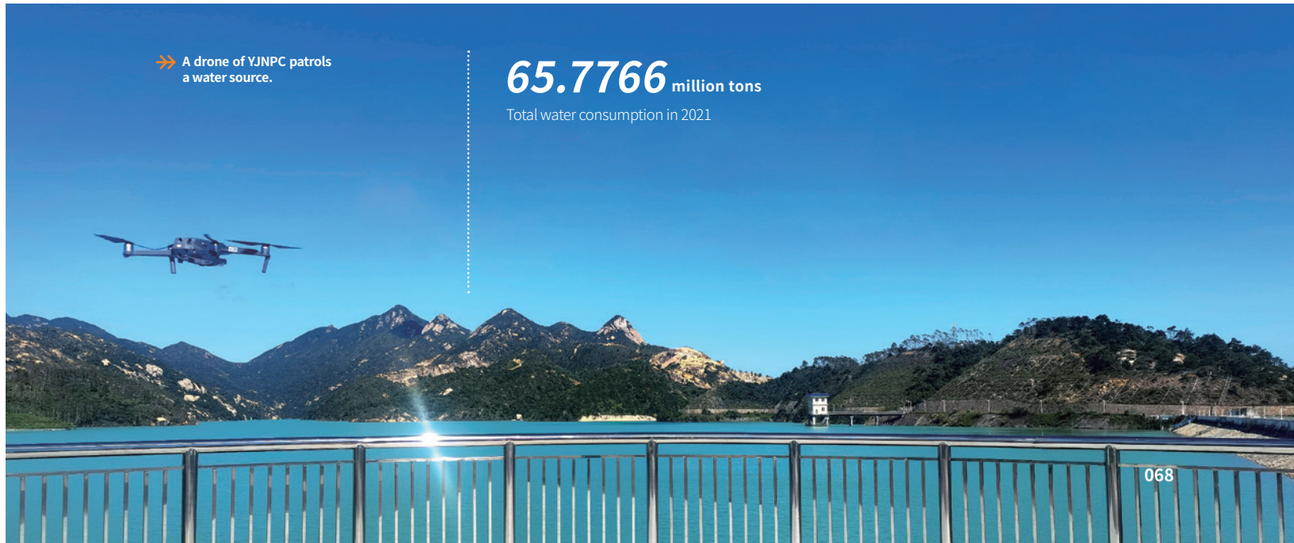
- HYHNPC has raised the water utilization rate by fully recycling wastewater in the plant with centralized treatment facilities to reduce water cost and facilities and equipment loss.
- YJNPC takes a series of measures to recycle treated reclaimed water which has reached relevant standards, with the recycling rate of 43.98%.

Rational use of water resources

- DNMC transferred 715,000 m^3 of water from Dakeng reservoir to Ling Ao reservoir during the flood season, and reclaimed 270,000 m^3 of water from Ling Ao reservoir dam leakage from weirs for the production and household use at the base.

Raising public awareness of water conservation

- DNMC assisted Dapeng New District of Shenzhen with holding public communication activities to mark the World Water Day and China Water Week at the nuclear power base for the first time, to jointly build a water-efficient city by advocating water conservation and efficient use of water.



A drone of YJNPC patrols a water source.

65.7766 million tons
Total water consumption in 2021

Risk Prevention and Control

CGN manages and treats radioactive waste properly in strict accordance with relevant laws and regulations. We have a sound radioactive waste treatment mechanism in place, and integrate the radioactive pollution control into the whole operation process. We also actively help with the national environment monitoring system to control the discharge/emission of solid, gaseous and liquid waste (Three Wastes), so as to protect the ecological environment around our nuclear power plants.

< 40 metric meters

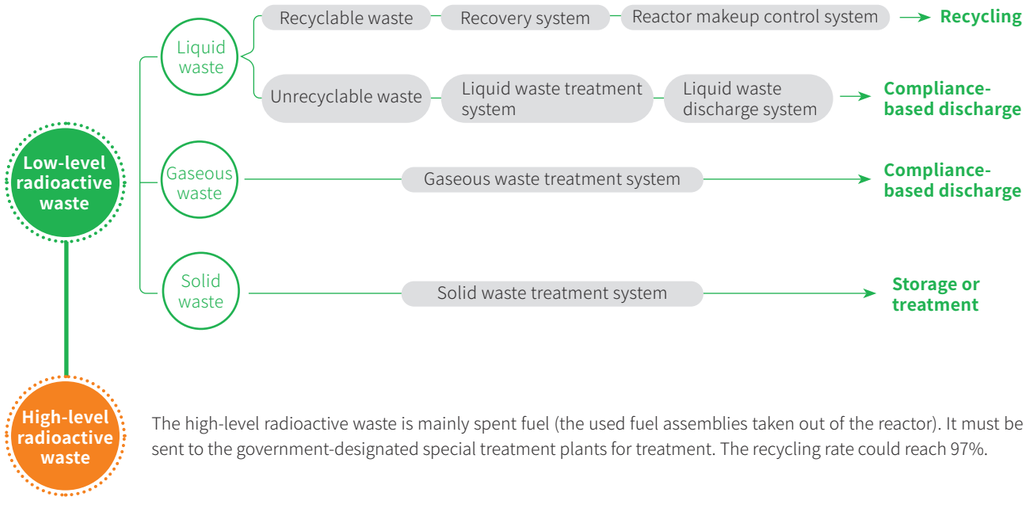
Waste packages generated annually by a single gigawatt-level pressurized water reactor

Radioactive Waste Management

CGN strictly abides by relevant laws and regulations such as the *Law on Prevention and Control of Radioactive Contamination, Regulation on Safety Management of Radioactive Waste and Regulation on Management of Safe Transportation of Radioactive Substances.* We have established a complete set of radioactive waste control and treatment mechanisms and continuously strengthened safety management of radioactive waste to minimize its impact.

Radioactive waste control and treatment mechanisms

We classify radioactive waste in accordance with *Classification of Radioactive Waste (GB9133-1995)* and apply the most appropriate treatment method for each type. We also follow the "As Low As Reasonably Achievable" (ALARA) principle in radioactive material management.



The high-level radioactive waste is mainly spent fuel (the used fuel assemblies taken out of the reactor). It must be sent to the government-designated special treatment plants for treatment. The recycling rate could reach 97%.

Note: The storage, transportation and treatment of radioactive waste are in strict accordance with the relevant laws and regulations.

Discharge of the Solid, Liquid and Gaseous Waste

CGN follows the most stringent emission standards, and applies international advanced technologies and standards to improve our capability on waste treatment continuously, keeping emissions much lower than the national standard in China.

	Daya Bay NPP		Yangjiang NPP		Fangchenggang NPP		Ningde NPP		Taishan NPP		Hongyanhe NPP	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Ratio of radioactive liquid waste (nuclides but tritium) to state annual limit	0.24	0.24	0.41	0.39	0.3	0.20	0.37	0.40	4.85	6.24	0.15	0.26
Ratio of radioactive gaseous waste (inert gases) to state annual limit	0.42	0.46	0.21	0.19	0.3	0.29	0.3	0.27	2.19	8.69	0.14	2.25
Generation of radioactive solid waste (m^3)	230.3	166.7	102.44	88.6	74.0	72.2	110.4	63.6	0	0	120	92.4
Environmental monitoring results	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Note: 1. At present, the nuclear power plants operated by CGN are all located in China, so they must comply with the GB 6249-2011: Regulations for Environmental Radiation Protection of Nuclear Power Plant for the discharge/emission of solid, gaseous and liquid waste. Since the nuclear power bases vary in terms of the number of operating units, their service years and operating condition, the annual quota of waste discharge and emission for each base approved by the regulators every five years also varies. For data comparability, we disclose the ratio of discharge/emissions to the state-approved annual limit. In recent years, the discharge/emissions data of each nuclear power base of CGN has been relatively stable, fluctuating within the range of 1%.

2. Daya Bay Nuclear Power Base includes Daya Bay NPP, Ling Ao NPP and Lingdong NPP.

3. The annual limit of Taishan Power Plant is different from other power plants, so there's no comparison between them.

Environmental monitoring

In accordance with *Regulations for Environmental Radiation Protection of Nuclear Power Plants*, Regulations for Environmental Radiation Monitoring of Nuclear Power Plants and other applicable laws, regulations and regulatory documents, CGN maintains effective monitoring on the surrounding environment of our in-service nuclear power plants, tracks impact on the environment and takes prompt actions. We timely disclose environment monitoring data, and submit monthly reports and annual reports on the results. We are subject to the supervision of regulatory authorities at all levels and the public to ensure our operation has no impact on the environment or the public.

Monitoring Scope

- Usually within 30 km around the plant sites, and the key monitoring areas within a 10-km radius of the sites, the monitoring station locations in these two systems supplementing each other, to make sure there's at least 1 land-based monitoring station in all 16 directions around the sites.

Monitoring Contents

- Environmental gamma radiation level in air, aerosol, iodine, tritium-in-air and Carbon-14, including sampling, monitoring and analysis of samples such as rain water, surface water, groundwater, drinking water, soil, sediment, organism etc.

Monitoring Results

- The discharge/emission level of solid, liquid and gaseous waste at all nuclear power bases remains stable and below the state-approved annual limits.
- Radioactive environment monitoring data shows no abnormality for all nuclear power bases, and the air absorbed dose rate measured around these nuclear power bases is within the range of local natural background.
- The radionuclide activity and concentration in environmental media like water, soil, and organisms around nuclear power plants remains unchanged compared with previous years, with no impact on the environment or public health.
- No reports of abnormal monitoring results from external institutions received by nuclear power bases.

Environmental Services

Technology is fundamental to the development of the environmental protection industry. CGN keeps on developing our core technologies and making steady progress in areas such as environmental protection for nuclear power bases, urban water supply and sewage system, treatment of hazardous solid waste, comprehensive treatment of water environment, and biomass etc. We have made major breakthrough in real-world application of our technologies on a large scale, and developed five "He" series of core products, providing technical support for pollution prevention and control.

The plasma-based special waste gasification melting treatment technology developed independently by CGN included in

Catalogue of Recommended Scientific and Technological Innovation Achievements of Central Enterprises

Herun

Herun, a system for safe and high-quality drinking water, is superior with water quality enhancement at every stage of the process, ubiquitous water quality monitoring and whole-chain intelligent operation and maintenance. It solves the safety problem with faucet water. Its water quality has reached the standards of the US, the EU and the WHO.

Jinyuan (Hongze) Water Supply Factory, Huaian

Heqing

Heqing, a fully integrated and efficient water filtration system, is developed based on the EAA system in Czech Republic, and adopts a wastewater treatment technology with smart control. It is economical, energy efficient, artistic, and low-carbon and also has a small footprint.

Chengnan Wastewater Treatment Factory, Jinxi

Hemei

Hemei Water Recycling System 4.0 aims at well-targeted wastewater treatment. Depending on local circumstances, it provides customized solutions to pain points such as water environment problem identification, project planning, cost reduction and efficiency improvement, and smart control.

Water Recycling System 4.0 project, Jinxi

Herong

The Herong Plasma-based Waste Gasification Melting Treatment Technology developed by CGN through over a decade of intensive research has obtained over 20 patents granted by national authorities. Compared with traditional treatment methods, this technology has a wider application, with no secondary pollution and no need for landfill.

Wuxi Comprehensive Plasma-based Hazardous Waste Treatment project

Henong

Henong, an organic waste fermentation and treatment system, recycles agricultural residues with bio-natural gas technology. It is helpful to achieve sustainable circular agricultural development, environmental protection, emission reduction, and clean energy development at the same time.

The biomass project in Hutubi, Xinjiang

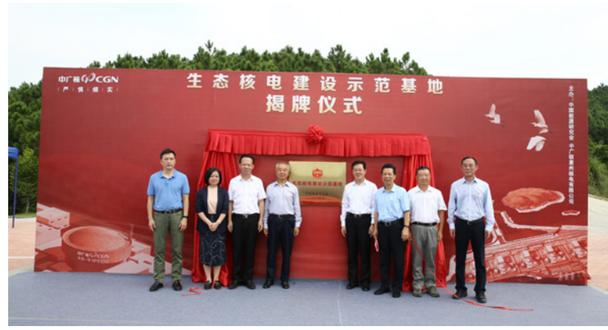
Biodiversity Conservation

Biodiversity loss has always been a severe global challenge. CGN has incorporated biodiversity conservation into the corporate development strategy. While actively promoting the development of local clean energy industry, we respond to biodiversity challenge in an eco-friendly way to make effective contribution to biodiversity abundance and the well-being of humanity, so as to jointly build a harmonious and beautiful world.

Eco-environmental protection

Eco-friendly nuclear power

Taipingling nuclear power project is located in Huizhou, Guangdong. Guided by the principle of "symbiosis, mutualism and regeneration" and adopting the four-layer zoning approach, CGN has conducted ecological quantitative evaluation on it from three aspects: environmental impact, resources consumption and social harmony, set an ecological indicator system covering the project lifecycle. The idea of energy conservation and emissions reduction runs throughout the project lifecycle, from design, operation to decommission. On September 28, 2021, Taipingling nuclear power project was inaugurated as the first Eco-friendly Nuclear Power Demonstration Base in China.



On September 28, 2021, HZNPC held plague-unveiling ceremony for "Eco-friendly Nuclear Power Demonstration Base."

Photovoltaic power generation to control desertification

CGN Shuofang Photovoltaic Power Station is located in the hinterland of Kubuqi Desert, known as the "Sea of Death." Leveraging the desert's solar energy to develop photovoltaic energy projects, CGN actively explores a mode of combining afforestation and PV power generation to control desertification, using foundation piles and components of the solar farms to fixate sands and break the winds in addition to planting trees. Its approach to sand control has produced ecological, economic and social benefits. Up to now, CGN has put five solar farms into operation and achieved effective desert control for approximately *27,000 mu* (or 1,800 hectares).

A tree planting activity organized by CGN on June 5, 2021

Water and soil conservation

CGN is committed to taking various water and soil conservation measures in the course of development and construction. CGN Dongling Wind Fare is located in Zhongshan, a county in Guangxi, and the Karst landform there is vulnerable to water and soil erosion. CGN implements water and soil conservation measures at the construction stage, with 99.1% of disturbed land and 98.81% of soil erosion area treated. CGN has also built tourist attractions such as windmills, a vast expanse of flower patches and viewing platforms outside the plant sites, adding to the beauty of local landscape. The project was awarded the honor of a "National Demonstration Project for Water and Soil Conservation" on December 22, 2021.

Dongling Wind Farm in the county of Zhongshan was awarded the honor of a "National Demonstration Project for Water and Soil Conservation" on December 22, 2021.

Biodiversity conservation actions

Committed to the principle of "symbiosis, mutualism and regeneration" CGN has implemented the four-step (avoidance, reduction, mitigation and compensation) approach and a series of biodiversity conservation actions, striving for achieving the harmonious coexistence of projects with surrounding environment.

Case

Co-hosting Business and Biodiversity Forum , a parallel event to COP15

From June 6 to 7, 2021, the Business and Biodiversity Forum, a warm-up to the 15th meeting of the Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD) was held in Kunming. CGN, the World Economic Forum and LONGi co-hosted the 9th Sub-forum "Climate Change and Biodiversity: Energy and Mining Industries Contribute to Biodiversity Objectives".

Mr. Yuan Changhong, spokesman of CGN, made a keynote speech at the forum, and participated in the Round Table on Sustainable Development Goals and Business Sector Mainstreaming for Global Biodiversity Framework after 2020, and shared CGN's practices and thinking on natural capital accounting of clean energy projects.

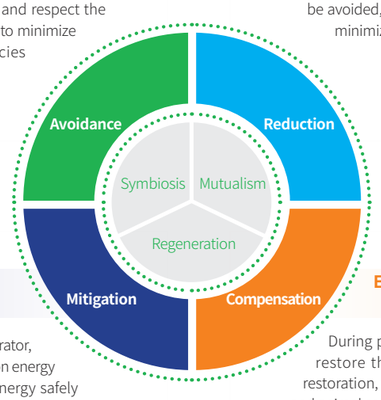
Mr. Yuan Changhong makes a keynote speech

Science-based planning to avoid impact

"Avoidance" of impacts is our first choice in selecting biodiversity conservation proposals. 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.

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. When disturbance cannot be avoided, the impact of projects on biodiversity should be minimized.



Producing clean energy to mitigate climate change

Drawing on our strength as a clean energy operator, we help the world shift to a clean and low-carbon energy mix by developing nuclear, wind and solar energy safely and efficiently. Meanwhile, we are dedicated to reducing energy consumption and improving energy efficiency in our operations, thus contributing to addressing global climate change and to the carbon peak and carbon neutrality goals.

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 increased in abundance.

Spotlight

China's first corporate biodiversity conservation report based on NCA

On October 11, 2021, at the opening of the first phase of the 15th meeting of the Conference of the Parties (COP-15) to the Convention on Biological Diversity (CBD) held Kunming, *China General Nuclear Power Group Report on Biodiversity Conservation* was published. It is the first corporate biodiversity conservation report prepared based on natural capital accounting (NCA) in China.

In accordance with the standardized procedure for natural capital evaluation set out in *Natural Capital Protocol*, CGN screened and identified material topics over "the dependencies of the nuclear power bases and wind farms' construction and operation activities on natural capital," "the impacts on self" and "the impacts on society." Then we measured and evaluated the impacts and dependencies on natural capital, analyzed comprehensive value, and demonstrated the effectiveness of biodiversity management and conservation.

Daya Bay Nuclear Power Base in Guangdong

approximately RMB **424.487** billion

total natural capital value in 1994-2019

Modou Mountain Wind Farm in Yunnan

approximately RMB **774** million

total natural capital value in 2012-2019

China General Nuclear Power Group Report on Biodiversity Conservation 2021

"**CGN has applied the international standard framework of the Natural Capital Protocol. The report reflects that CGN, a Chinese energy company, is leading the way in assessing and accounting of the impact and dependence of clean energy on nature and society, and innovatively exploring how energy companies can better contribute to nature conservation and social progress.**"

——Zhu Chunquan, General Manager of the Global Public Goods Platform, World Economic Forum Beijing Office

"**This report is a very important and special corporate document. It demonstrates the transparency and accountability required in CSR fulfillment, cooperate culture and CSR competitiveness. I hope more and more enterprises will follow suit to do natural capital accounting and publish biodiversity conservation reports.**"

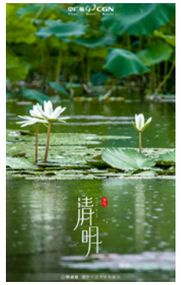
——Zhao Yang, Senior Engineer, The Foreign Economic Cooperation Office (FECO), MEE, translator of the Chinese edition of the *Natural Capital Protocol*

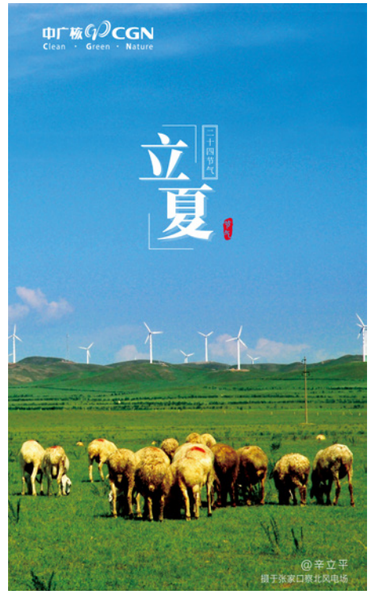
"**CGN's four Natural Capital Assessment pilot projects raised the environmental assessment to a new level in three aspects. First, this assessment not only measures environmental impact, but also environmental dependencies. Second, it combines qualitative and quantitative evaluation with monetary valuation – value to society and enterprise. Third, it transforms from 'linear thinking' to 'systematic thinking' – taking into consideration correlations across regions and over time.**"

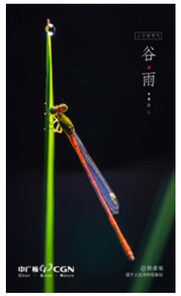
——James Spurgeon, President of Sustain Value

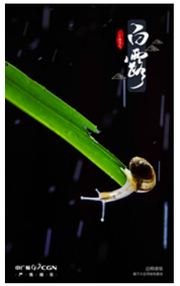
Beautiful throughout all 24 solar terms a year

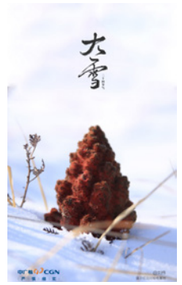
The countdown program featuring the 24 Chinese solar terms at the opening ceremony of XXIV Olympic Winter Games in Beijing held in February 2022 showed the world China's harmonious coexistence with Nature in the pursuit of development in a distinctly poetic and romantic way. A stanch contributor to ecological conservation and green development, CGN advocates the slogan of "Natural energy powering nature," and conserves the environment and biodiversity while providing the society with clean energy, to achieve harmonious coexistence between humanity with Nature. At present, the surrounding areas of our project sites become sanctuaries for many wildlife species under key state protection. We are now able to appreciate the beauty of these creatures and Nature as season changes, from one solar term to another.











EMPLOYEE DEVELOPMENT

Employee growth is the cornerstone for CGN to prosper. The hard work of employees underpins CGN's steady and robust progress. Putting people first, we honor our commitment to "taking care of employees, promoting employee growth, and empowering employees to grow together with CGN". While pursuing corporate development, we help employees realize personal value and shine at their own positions.

Contributions to UN SDGs

Our Achievements

42,972
Employees

2.59 million
Total training hours

60
Average training hours per employee

Employee Rights

CGN respects and safeguards employees' lawful rights, including the right to equal employment, the right to fair payment, and the right to democratic communication, etc., and actively build harmonious and stable employment relations.

100%
Social insurance coverage rate

Diversity and equal employment

CGN complies strictly with the *Labor Law*, the *Labor Contract Law*, labor policies on overseas employment, and other laws and regulations. Upholding 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, or cultural background. Child labor, forced labor, and other illegal employment are prohibited in CGN. In sum, we strive to create an equal and inclusive workplace, to attract and retain excellent employees.

Our management of our overseas project teams stick to localized employment and embrace and respect local religions, cultures and folk customs, turning cultural diversity into a boost to CGN's harmonious development. For example, CGN Europe Energy hires employees of over 15 nationalities and has signed agreements on promoting employment of persons with disabilities. CGN Swakop Uranium, a firm supporter of equal employment, was awarded the "affirmative action compliance certificate" by Namibian Ministry of Labor for two consecutive years.

Democratic management

CGN prepared and issued the *Guidelines on the Operation of the Workers' Congress* to regulate the organization and actions of the Congress in each subsidiary and ensure its functions and powers are effectively exercised. In 2021, our subsidiaries held 46 sessions of the workers' congress, considered and approved 273 proposals. Issues vital to employees were all discussed at these meetings, and all employee proposals were proceeded.

Compensation and benefits

In line with national and local social insurance mechanisms, we offer employees social insurances, including pension, medical insurance, unemployment insurance, work-related injury insurance, and maternity insurance, as well as supplementary medical insurances and paid leaves.

CGN with U

I want to be the first female team leader in our village

CGN Swakop Uranium is committed to providing more meaningful jobs for women in Namibia, and Hertha Ruben was one of them. She joined the company in August 2018 and became a mechanic in the auxiliaries workshop. Located in the heartland of desert, the Husab Uranium Mine site is in scorching heat throughout the year, whereas Hertha is always able to beat the odds and perform excellently at her job.

Now Hertha has grown into an excellent mechanic and a mentor of two new interns: Tanji and Arno. For Tanji, Hertha knows the equipment, how it works and how it is assembled, like the back of her hand. Recently, Hertha was elected as the part-time safety officer in the workshop, and she was happy to take it and grateful for the trust. When asked about her dreams, Hertha said that she has two wishes: one is to send her younger brother and sister to college with her salaries and the other is become an excellent workshop team leader at the Husab Mine, which means she will be the first female team leader in her village.

"**As a black woman, I am respected and promoted here the way I could never dare to imagine in other companies!**"

—— Hertha Ruben

Basic information of employees

Gender of employees

16.48% Female employees

83.52% Male employees

8.1% Female executives

Age group of employees

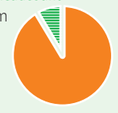
25.14% 30 years old and under

67.61% 31-50 years old

7.25% 51 years old and above

Regional distribution of employees

39,381 headcount
Employees from China



91.64% Percentage

3,591 headcount
Employees overseas

8.36% Percentage

Employee turnover rate

5.14% Male employee turnover rate

1.53% Female employee turnover rate

Percentage of employees overseas

39.91% Asian employees

50.26% African employees

9.55% European employees

0.14% American employees

0.14% Oceanian employees

100%
Labor contract signing rate

Employee Growth

Upholding the philosophy that "talent development proceeds corporate development", CGN attaches great importance to talent training. Covering "three programs" and "four projects", an across-the-board, whole-process and all-round talent training system has been established to provide training and guidance for employees in different positions and at different levels and to help them fulfill career dreams.

He Haibin, a member of the Standing Committee of the Party committee and CFO of CGN, shares views with young officials

100%
Employee training coverage

2.59 million
Total training hours

60
Training hours per employee

Talent Development Proceeds Corporate Development
Across-the-board, Whole-process and All-round Talent Training

- **Technical personnel training project**: Nuclear power operation; Nuclear power engineering; New Energy; Nuclear fuel; Digitization; Nuclear technology; Science-based environmental protection; Industrial finance
- **Scientific manpower training project**: Academicians; Chief experts; Leading experts; Senior specialists; Technical officials; Young talents
- **Administrative personnel training project**: Party affairs; Discipline inspection; Publicity; Communist Youth League; Finance; Human resources; Law; Market development; Audit; Safety and quality
- **Red Egrets program**: Party secretary; Party committee members; Party branch secretary; Party branch members; New/Probationary Party members; Applicants for Party membership
- **White Egrets program**: Strategy executives; Operation executives; Middle-level managers; Primary-level managers; New employees
- **Blue Egrets program**: Collaborative program for doctoral candidates; Collaborative program for postgraduate students; Collaborative program for graduate students; Collaborative program for junior-college students
- **"Egrets overseas" international talent training program**: International senior management training; International pre-assigned personnel training; Language training; Training for management trainees; Practice training; Safety & defense training; ACCA training; WAT training

Three Projects | **Four Programs**

CGN's Talent Training System

White Egret Program

This program tackles the pains and difficulties facing new employees, newly promoted managers at all levels, and management trainees at all levels in their transitional and probationary periods, and covers multiple stages of career based on the core skill sets required for managers at all levels. It was awarded the Best Training Program for Chinese Enterprises and the Best Practice Case of China Talent Development.

2 sessions
White Egret-Hatching Program

6 sessions
White Egret-Run-up Program

2 sessions
White Egret-Wing-spreading Program

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

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

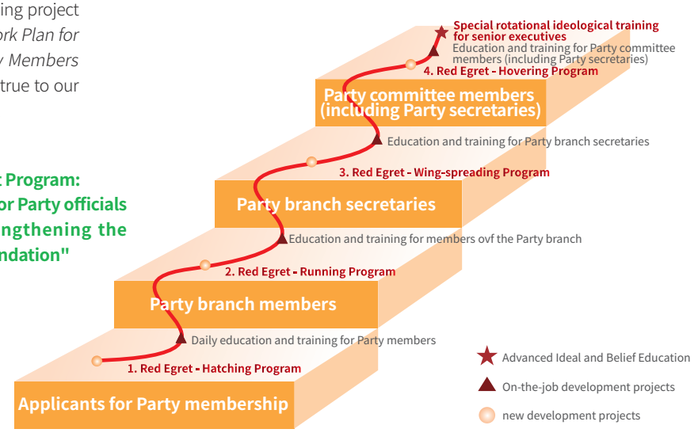
Red Egret Program

Red Egret Program is a Party school-based training project developed in accordance with the *2019-2023 Work Plan for Strengthening Education and Training of Party Members* and support the themed campaigns of "staying true to our founding mission", "Party history education", etc.

60
"Red Egret Program" training sessions offered

Red Egret Program: training for Party officials for "strengthening the Party foundation"

Around 2,300
Participants



Organizing competitions to improve skills

CGN has organized employee skills competitions in major business fields, in diverse forms, at higher levels and covering more channels, in a bid to improve employees' overall quality.

4
Events organized and participated by CGN in the National Vocational Skills Competition

3
Events hosted by CGN in the Guangdong Vocational Skills Competition

Around 500
Vocational skills competitions among ordinary employees carried out and participated by CGN and member companies

20,000+
Participants in vocational skills competitions among ordinary employees

Wang Jiantao from CGN Operations wins the **"China Skills Award".**

Cui Li from CGN Operations and Zhang Chunyu from HYHNPC are awarded **"National Technical Expert".**

Liu Yang from CGNPC Uranium is awarded **"Young Expert in SOEs".**

Wang Yan from YJNPC wins **"Technical Expert in South Guangdong".**

Yang Man from LFNPC wins **"Guangdong May 1st Labor Medal".**

Zhou Jianping from FCGNPC wins **"Guangxi May 1st Labor Medal".**

Sun Peng from CGN Operations and Huang Lei from CGN Engineering win **"Shenzhen May 1st Labor Medal".**

On October 19, 2021, CGN New Energy hosted the 13th National Power Industry Vocational Skills Competition.

On November 27, 2021, Guangdong Vocational Skills Competition, sponsored by the Provincial Human Resources and Social Security Department, undertaken by CGN and co-organized by DNMC, was held in Daya Bay nuclear power base.

CGN with U

Strict compliance, prudent decision-making, detail-oriented, and fact-based approach make a good mechanic

"Years of hard work give you not only callused hands but also knowledge and better skills. It makes me very proud to see the processes and tools that I've kept improving prove useful at work."

——Cui Li, CGN Operations

Cui Li, an engineer of CGN Operations, has developed a matured set of methods for tackling technical problems: analyze the difficulties, understand the keys to repair, master the working principles, and then apply them to the actual work.

The mechanical seal of the closed cooling water pump in a nuclear power unit failed multiple times, and the problem lingered even after fixes. "Maybe we didn't look the right way?" When he was reading previous technical reports, a bold idea occurred to him——Maybe the fault has nothing to do with the mechanical seal. After trails and errors, he used the new technique "install pump cover without the rotor" and found what the real problem was: there was collapse and a gap between the pump cover and the pump case sealing surface, a part that is close to the mechanical seal which was only its "scapegoat". Cui Li then led the project team to fix the gap with micro-welding and metal repairing agent, getting the problem solved once and for all.

Always on the workshop site, thoroughly familiar with the working principles, good at identifying the problems and willing to learn from others, for over twenty years in his career as a frontline worker for water pump maintenance and repair, Cui Li has always followed the strict compliance, prudent decision-making, detail-oriented, and fact-based approach, and was awarded "National Technical Expert" in 2021.

Cui Li at work

Employee Care

CGN works continuously to establish a corporate culture and takes active part in promoting cross-cultural management and integration. As we strive to solve life and work problems for our employees, we hope to boost their sense of happiness and belonging and create a heart-warming, harmonious and family-like atmosphere.

Corporate Culture Week

Around the National Day holiday in 2021, CGN launched the 8th Corporate Culture Week on the theme of "Pass on the tradition of revolutionaries, pursue the working style characterized by strict compliance, prudent decision-making, detail-oriented, and fact-based approach". In the event, we explored CGN's Party heritage and guided our employees to know the history, love the Party and the country, and develop the Company to serve the people, shaping a healthy and positive corporate culture.

60+
Cultural activities organized

7,000+
Participants among employees

CGN Operations

- "We Are the Champion" corporate culture-themed puzzle game
- Creative show about the "strict compliance, prudent decision-making, detail-oriented, and fact-based approach" working style

CGN Engineering

- Face-to-face with model workers——"Learning from national outstanding Party member Zhou Chuangbin"

CGN Research Institute

- "Review Party history, follow Party guidelines" knowledge competition on Party history
- Team building for new employees themed on the "strict compliance, prudent decision-making, detail-oriented, and fact-based approach" working style

NDNPC

- "Spark· Heart" "punch the card"photo shooting activity

HYHNPC

- Sharing stories about the "strict compliance, prudent decision-making, detail-oriented, and fact-based approach" working style with young employees
- Cultural forum on the 10th anniversary of the first group of licensed personnel in HYHNPC

FCGNPC

- Open Family Day
- Sharing stories about the "SPDF Principle"

LFNPC

- Debate competition on the theme of safety culture
- "The Reader" videocasting to encourage reading in LFNPC

CGNPC Uranium

- Symposium on the theme of the "SPDF Principle"
- The 1st Corporate Culture Forum
- Songs broadcasting activity to celebrate the 15th anniversary of CGNPC Uranium

CGN Energy International

- A Bite of CGN Energy International

Corporate culture training for new employees

Stories about the "strict compliance, prudent decision-making, detail-oriented, and fact-based approach" work style

Face-to-face with role models

Chinese Overseas employees celebrating Chinese festivals

CGN Suzhou Institute（SNPI）

- "Read in SNPI·CPC books recommendation" video exhibitions
- Party history knowledge competition themed on "Learn Party history to promote development with stronger belief"

DNMC

- Symposium on high-quality development under the guidance of Party building
- Party history knowledge competition

YJNPC

- Singing activity on the theme of the "SPDF Principle"

TNPJVC

- Cultural activity to celebrate the 2th anniversary of the completion of Taishan Nuclear Power Plant Phase I Project

HZNPC

- A hiking event
- Activity on learning the "four histories"

CNNPC

- Activity on learning the "four histories"
- Lecture on nuclear safety culture

CGN Nuclear Technology

- Sharing stories about the "SPDF Principle" with young employees

CGN Environmental Protection

- Knowledge competition on Party history and Company history
- Story-telling competition on the theme of "SPDF Principle"

CGN Capital

- Sharing stories about the "SPDF Principle"
- Micro videos on the theme of the "SPDF Principle"

"Youth Ode to the Motherland" activity to boost patriotism among CYL members in CGN and show their pledge to the Party to make the country strong

"Face-to-face with model workers"——Learning from the national outstanding Party member Zhou Chuangbin, shows CGN employees' pursuit of excellence.

Cross-cultural communication

Edra Power Holdings Sdn Bhd, a subsidiary of CGN Energy International, gives out gifts and blessings to employees on the Chinese Spring Festival, Eid Al-Fitr, Diwali, and other festivals. The gift pictured was made by Women of Will community kitchen and sewing center which hired disadvantaged women bakers and tailors to increase their income.

CGN Brazil Energy, a subsidiary of CGN Energy International, has taken measures to promote cultural integration and mutual understanding between Chinese and Brazilian employees. Many Brazilian employees have learnt how to say thank-you in Chinese, and Chinese employees would say "Obrigado, amigo" to thank their Brazilian colleagues.

CGN Brazil Energy, a subsidiary of CGN Energy International, marks its 2nd anniversary with activities on the theme of "Paying tribute to CGN" and "Proud to be part of CGN".

Employee care

CGN has worked to solve the difficulties and troubles of employees working on the ground, especially overseas employees, and meet their need for better living standard, more knowledge, health and fitness, etc. in a bid to enhance their sense of gain, happiness, and security.

Overseas employees care

To mark the Mid-Autumn Festival in 2021, CGN, together with CGN Operations, CGN Engineering, CGN Energy International, and CGNPC Uranium each organized an online celebration party for overseas Chinese employees, joined by their families via video link.

Health and fitness activities

To lower the risk of Covid-19 infection, CGN holds an online sports meet, which is live-streamed on DingTalk

Themed lectures

As part of the "Serving the People with Concrete Actions" campaign, CGN invites a specialists to give a lecture on the "Double Reduction" education policy, attracting around 3,500 online employees and their families.

The "New Journey" badminton friendly match organized by CGN Services

Better working conditions

CGN Nuclear Technology's subsidiary Kingwo Technology Co., Ltd. installes water-pad blowers at workshops to improve employees' working conditions.

CGN Operations promotes R&D of automatic technologies to lower frontline employees'risk of radiation exposure.

TNPJVC livestreams on how to protect yourself and others from Covid-19 before holidays.

"The Pioneer" tennis match organized by CGN Capital

Edra Power Holdings Sdn Bhd, a subsidiary of CGN Energy International, launches the "Sharing & Caring" employee care project and organizes a photo contest on the theme of the Malaysia Day and Diwali.

CGN UK holds a family day for expatriate workers.

HARMONIOUS COMMUNITY

CGN's humanism and founding mission can be seen from everything we do. In line with the people-centered philosophy of development proposed by Chinese President Xi Jinping, and the principle of extensive consultation, joint contribution and shared benefits, CGN insists on transparent operations, and actively accepts supervision. While developing clean energy projects, CGN strives to give back to the community by promoting local economic growth, creating jobs, improving people's livelihood, and sharing development fruits with the locals.

Ningde Nuclear Power Base

Our Achievements

RMB **77.6754** million
Global charitable donations

12,723
Employee volunteers

48,092
Volunteering hours

Contributions to UN SDGs

Engagement in Community Development

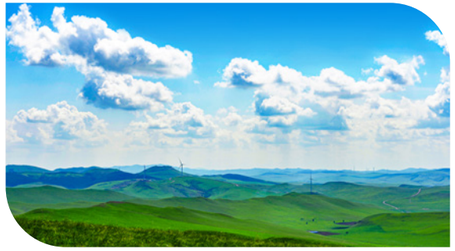
CGN actively promotes community development. Through localized management of clean energy projects, CGN helps local community build and upgrade facilities, develop industries, create jobs, protect the environment and improve education, embodying the philosophy of "driving local economic growth and benefiting local people with high-quality projects". We strive to work with the community for common development.

Building and upgrading community facilities

FCGNPC has spent RMB 640,000 building demonstration sites for multi-ethnic solidarity and progress and public leisure facilities in Shiwanshan Yao Ethnic Township and Naba Village of Fangcheng District, the surrounding areas of the plant and upgrading the facilities of the city's social welfare institution.

DNMC has actively built roads, cultural and sports facilities, and renovated community health service centers for local community. Of the approximately RMB 5 million it spends each year on local community, RMB 3.2 million goes to supporting the surrounding communities (villages) to be relocated.

Promoting the development of local industries



CGN New Energy has launched a major assistance project for the clean energy industry in Inner Mongolia, with a total investment of RMB 18.4 billion. During the construction process and after put into operation, the project can directly create more than 1,500 jobs. Throughout its 20-year operation cycle, it is expected to contribute RMB 5.2 billion to local tax revenue, and bring approximately RMB 10 billion of investment to the industrial chain.

FCGNPC has introduced the Agricultural Research Institute of Guangxi University to sign an agricultural skills training framework agreement with Longhuai Village to provide technical support for the development of planting and breeding industry.

CGN Nuclear Technology has launched the electron-beam irradiation (EBI) technology for food preservation project for agricultural products in Baise, and taken various measures to ensure its success, including market development, process research and improvement, and project operation and management, to build China's first EBI food preservation center for agricultural products in the source of origin, and promote the development of local industries.

Promoting local employment

CNNPC has provided 1,373 jobs for local people through the localization of work mechanism and the labor supply and demand list.

Engaging in community philanthropy

HYHNPC has donated RMB 3 million to the Leye County People's Government to support students of ethnic minorities.

Edra Power Holdings Sdn Bhd, a subsidiary of CGN Energy International, has launched the *Edra Student Assistance Program* in the project site in Malaysia to improve the school infrastructure, and donate money and materials to schools, including computers and other equipment for online learning.

Transparent Communication

While sticking to the transparent public communication system, CGN constantly improves the way of communication with stakeholders, strengthens information disclosure, and carries out public communication activities, with the purpose of building an interactive, trustful, harmonious and friendly relationship with all sectors of society.

Diversified communication channels

In order to promote communication and contact with all sectors of society, CGN has established a variety of communication channels for information disclosure and public communication and accepted widening public supervision.

Information disclosure

- Official website (The platform for the disclosure of nuclear and radiation information)
- Official account on WeChat, Weibo and other new media platforms
- Press conferences and media briefings
- CSR reports/Special reports
- Regular community-based information disclosure
- Media reports

Public communication

- Industrial tours
- Open Day activities
- Popularization of nuclear science on campus and in residential neighborhoods
- Knowledge competitions on nuclear science
- Exhibitions, conventions and exchanges
- Nuclear science exhibition halls

Characteristic communication activities

The first Cloud-Based Popular Science Museum of Nuclear and Radiation Safety in China

HYHNPC has launched China's first Cloud-based Popular Science Museum of Nuclear and Radiation Safety. Based on the on-site nuclear power equipment and plant, the Museum has made online three-dimensional scenes to vividly display the operational procedures, safety measures and nuclear safety culture of the plant.

Engaging lecturers for nuclear science popularization

YJNPC and Yangjiang Education Bureau jointly hold a ceremony to issue the letter of appointment to the first batch of 12 lecturers to spread nuclear science in the city. The enterprise-school cooperation further strengthened the popularization of nuclear science and enhanced public understanding of clean energy.

The activity of "Popularizing Science on Campus"

NDNPC holds the activity of "Popularizing Science on Campus", in which, students from Fuding No. 6 Middle School are invited to visit the nuclear science exhibition hall. The wonderful activities with vivid and interesting explanations opens a window onto nuclear science for students.

The essay competition on "Discovering the Ecological Beauty"

HZNPC and Xiangtoushan National Nature Reserve co-hold an essay competition on "Discovering the Ecological Beauty" for more than 20 schools such as Huizhou No. 1 Middle School, and organize more than 130 teachers, students and parents to visit Taipingling Nuclear Power Base and Xiangtoushan National Nature Reserve.

12
Large-scale brand exhibitions at home and abroad planned and organized

12
Press conferences and media briefings organized

The Daya Bay Nuclear Power Base and Ningde Nuclear Power Base are among the first to win the honorary title of Patriotism Education Base Run by a Central State-Owned Enterprise.

The popular science animation series *The Big-Head Son Visits the CGN Nuclear Power Base* co-produced by CGN and CCTV Animation is named one of the top ten popular science works awarded with Classic Works · 2021 China Science Communication.

The clean thermal power popular science exhibition hall in Yuping, Guizhou is awarded the title of Energy Popular Science Base by China Energy Research Society.

Two of our branding practices, *CGN: Making Good Use of Natural Energy and CGN's Transparent Communication: Toward a More Complete Transparency 3.0*, have been selected into the China Business Administration Case Center of the School of Economics and Management of Tsinghua University and the Management Case Research Center of Guanghua School of Management of Peking University, respectively, to be used in their MBA programs.

The Lighthouse Program

CGN Research Institute and Shenzhen Middle School jointly carry out the Lighthouse Program, in which engineers are invited to give face-to-face lectures including the course titled "Into the Nuclear Power Plant" to cultivate students' scientific research thinking and broaden their knowledge structure.

Family Day

Employees' families are invited to visit the IC-PARK office area and innovation technology center of China Techenergy, experience the corporate culture and gain scientific and technological knowledge with the help of VR technology and staff explanation.

The nuclear science exhibition on "Grow Together with Nuclear Energy"

CGN Operations holds the 8th Shenzhen Youth Science and Art Festival - the Nuclear Science Exhibition on "Grow Together with Nuclear Energy" in Shenzhen Children's Palace.

The activity of "Sunshine Education for Students: Sparkling Dreams and Popularizing Nuclear Power Science"

LFNPC holds the activity of "Sunshine Education for Students: Sparkling Dreams and Popularizing Nuclear Power Science", to give teachers and students a more objective and comprehensive understanding of nuclear power.

Spotlight

Virtual Open Day events at home and abroad

The 9th CGN Open Day

On August 7, 2021, due to the impact of COVID-19, CGN launched the 9th Open Day online and livestreamed the events on platforms such as Guozixiaoxin (the official new media platform of SASAC), Kepu.gov.cn and People.cn as a way of public communication.

Under the theme of "CGNN-Family Guarding Our Shared Blue Planet", Luo Yucan, the first Nuclear Energy Public Communication Ambassador appointed by China Nuclear Energy Industry Association and other experts and community representatives were invited to witness the online release of the blind boxes of CGNN-Family, and take the online audience to a tour around internet-famous sites of nuclear power bases. The live-streaming also announced the data milestone of CGN's contribution to the carbon peak and carbon neutrality goals with nuclear power and China's first natural capital assessment results of the nuclear power industry, and showed CGN's practice in response to climate change, carbon peak and carbon neutrality goals and biodiversity conservation.

As the main warm-up activity of the Open Day, the second phase of the live-streamed Youth Science Camp was launched to introduce Big Science projects to students. Qiao Sukai, Wang Xin and Wang Shuqiang, three experts from CGN, gave the students an online tour around Daya Bay Nuclear Power Plant to impart knowledge of nuclear power to more than 12,000 high school students in front of the screen.

The 9th CGN Open Day (Virtual) held on August 7, 2021

7.2 million
Viewers watched the live-streaming and replay

120 million
Cumulative audience reached

51
Reports by mainstream media

417
Re-forwards on media platforms

The French virtual Open Day with the theme of "From Wind Farm to Windmill"

On July 12, 2021, CGN Europe Energy held a virtual Open Day with the theme of "From Wind Farm to Windmill" at Assac Wind Farm in southern France. Guided by Charlotte Bouteloup, a well-known TV host in France, 250 local primary school students, Assic mayor Myriam Vigroux and surrounding farmers saw with their eyes how wind energy had changed their town Assac.

Charlotte accompanied mayor Vigroux on a hike from the wind farm to the windmill. The mayor proudly said, "This 6-kilometer road is the first hiking route through our city. Crossing time and space, it connects the ancient windmill and modern wind farm along the river."

After listening to the introduction given by Gregoire De Grendre from the Engineering Operation and Maintenance Department at the wind farm, Charlotte and the pupils visited the Good Time Farm in the town where Chris FRANCOIS, the company's environmental expert, told them what CGN had done to conserve biodiversity.

Assac Wind Farm is already included by local tourism bureau into the destinations of "Industrial Tourism" to appeal to tourists. The footage of the Open Day activities was aired at the prime time of BFMTV, the largest news TV in France. The Open Day was also covered by mainstream media such as the *Le Parisien* and *L'Express*. CGN was praised by the French media as "demonstrating the responsibility of Chinese enterprises".

The environmental expert Chris FRANCOIS (right) introduces CGN's biodiversity conservation effort

Host Charlotte (right) and mayor Vigroux (left) visited a hiking trail

The footage of the virtual Open Day has been widely spread by nearly 200 media and social media accounts around the world in Chinese, English, French and other languages, reaching an audience of **1.2 billion**

The Open Day event and its public communication were rated among the **"Top Ten International Image-Building Cases"** of 2021 among Chinese enterprises

External Exchange

In line with the principle of win-win cooperation and inclusive development, CGN has actively strengthened cooperation with government agencies, other enterprises, universities and other stakeholders, and deepened communication with all walks of life, so as to draw on each other's advantages and generate mutual benefit.

March 30, 2021

Hosting the first China Nuclear Energy High-Quality Development Conference

The first China Nuclear Energy High-Quality Development Conference hosted by CGN was held simultaneously in Shenzhen and Beijing. Yang Changli, Party Secretary, Chairman of CGN, delivered a speech at the conference. The conference was live-streamed by Yangshipin and other platforms, with online viewers of more than 150,000 at most.

April 14 to 16, 2021

Participating in the 14th China International Exhibition on Nuclear Power Industry

The 14th China International Exhibition on Nuclear Power Industry was held at the China National Convention Center in Beijing. At the exhibition, CGN brought its proprietary Harmony System, China's first home-grown nuclear digital I&C platform.

September 10 to 13, 2021

Participating in the 18th China-ASEAN Expo

At the 18th China-ASEAN Expo held in Thailand, CGN showed visitors HuaLong One, the electron beam technology for special waste treatment, nuclear power robots and other research outcomes, as well as characteristic agricultural products for rural revitalization.

October 19 to 21, 2021

Participating in the 2021 Carbon Emission Peak and Carbon Neutrality Yantai Forum

Shi Bing, member of the Standing Committee of Party Committee and Senior Vice President of CGN, attended the 2021 Carbon Peak and Carbon Neutrality Yantai Forum jointly organized by the Shandong Development and Reform Commission and the People's Government of Yantai, and signed the *Cooperation Agreement on Jointly Building a Clean Energy Demonstration City* with Yantai on behalf of CGN.

November 6, 2021

Participating in the 4th China International Import Expo

On the second day of the 4th China International Import Expo, some subsidiaries of CGN signed ten procurement contracts and cooperation agreements with SEMPELL, Emerson and other companies, involving high-end equipment, emerging technologies, intelligent technologies and other fields.

December 16, 2021

Participating in the 2021 Carbon Peak and Carbon Neutrality Forum and the 9th Shenzhen International Low Carbon City Forum

Pang Songtao, member of the Standing Committee of Party Committee and Senior Vice President of CGN, was invited to attend and participate in high-end dialogue sessions of the forum, which was hosted by the Shenzhen Municipal People's Government under the guidance of the National Development and Reform Commission and the People's Government of Guangdong Province.

December 27, 2021

Participating in the 23rd China Hi-tech Fair

This year's fair was held with the theme of "promoting high-quality development and building a new development pattern". At the fair, CGN exhibited a number of scientific and technological innovations, and what it had contributed to carbon peak and carbon neutrality, attracting a lot of attention.

Corporate Philanthropy

CGN cares about what the public, especially the disadvantaged, need. CGN mobilizes the whole staff to provide volunteer services and engage in public welfare activities, thus to spread love in society and share the achievements of CGN's development with others.

12,723
Employee volunteers

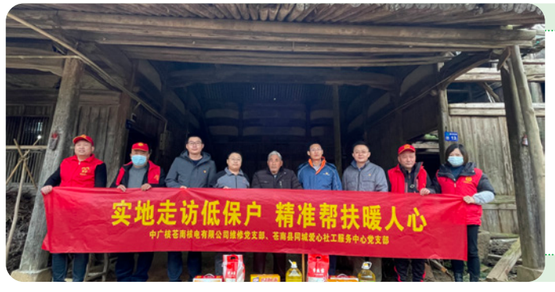
26,718
Participants of volunteer activities

48,092
Hours of volunteer service and social welfare activities

RMB 15 million
Emergency donation to support flood relief in Henan

Improving living conditions

Volunteers of the Radiation Monitoring Center of CGN Suzhou Institute visit local neighborhood, measure the indoor formaldehyde level, and teach residents how to prevent and protect themselves from formaldehyde pollution.



Volunteers of CNNPC organize targeted volunteer activities, and provide assistance and winter care for the elderly of no family, the empty-nest elderly and people with a disability.

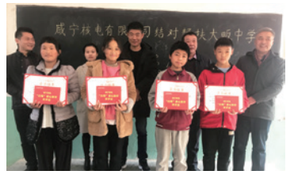
CGNPC Uranium mobilizes employees to donate winter clothing to help the elderly of no family in the remote mountainous areas of Liangshan Yi Autonomous Prefecture in Sichuan.

Caring for special groups

CGN Brazil Energy, a subsidiary of CGN Energy International, has sponsored the local wheelchair rugby team for years, and had donated BRL 48,000 by the end of 2021.

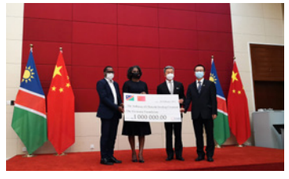
Promoting the development of education

CGN held a love aid activity in Transshipment Middle School in Tongshan County to sympathize with needy students and issue "White Egrets program" love grant to fulfill the dreams of needy students.



HYHNPC carries out a "Rainbow Project" relay teaching activity in Lanjin Primary School, Lingyun County, Guangxi, to inspire children while imparting knowledge.

CGN Swakop Uranium, together with the Chinese Embassy in Namibia, donates N$ 1 million to the First Lady of Namibia Foundation for the development of local youth.



Contributing to local fight against COVID-19

In 2021, CGN Swakop Uranium donated anti-covid materials with a market value of about N$ 2 million to the Namibia Chamber of Commerce and Industry, including oxygen, oxygen concentrators, masks, and beds, so as to help local hospitals and clinics improve their ability to treat COVID-19 patients.

"Currently, the whole country is in shortage of anti-covid materials, and hospitals are overcrowded. CGN Swakop Uranium has sent us more than 170 beds at an admirable speed."

——Collin Gerts, member of the COVID-19 Pandemic Prevention Committee in rehoboth

Outlook

The year 2022 will be a key year for the implementation of the 14th Five-Year Plan. CGN will continue to follow the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, implement the guiding principles of the 19th CPC National Congress, all previous plenary sessions of the 19th CPC National Congress and the Central Economic Working Conference, and stick to the general principle of seeking economic progress while keeping performance stable. We will apply the new development philosophy in full, in the right way, and in all fields of endeavor and promote the working style of "strict compliance, prudent decision-making, detail-oriented principle and fact-based approach". We will strengthen CPC leadership on all fronts and Party building, strictly ensure nuclear safety, maintain a stable performance in our principal business, and build new competitive edges, to contribute to carbon peak and carbon neutrality, and set the stage for the upcoming 20th CPC National Congress with high-quality development.

Upholding the Party leadership

We will continue to orient toward reinforcing the CPC's political foundations, give full play to the role of the Party as the leading core and political core, and effectively implement the decisions and requirements of the first congress of Party representatives of CGN. We will closely align Party building with our central work, so as to better play the role of Party leadership and Party building in leading and supporting high-quality development.

Pursuing progress while ensuring stability

We will deeply understand and accurately grasp the relationship between "stability" and "progress". On the basis of ensuring safety, CGN will increase investment in nuclear power, new energies, new technology and other fields, strive to improve quality and efficiency, solve problems encountered in development, and consolidate and continuously strengthen its advantages in development.

Promoting development and innovation

We will proactively advance the leapfrog development of such industries as new energies, non-power nuclear technology, digitization, and tech-based environmental protection, get rid of cognitive inertia and path dependence, comprehensively seek new ideas, and develop new technologies, models, organizations and systems for even greater breakthrough.

Taking a holistic approach

We will coordinate the development of various elements of the industry and pay more attention to developing technologies that are advanced, reliable and of high economic value at the same time. We will coordinate the development of "6+1" industries and promote the overall development of all industries. We will also coordinate the integrated development of the industrial ecosystem to create a new win-win pattern of joint contribution and shared benefits for all parties.

Yangjiang Nuclear Power Base

Performance Data

Safety

Performance Indicators		2019	2020	2021
Maximum personal radiation dose at each nuclear power plant in operation	Daya Bay Nuclear Power Plant (mSv)	9.14	5.02	11.854*
	Ling Ao Nuclear Power Plant (mSv)	6.94	6.77	
	Lingdong Nuclear Power Plant (mSv)	5.81	4.70	
	Units 1-6 of Yangjiang Nuclear Power Plant (mSv)	11.82	12.05	8.831
	Units 1-5 of Hongyanhe Nuclear Power Plant (mSv)	8.79	6.43	5.983
	Units 1-4 of Ningde Nuclear Power Plant (mSv)	8.74	11.22	7.325
	Units 1 & 2 of Fangchenggang Nuclear Power Plant (mSv)	4.10	6.36	3.608
	Unit 1 & 2 of Taishan Nuclear Power Plant (mSv)	1.01	7.10	8.501
Nuclear Safety	Number of in-service nuclear power units	24	24	25
	Ratio of units achieving the world's advanced level (the world's top quartile) in WANO indicators (%) *	76.39	72.6	83.0
	Unplanned shutdowns (times)	3	5	1
	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	10	6	8
Personal safety of employees	Work-related fatalities	1	1	2
	Industrial safety accident rate per 200,000 man hours	0.0088	0.013	0.009
	Occupational disease incidence rate	0	0	0

Note: Since 2021, data of Daya Bay Nuclear Power Plant, Ling Ao Nuclear Power Plant and Lingdong Nuclear Power Plant located in Daya Bay Nuclear Power Base have been included into the consolidated statistics of Daya Bay Nuclear Power Base.

Scientific research

Performance Indicators		2019	2020	2021
Investment in scientific research activities (RMB billion)		3.79	3.79	4.15
Total participants of scientific research activities		7,164	8,582	8,909
Educational background of scientific research personnel	Doctor's degree (headcount)	170	175	203
	Master's degree (headcount)	2,208	2,836	2,786
	Bachelor's degree (headcount)	4,708	4,891	4,924
National talents	Academician (headcount)	2	1	2
	Talents Project (headcount)	5	6	4
	Number of recipients of special allowance of the State Council (headcount)	37	39	34
Patent applications	Invention	785	874	1,031
	Utility mode	544	604	538
	Appearance design	23	21	15
Authorized patents	Invention	348	395	470
	Utility mode	513	591	767
	Appearance design	14	26	24

Operation

Performance Indicators	2019	2020	2021
Total assets (RMB billion)	749.48	788.5	848.0
Total overseas assets (RMB billion)	139.9	133.8	134.9
Operating income (RMB billion)	109.9	110.7	121.4
Overseas operating income (RMB billion)	22.72	20.3	22.5
Ratio of overseas operating income (%)	20.7	18	19
Total tax payment (RMB billion)	11.86	12.0	12.6
Gross in-service installed capacity of clean energy (GW)	58.18	63.16	68.5096
Gross in-service installed capacity of nuclear power (GW)	27.14	27.14	28.26
Gross in-service installed capacity of nonnuclear power (GW)	31.04	37.95	40.1541

Environment

Performance Indicators	2019	2020	2021
CO_2 emissions equivalent reduced from clean energy (million tons)	210+	200+	210+
Comprehensive energy consumption (10,000 tons of standard coal)①	199.96	180.01	179.5
Comprehensive energy consumption per RMB 10,000 of output value (tons of standard coal equivalent)②	0.1872	0.1643	0.1486

Note: ① 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.

② 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).

Discharge of the Three Wastes	Daya Bay Nuclear Power Plant			Yangjiang Nuclear Power Plant			Fangchenggang Nuclear Power Plant		
Performance Indicators	2019	2020	2021	2019	2020	2021	2019	2020	2021
Ratio of liquid effluent (nuclides but tritium) to state annual limit	0.27%	0.24%	0.24%	0.55%	0.41%	0.39%	0.29%	0.30%	0.20%
Ratio of gaseous effluent (inert gases) to state annual limit	0.43%	0.42%	0.46%	0.30%	0.21%	0.19%	0.29%	0.30%	0.29%
Generation of radioactive solid waste (m3)	244.8	230.3	166.7	60.8	102.4	88.6	67.6	74.0	72.2
Environmental monitoring results	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Discharge of the Three Wastes	Ningde Nuclear Power Plant			Taishan Nuclear Power Plant			Hongyanhe Nuclear Power Plant		
Performance Indicators	2019	2020	2021	2019	2020	2021	2019	2020	2021
Ratio of liquid effluent (nuclides but tritium) to state annual limit	0.24%	0.37%	0.40%	3.02%	4.85%	6.24%	0.19%	0.15%	0.26%
Ratio of gaseous effluent (inert gases) to state annual limit	0.28%	0.30%	0.27%	1.59%	2.19%	8.67%	0.20%	0.14%	1.87%
Generation of radioactive solid waste (m^3)	124.8	110.4	63.6	0	0	0	118.4	120.0	92.4
Environmental monitoring results	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Staff development

Performance Indicators		2019	2020	2021
Number of employees		41,622	42,464	42,972
By gender (%)	Male	83.29%	83.32%	83.52%
	Female	16.71%	16.68%	16.48%
By age (%)	30 years old and under	30.59%	27.31%	25.14%
	31-50 years old	63.13%	65.08%	67.61%
	51 years old and above	6.28%	7.61%	7.25%
By region (%)	Employees from China	91.32%	91.41%	91.64%
	Employees overseas	8.68%	8.59%	8.36%
Total training hours for employees (10,000 hours)		477	387	259
Annual training hours per employee (hour)		108	93	60
Employee turnover rate (%)		7.01%	6.55%	6.65%
New employees (headcount)		3,404	3,560	3,758

Community contribution

Performance Indicators	2019	2020	2021
Global charitable donations (RMB million)	102.85	172.00	77.6754
Poverty alleviation investment (RMB million)	90.31	101.06	59.476
Number of CGN employee volunteers	About 9,100	16,432	26,718

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CGN Douyin account

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