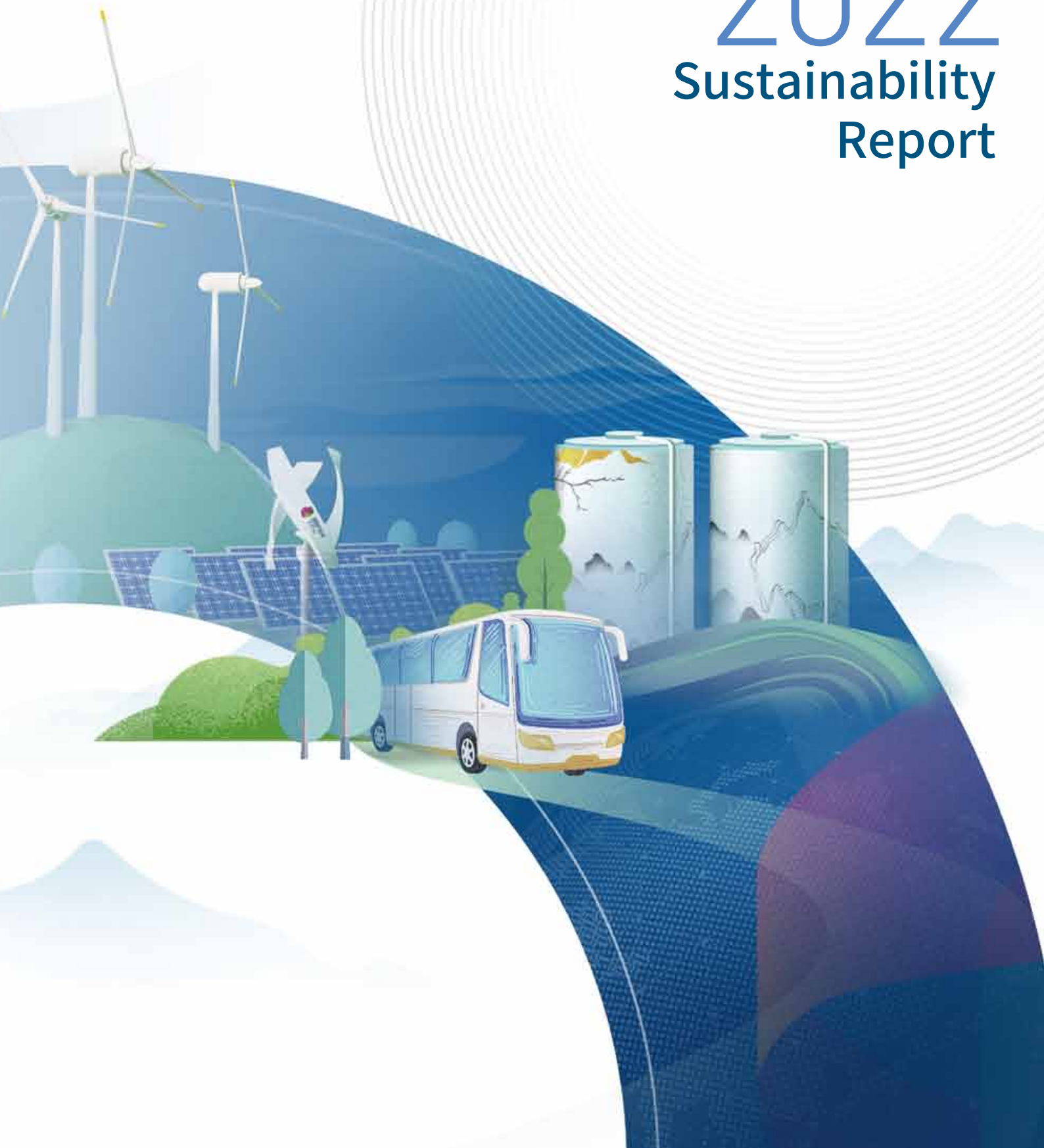
China Power International Development Limited
中國電力國際發展有限公司

(incorporated in Hong Kong with limited liability)

(Stock Code : 2380)

2022 Sustainability Report



CONTENTS

About This Report

Basis of Preparation

- This report is prepared in accordance with the relevant requirements of the Guiding Opinions on Fulfilling Social Responsibilities of Central Enterprises issued by the SASAC, the prevailing Environmental, Social and Governance Reporting Guide issued by the Hong Kong Stock Exchange, and with reference to the Sustainability Reporting Standards of the Global Reporting Initiative ("**GRI Standards**").

Reporting Period

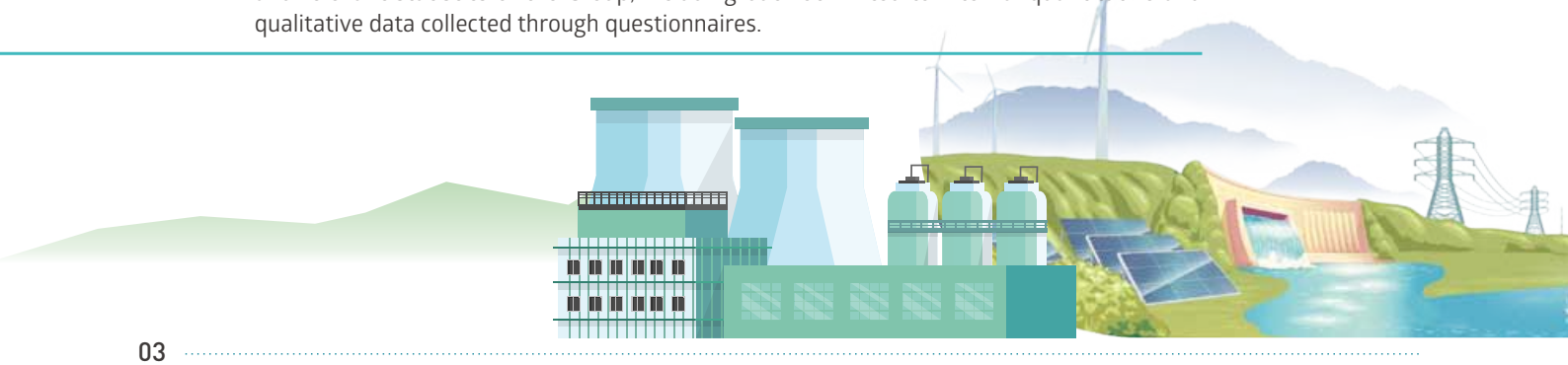
- This report covers the period from 1 January 2022 to 31 December 2022, with part of the content traced back to the previous years where appropriate. This report is dated on the same day as the Annual Report 2022 (i.e. 23 March 2023) unless otherwise specified. For the Corporate Governance Report, please refer to the Annual Report 2022 available at the websites of China Power at www.chinapower.hk or the Hong Kong Stock Exchange at www.hkexnews.hk.

Reporting Scope

- The reporting scope is reviewed regularly to ensure any material impacts on the Group's sustainability performance are covered.
- The information provided in this report covers the Group's sustainability performance in 2022, including our subsidiaries, which are consolidated into the financial statements of the Company, and joint ventures and associates, which are recorded as interests in joint ventures and interests in associates in the consolidated financial statements of the Group, respectively (collectively, the "**Assets**").
- This report covers (i) any Assets that have been in continued operation during the year; (ii) any Assets that have been acquired or established during the year, commencing from the completion date/date of establishment of the relevant acquisition/establishment up to 31 December 2022; and (iii) any Assets that have been disposed of in its entirety during the year, from 1 January 2022 up to the completion date of the relevant disposal.
- The financial information contained herein covers the same scope as the Annual Report 2022, unless otherwise stated, and should be read in conjunction with the Annual Report 2022 for a more thorough understanding of the Group's sustainability and financial performance.

Data Sources

- The financial data cited in this report is derived from the audited financial information as set out in the Annual Report 2022, and other data is derived from internal official documents and relevant statistics of the Group, including but not limited to internal quantitative and qualitative data collected through questionnaires.



Reporting Principles

- **Materiality**

  The Company conducts online questionnaires on material topics with each of its stakeholders to determine the material environmental, social and governance ("**ESG**") factors that may exert significant impacts on the Group's business. For more information, please refer to the sub-sections headed "Assessment of Material Topics" and "Stakeholders Engagement" under "Sustainability Governance" of this report.

- **Quantitative**

  The Company uses calculations and numeric presentations of ESG KPIs that are applicable to the Group. The calculation methods, assumptions, standards and units of measurement used are specified in the footnotes of the corresponding performance tables or the section headed "Technical Glossary and Definitions" of this report.

- **Consistency**

  The Company adopts the same reporting framework and statistical methods disclosed in previous sustainability reports of the Company to allow meaningful comparisons with this report. In case of any significant discrepancies with previous reporting frameworks, corresponding explanations will be clearly presented.

- **Balance**

  The Company is fully open and transparent on its ESG-related works in order to present a non-biased picture of the sustainability performance and progress of the Group.

Currency

- The currency used in this report is RMB, unless otherwise specified in related data.

Approval of the Sustainability Report

- This report was approved by the Board in March 2023.

Access to this Report

- This report is available in Chinese and English electronic versions. You may access this report at the websites of China Power at **www.chinapower.hk** or the Hong Kong Stock Exchange at **www.hkexnews.hk**, or email our investor relations team at **ir@chinapower.hk**.

Message from the Chairman

2022 was a crucial year for China Power's commitment to strategic transformation. During the year, we effectively integrated ESG governance into our business management, making ESG a benchmark for fulfilling our high-quality and sustainable strategic transformation, which enabled the results of corporate development to better benefit all stakeholders and laid a more solid foundation for further creation of corporate value for shareholders.

High-quality Development: Green and Innovation

We continued to consolidate our advantages in the principal business of clean energy segment with focuses on promoting the rapid and sustainable development of clean and low-carbon energy such as photovoltaic power, wind power, hydropower and environmental power. Meanwhile, proactive efforts have been made to nurture emerging industries of green energy including energy storage, hydrogen power, green power transportation and colored photovoltaic, optimized and adjusted existing coal-fired power assets comprehensively and increased the proportion of clean energy at a faster pace. As of the end of 2022, the consolidated installed capacity of clean energy was 20,519.2MW, accounting for close to 65% of the total consolidated installed capacity, representing an increase of approximately 12.8 percentage points as compared with the previous year.

We actively participated in ecological and environmental management, incorporated climate issues into our overall corporate strategies, promoted the refined management of carbon emissions and ensured the stable operation of environmentally-friendly power generation. During the year, green power/green certificate transactions were launched comprehensively and we completed green power transactions of approximately 2,095,000MWh. We continued to promote the "New Energy + Ecology" development model to facilitate the improvement of our environment and the building of an ecological civilization.

We continued the pursuit of innovation and breakthrough in technologies, business models, management and services for developing a green and intelligent energy ecosystem that eliminates limitations and creates values. We have nurtured three "Unicorn" enterprises platform companies in the emerging industries of green energy, namely Xinyuan Smart Storage, Qiyuanxin Power and Xinyuan Jinwu. Firstly, **Xinyuan Smart Storage**, a company engaged in the new energy storage industry, was successfully listed as a "Demonstration Enterprise in Science and Technology Reform" and a "National High-and-New-Tech Enterprise" by the SASAC to highlight its achievements of energy reform and technological innovation. Secondly, for the green power transportation sector, positioned as an "integrated service provider in zero-carbon green power transportation", **Qiyuanxin Power** was honored with the "Gold Award for Smart Transportation" in the "5th APEC-ESCI Best Practice Award" for its heavy-duty truck battery-swap projects. Thirdly, **Xinyuan Jinwu** achieved advancement in recycling solar panel materials and applied the new technology of reusing decommissioned photovoltaic modules. It has established a production base for color-coated photovoltaic components for power generation in Tongzhou District, Beijing.

Social Benefits: Collaboration and Care

Pursuing "Mutual Achievement" as one of our core corporate philosophies, we are committed to deepening communication and collaboration with all stakeholders. Through timely information disclosure, results announcements, roadshows, strategic partnership and cooperation, we continue to strengthen our relations management with shareholders, investors, suppliers, customers, business partners, employees, the government and the public, and to care and protect the interests of all parties.

We are committed to fulfill our corporate social responsibility, develop a responsible supply chain and promote rural revitalization, thereby contributing to the society with the fruitful results of our corporate development. In terms of supply chain, we made every effort to maintain a steady power and heat supply throughout last year, playing an important role in safeguarding the livelihood of the people and development of the society. In addition, the entrusted management project of Yanqing Garden Hydrogen Refueling Station successfully completed the task of ensuring sufficient supply of green hydrogen energy for the Beijing Winter Olympic Games. In the area of rural revitalization, we continued to push forward the development model of "new energy + smart agriculture" by building demonstration projects of zero-carbon villages and promoting green development of the local economy.

Insisting on putting people first, we have improved the system for the development and protection of the rights and interests of employees, carried out regular employee caring activities, provided a stable, safe and comfortable working environment for all employees, and helped them to develop their personal careers. In addition, we have launched a wide range of volunteering activities and built the volunteer service brand of "Yingshanhong — CP Act of Light" to provide continuous support and assistance to impoverished families and regions in need.

Corporate Governance: Enhancement and Reform

We have strictly complied with relevant laws and regulations and regulatory requirements, and made efforts in various aspects to build up our compliance management organizational system, internal control system, listing regulatory compliance capability and corporate compliance culture in order to ensure the responsibility of risk management is on all employees and covers the entire business processes, effectively enhance the ability of corporate risk prevention and control, and fully safeguard corporate governance in compliance with the law.

We continued to deepen our corporate reform, innovate development model and drive organizational reform at a high level of strategic transformation. We optimized the selection and appointment mechanisms of human resources and provided employees with accessible development paths and share incentive scheme so as to motivate creativity and vitality of employees. In addition, we offered comprehensive and diversified trainings for employees to enhance their professional capability, enabling them to realize greater values under the new strategic objectives of the Company.

Looking ahead, we will continue to maintain our strategic positioning, and anchor our vision and goal of becoming a "**World-class Green and Low-carbon Energy Provider**" driven by technology and innovation. Bringing together efforts of our global industrial chain and partners, we will seek mutual progress and win-win results in concerted efforts to create a better, green and low-carbon life together!

Future Outlook and Strategic Direction

2023 is a year for China Power to forge ahead in its strategic transformation. We will seize opportunities brought by the latest trend in the new stage of sustainable development, and step up our efforts to lay a strong foundation for our strategic focus on transforming the Company into a "World-class Green and Low-carbon Energy Provider" driven by technology and innovation.

Green Development

We will strive to achieve the next level of clean energy development in terms of increasing quality and quantity to meet the Company's strategic goals and pathway in three phases up to 2025, 2030 and 2035.

- Maintain the momentum for rapid clean energy development by focusing on the development of large-scale base projects as well as promoting the development of distributed and user-oriented projects.
- Develop "New Energy +" intelligent model of industrial projects such as "photovoltaic power + smart agriculture", by building high-quality pilot demonstration projects in support of development of low-carbon agricultural economy in rural areas, through the "combining N into 1" model to realize an organic integration of clean energy and various industries with an unity of innovation significance and economic benefits.

Innovative Development

We will transform our operations from investment-driven to innovation-driven, and develop a new pattern of technological innovation and value creation in the emerging green energy industries.

- Expand technological research and development and master a number of globally competitive low-carbon and zero-carbon core technologies and solutions.
- Seize market opportunities and actively incubate green energy emerging-industry companies and "Unicorn" enterprises through the development mode of "Cultivate an Emerging Industry and Build a Professional Platform", so as to enhance our leading capability and discourse power in the energy industrial chain.
- Emphasize on the development of a platform integrating "industry-academia-research-application", and promote our own new technologies, new business forms and new models in emerging green energy industries to the market.

Sustainable Development

We continue to promote good corporate governance, deepen reforms and provide inexhaustible impetus for strategic transformation.

- Enhance the level of ESG governance by integrating ESG governance into the Company's strategic development, and improve the Company's ESG governance structure and its internal relevant working mechanism.
- Continue to optimize mechanisms of remuneration allocation and incentives, and increase efforts in the reformation of human resources systems and team building of cadres so as to motivate the vitality and momentum of innovation.
- Further promote strategic cooperation and seek mutual progress and win-win results with relevant parties involved in the "energy ecosystem and partnership network".

We are committed to developing ourselves into a technology and innovation-driven green and low-carbon energy provider, collaborating and seeking mutual success with various parties to create a sustainable future together.

Company Profile

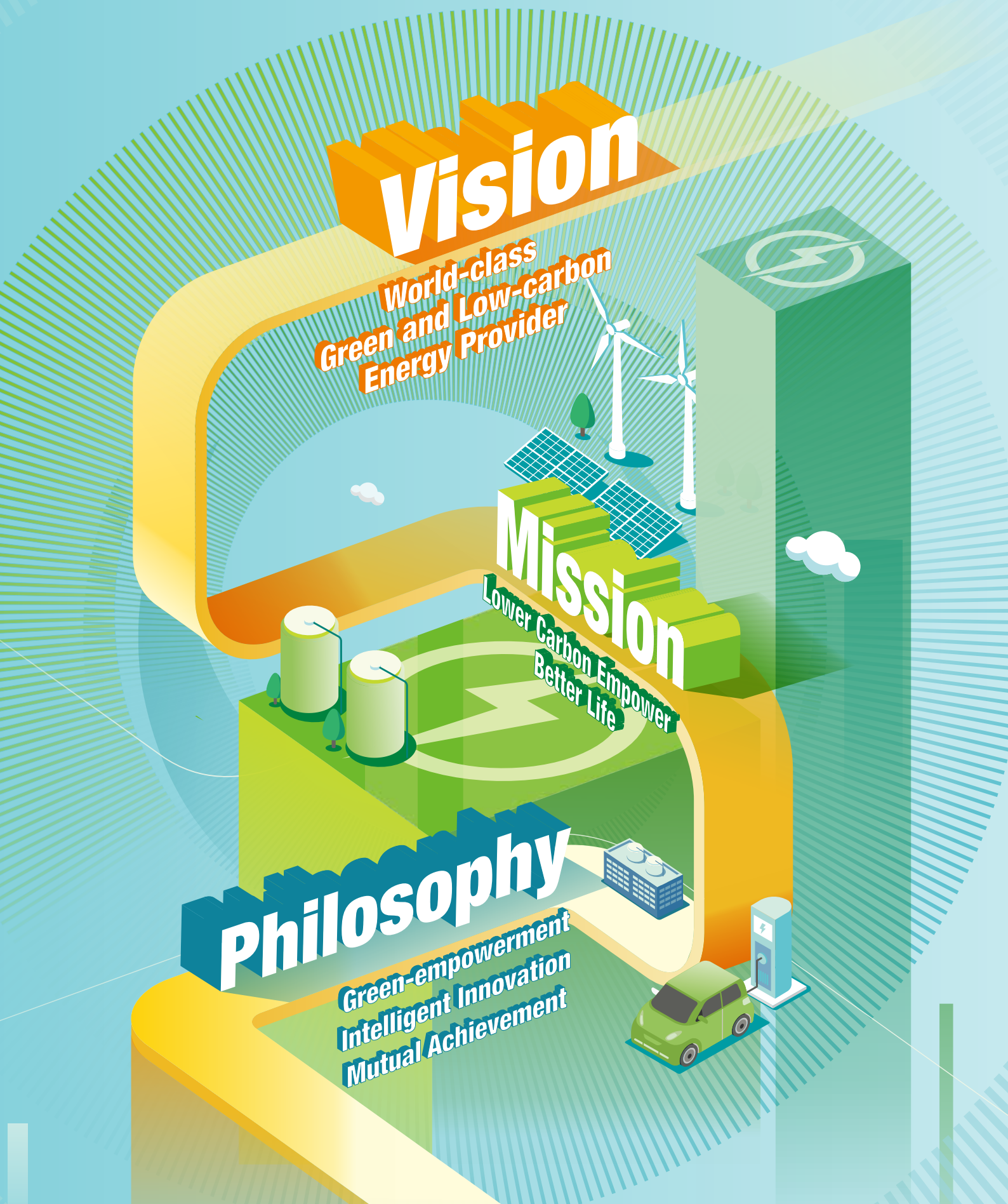
- About Us
- Business Distribution
- Business Segments

About Us

China Power was incorporated in Hong Kong with limited liability under the Hong Kong Companies Ordinance on 24 March 2004 and is a core subsidiary of SPIC, which is an integrated energy group that simultaneously owns thermal power, hydropower, nuclear power and renewable energy resources in the PRC.

The shares of the Company were listed on The Main Board of the Hong Kong Stock Exchange on 15 October 2004 with the stock code 2380. From the beginning of solely engaging in generation and electricity sales of coal-fired power, the Company has expanded its business into the areas of, among others, hydropower, wind power, photovoltaic power, natural gas power, environmental power, energy storage, green energy transportation and integrated intelligent energy services through continuous development. Various business segments have been kept growing along with the constant expansion of the Group.

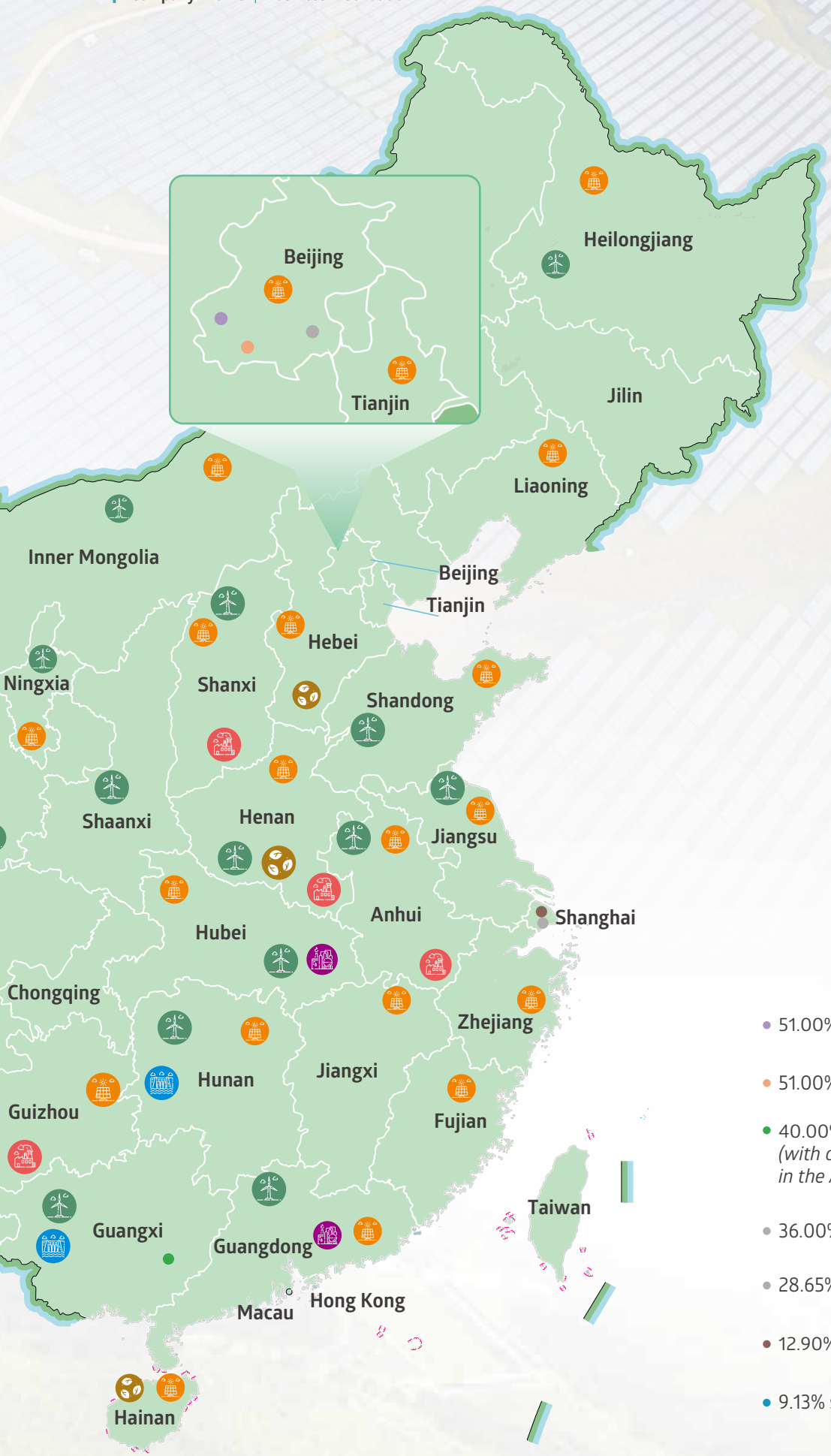
As at 31 December 2022, the Group's total consolidated installed capacity was 31,599.2MW, of which the consolidated installed capacity of clean energy was 20,519.2MW, accounting for 64.94% of the total consolidated installed capacity.


Vision
World-class
Green and Low-carbon
Energy Provider
Mission
Lower Carbon Empower
Better Life
Philosophy
Green-empowerment
Intelligent Innovation
Mutual Achievement

Business Distribution

DIRECTIVE

- Hydropower
- Coal-fired Power
- Wind Power
- Natural Gas Power
- Photovoltaic Power
- Environmental Power



- 51.00% stake in Xinyuan Smart Storage
- 51.00% stake in Xinyuan Jinwu
- 40.00% stake in Guangxi Overseas *(with other investments located in the ASEAN region)*
- 36.00% stake in CP Nongchuang
- 28.65% stake in Qiyuanxin Power
- 12.90% stake in Shanghai Power
- 9.13% stake in Sichuan Energy Investment

Business Segments

Power Supply

- Hydropower
- Wind Power
- Photovoltaic Power
- Coal-fired Power
- Natural Gas Power
- Environmental Power

Energy Services

- Novel Energy Storage
- Green Power Transportation
- Integrated Intelligent Energy
- Hydrogen Energy Application
- Construction of Low-carbon and Zero-carbon Beautiful Countryside
- Colored-Photovoltaic and Recycling
- Electricity Sales and Distribution
- Carbon Trading

Industries Synergy

- Nuclear Power Maintenance
- Power Plant Services
- Financial Sharing
- Power Generation By-products

Highlights of Year 2022

Milestones of the Year

February

The Yanqing Garden Hydrogen Refueling Station served the Winter Olympic Games with green energy transportation

The 16-day Beijing Winter Olympic Games concluded successfully. China Power was entrusted to manage the Yanqing Garden Hydrogen Refueling Station in Zhongguancun and successfully completed the task of guaranteeing hydrogen power supply by providing clean energy for the "green" Winter Olympic Games to achieve carbon neutrality. During the Winter Olympic Games, it fueled 3,800kg of hydrogen in aggregate, provided refueling services for 692 hydrogen-fueled passenger vehicles and received a number of commendation letters from the Beijing Organizing Committee for the Winter Olympic Games.

February

Qiyuanxin Power built the first pure-electric battery-swap container vessel in China

Qiyuanxin Power collaborated with 江蘇遠洋運輸有限公司 (Jiangsu Ocean Shipping Co., Ltd.*) and other parties to jointly build China's first pure-electric container vessel with chargeable and swappable batteries which emits zero emissions in shipping.

March

SPIC Haiyang Energy Storage Power Station participated in electricity spot market trading

The SPIC Haiyang Energy Storage Power Station of Shandong Company successfully completed spot market trading of electricity in Shandong Province and became one of the first batch of independent energy storage power stations to participate in China's electricity spot market trading.

April

Xinyuan Smart Storage was selected in "China's Power Storage Companies Ranking 2021"

China Energy Storage Alliance (中關村儲能產業技術聯盟) (CNESA) published the "China's Power Storage Companies Ranking 2021". Xinyuan Smart Storage ranked the third in "Shipment Volume of Energy Storage Systems in Domestic Market for 2021" and the fifth in "Newly Installed Capacity in China for 2021", which showcased its leading position in the industry.

March

Xinyuan Smart Storage was selected as one of the "Demonstration Enterprises in Science and Technology Reform"

Xinyuan Smart Storage was selected as one of the "Demonstration Enterprises in Science and Technology Reform (科改示範企業)" by the Office of the Leading Group for State-owned Enterprises Reform of the State Council (國務院國有企業改革領導小組辦公室), highlighting the Company's achievement in energy reform and technological innovation.

May

China Power's heavy-duty truck battery-swap case study won the gold award of the "APEC-ESCI Best Practice Award"

The heavy-duty truck battery-swap project of Qiyuanxin Power stood out from 65 projects submitted by 17 economies including Australia, Canada and the United States, and won the "Gold Award for Smart Transportation" in the "5th APEC-ESCI Best Practice Awards" organized by the Energy Working Group of the Asia-Pacific Economic Cooperation.

May

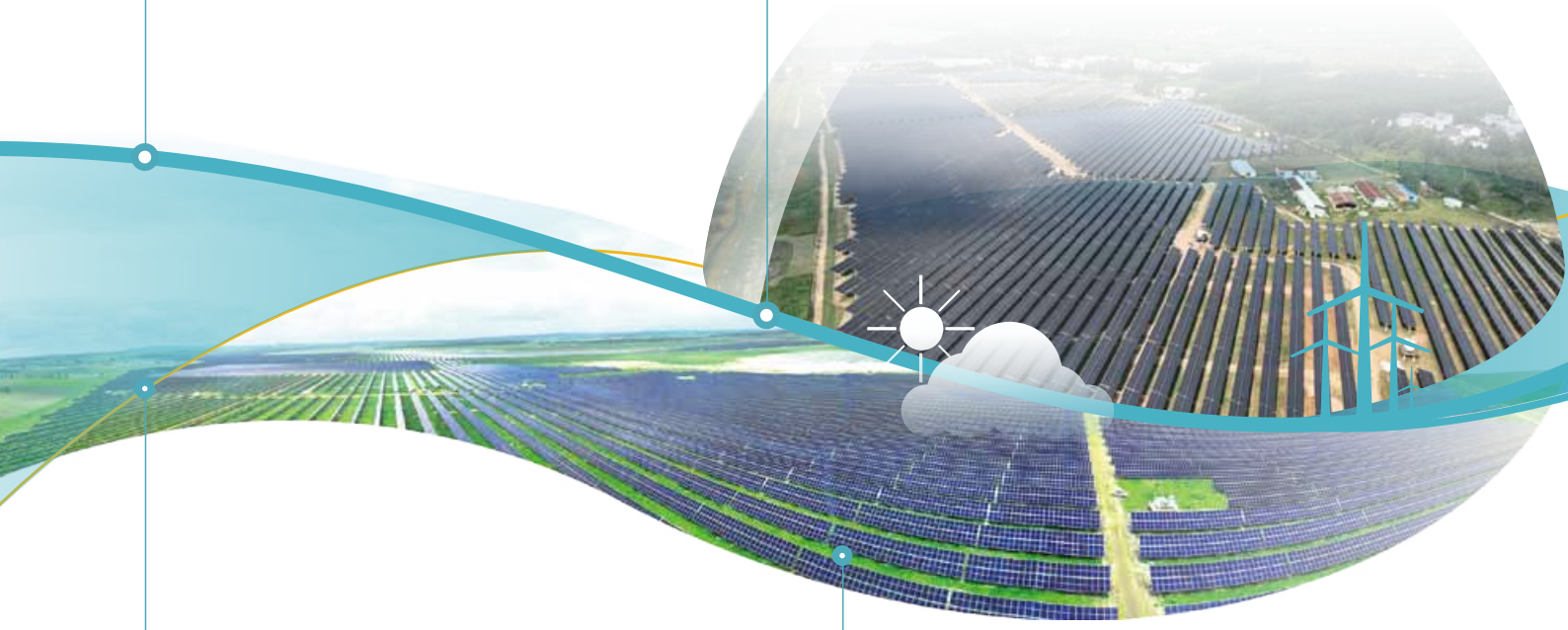
China's first photovoltaic direct power and battery-swap station was completed and commenced operation officially

The photovoltaic direct power and battery-swap station of China Power's green power transportation segment was successfully completed in Yinchuan City, marking the official commissioning of China's first photovoltaic direct power and battery-swap station.

June

China Power was awarded the "Green Finance Pre-issuance Stage Certificate"

China Power received the "Green Finance Pre-issuance Stage Certificate" from the Hong Kong Quality Assurance Agency for its cooperation green loan project with the Hong Kong Branch of China Construction Bank with a principal amount of RMB2 billion, which is the first Hong Kong-listed mainland power enterprise to receive such certification.



June

Tongshanling Wind Farm of Wu Ling Power was recognized as a "High Quality Small to Medium-sized Power Project in China for 2022"

The China Electric Power Construction Association (中國電力建設企業協會) announced the review results of the "2022 China High Quality Power Projects". Phase I of the Tongshanling Wind Farm Project of Wu Ling Power was recognized as a "High Quality Small to Medium-sized Power Project in China for 2022".

June

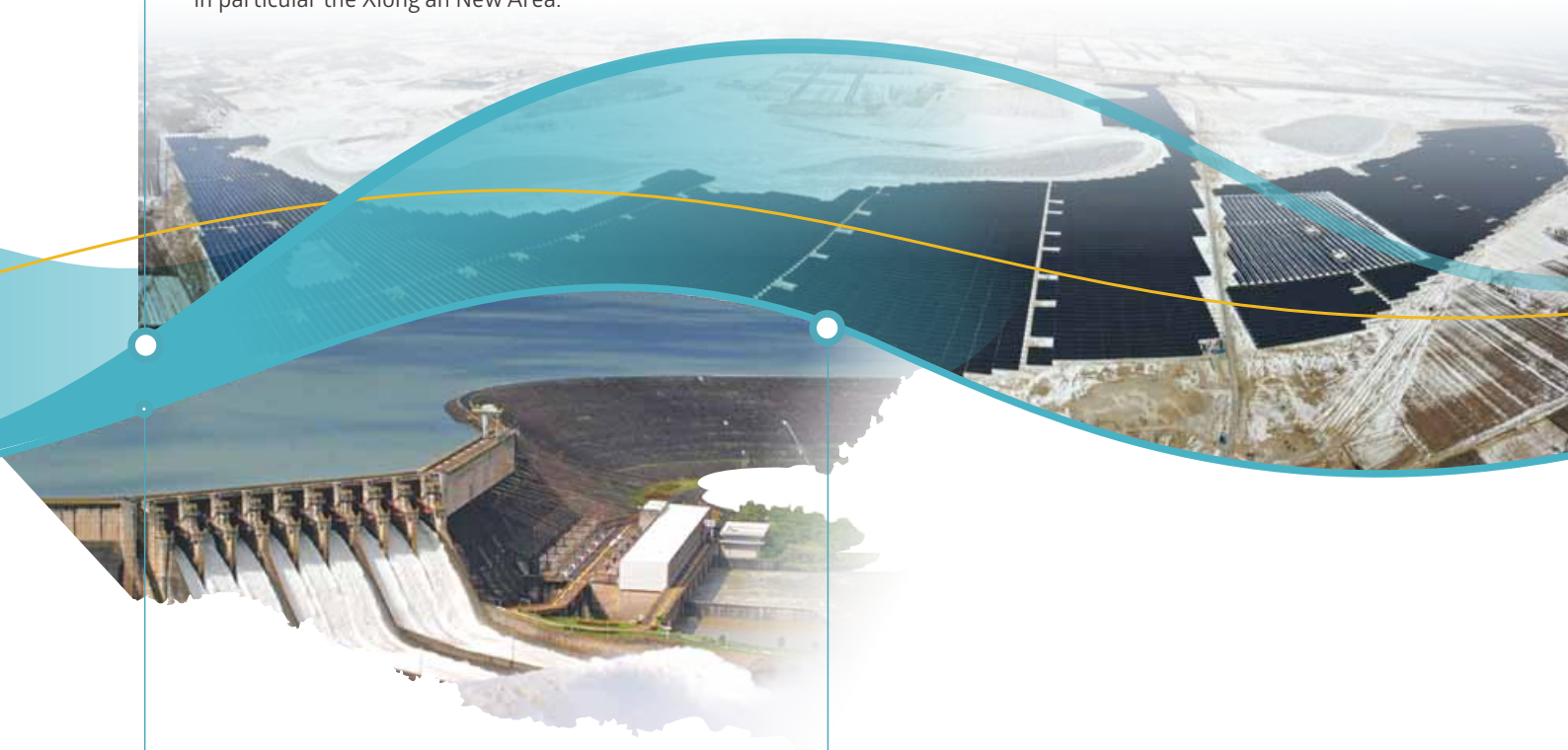
Multi-energy Complementary 1,000,000kW New Energy Base Project in Macheng City was connected to the power grid for power generation for the first time

Phase I (400MW) of the Multi-energy Complementary 1,000,000kW New Energy Base Project in Macheng City invested in and developed by the Company was connected to the power grid for power generation for the first time with a grid-connected production capacity of 30MW, marking a new stage of project construction, and accelerating the development of China Power into a "**World-class Green and Low-carbon Energy Provider**".

June

The "Photovoltaic + Energy Storage" Demonstration Project of Wuhu Power Plant was connected to the power grid for power generation

The 400MW "Photovoltaic + Energy Storage" Demonstration Project of Wuhu Power Plant in Guyuan County, Hebei Province was connected to the power grid for power generation at full capacity. After the project commence operation at full capacity, about 640,000MWh of clean energy can be transmitted through the "Zhangbei–Xiong'an" ultra-high voltage lines every year, providing a guaranteed and reliable source of green energy supply for the economic development of the Beijing-Tianjin-Hebei region, in particular the Xiong'an New Area.



July

China Power gave a keynote presentation on its ESG practices

The Company participated in the summit titled "The Future of Investor Relations — Innovation, ESG and Impact" held by The Hong Kong Exchanges and Clearing Limited in Hong Kong, and gave a keynote presentation on its ESG practices.

July

China Power was awarded the title of "Double Hundred Enterprise (雙百企業)" by the SASAC

China Power was awarded the title of "Double Hundred Enterprise (雙百企業)" by the SASAC, signifying the Company's significant progress in key areas of the reformation of State-owned enterprises.

August

CP Huayuan was selected as one of the "Specialized and New" Enterprises

CP Huayuan, a company principally engaged in the provision of technical inspection and maintenance services for nuclear power stations and the integrated intelligent energy business, was selected as one of the "Specialized and New" enterprises by Shanghai Municipal Commission of Economy and Informatization (上海市經濟和信息化委員會) in 2022.

September

Dongping Hydropower completed the first transaction in the carbon emissions reduction market

Dongping Hydropower of Wu Ling Power completed the first transaction in the carbon emissions reduction market, realizing a new profit growth impetus for clean energy assets.

September

Changzhou Hydropower was accredited with the title of 5A Outstanding Generating Unit

Changzhou Hydropower was accredited with the title of outstanding generating unit for "5A Regular Tubular Hydropower (10MW and above)" by the China Electricity Council (中國電力企業聯合會).

October

China Power completed the acquisition of clean energy companies

China Power completed the acquisition of clean energy companies with a total installed capacity of 2,155.4MW from CPNE and CPINE under SPIC.

October

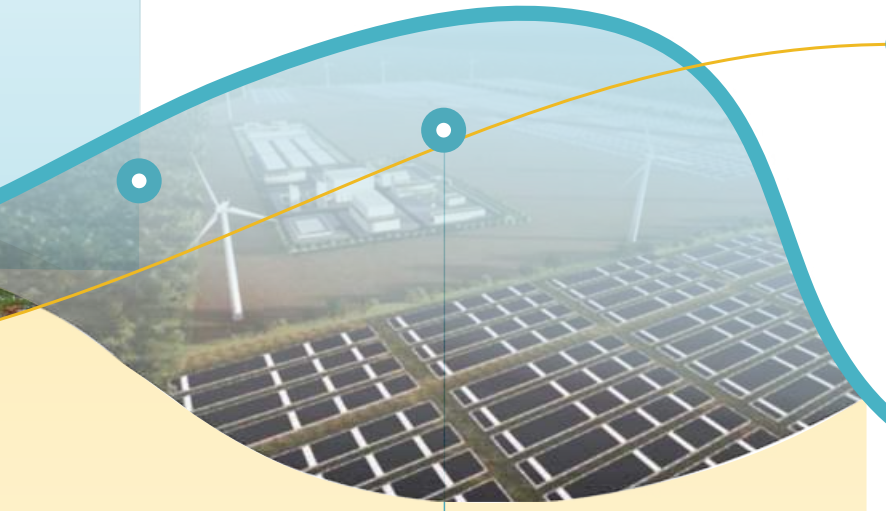
China Power was named one of the "Excellent ESG Enterprises of 2021–2022" by Hong Kong Economic Times

China Power was honored as one of the "Excellent ESG Enterprises of 2021-2022" by Hong Kong Economic Times, a leading financial newspaper in Hong Kong, in recognition of its outstanding performance in respect of environmental, social and corporate governance at the "ESG and Green Finance Forum cum Recognition Ceremony 2022". This was the second consecutive time that China Power received this honor, and was the only power enterprise honored with this award.

November

Xinyuan Smart Storage's Intelligent Manufacturing Plant commenced operation

Xinyuan Smart Storage's Intelligent Manufacturing Plant officially commenced operation, which is China Power's first non-power generation production line.



October

The first Integrated "Source, Grid, Load and Storage" Project was officially approved

The first Integrated "Source, Grid, Load and Storage" Project located in Lubei, Shandong Province and invested by the Company through 中電魯北清潔能源(山東)有限公司 (China Power Lubei Clean Energy (Shandong) Co., Ltd.*), a joint venture of the Company, was officially approved, marking the implementation of the Company's strategy for establishing an integrated intelligent energy ecosystem.

November

The world's first deep-sea floating "wind-photovoltaic hybrid" demonstration project successfully commenced power generation

The 20MW Offshore Wind Farm and Deep-sea Floating 0.5MW Photovoltaic Demonstration Project of Shandong Company in Shandong Province successfully commenced power generation, which is the first deep-sea "wind-photovoltaic hybrid" floating photovoltaic demonstration project in the world. The project marked a major technological breakthrough of the Company in the scientific research in this area.

November

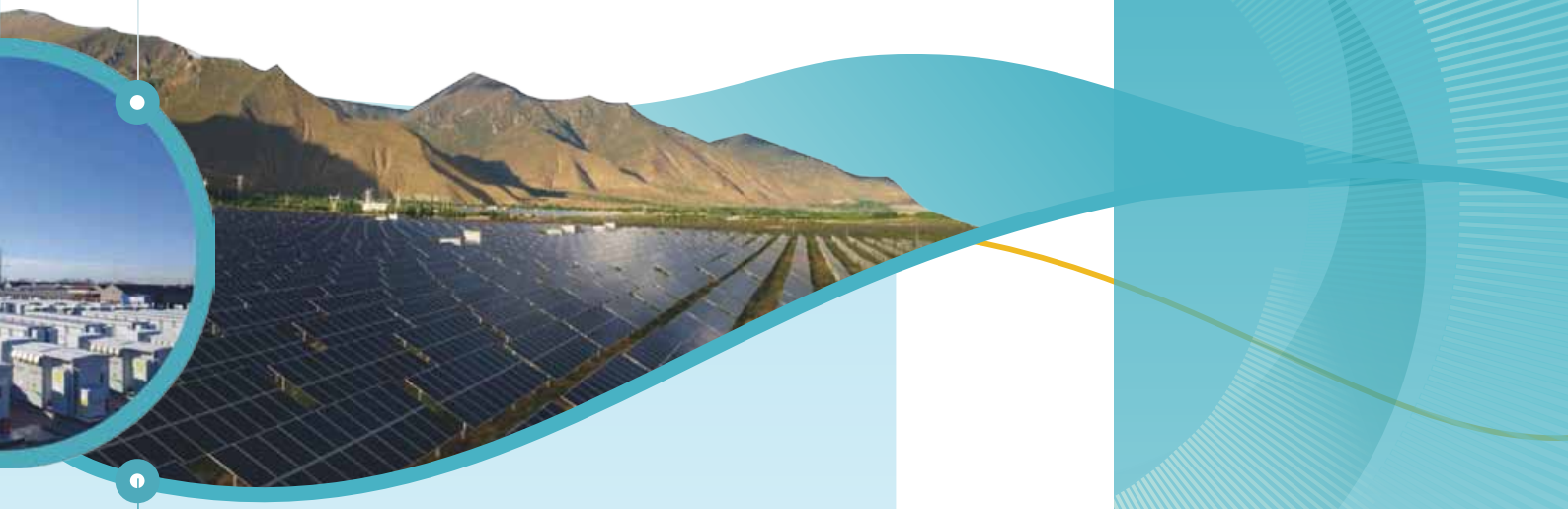
Participated in the "24th China High-tech Fair"

Xinyuan Smart Storage, Qiyuanxin Power and Xinyuan Jinwu (the emerging business segment of the Group), participated in the "24th China Hi-tech Fair" held in Shenzhen and attracted wide attention.

December

The two energy storage demonstration projects in Jining, Shandong and Golmud, Qinghai developed and constructed by Xinyuan Smart Storage were connected to the power grid

Shandong Jining Weishan 100MW/200MWh Peak-shaving Energy Storage Power Station Demonstration Project and Qinghai Golmud 100MW/200MWh Energy Storage Sharing Power Station Demonstration Project developed and constructed by Xinyuan Smart Storage, the novel energy storage business platform of China Power, were successfully connected to the power grid. The latter project has demonstrated high level of safety and reliability of the energy storage systems under harsh natural environment such as high altitude (3,200 meters) and extreme temperature differences (-30°C–35°C).



December

China Power Datong Photovoltaic Xinrong Phase II 600MW Grid Parity Photovoltaic Project was connected to the power grid

China Power Datong Photovoltaic Xinrong Phase II 600MW Grid Parity Photovoltaic Project was connected to the power grid at full capacity. The project is located in Xinrong District, Datong City, Shanxi Province. It is the single largest grid parity photovoltaic project in Shanxi Province in terms of installed capacity. The project has adopted a forestry-and-photovoltaic complementary mode, and made use of idle land in the low-lying mining areas in Datong City for the construction of the photovoltaic energy base. After the project has been connected to the power grid at full capacity, it is expected to provide more than 1,000,000MWh of clean electricity per year.

KPIs of the Year

Financial

Total assets (RMB'000)	2022	211,404,964	20.63%
	2021 (restated)	175,245,988	
Revenue (RMB'000)	2022	43,689,129	23.15%
	2021 (restated)	35,476,703	
Profit for the year (RMB'000)	2022	2,685,338	297.07%
	2021 (restated)	676,296	
Profit/(loss) attributable to equity holders of the Company (RMB'000)	2022	2,648,051	
	2021 (restated)	-256,257	
Basic earnings/ (loss) per share (RMB)	2022	0.22	
	2021 (restated)	-0.04	
Consolidated installed capacity (MW)	2022	31,599.2	9.22%
	2021	28,931.9	
Total electricity sold (MWh)	2022	108,170,802	7.51%
	2021 (restated)	100,612,928	

Environmental

Clean energy power generation (MWh)

2022	40,999,427
2021 (restated)	37,862,975

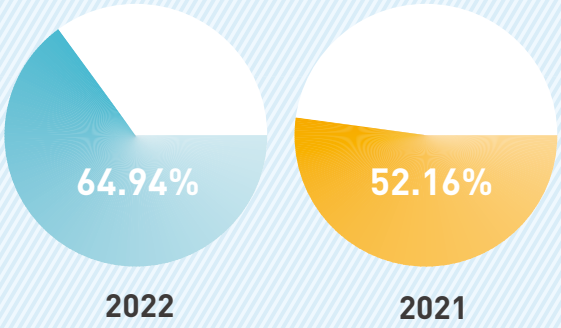
8.28%

Equivalent to reduction of CO_2 emissions (tonnes)

2022	26,102,786
2021 (restated)	23,590,280

10.65%

Proportion of clean energy in consolidated installed capacity



12.78 percentage points

Net coal consumption rate (g/kWh)

2022	302.37
2021	301.16

0.40%

Density of SO_2 emissions (g/kWh)

2022	0.070
2021	0.076

-7.89%

Density of NO_x emissions (g/kWh)

2022	0.131
2021	0.139

-5.76%

Density of flue gas and dust emissions (g/kWh)

2022	0.008
2021	0.008

—

Social

Innovation

Total investment in technological R&D (RMB)	2022	946,742,463	127.34%
	2021	416,441,300	
No. of technological projects launched	2022	269	26.89%
	2021	212	
No. of innovation achievement	2022	252	245.21%
	2021	73	

Suppliers

Audits carried out on suppliers	2022	13,701	211.17%
	2021	4,403	
Open procurement rate	2022	99.82%	
	2021	N/A	

Employees

Total training hours of employees	2022	734,720 hours	-2.07%
	2021	750,218 hours	
Total investment in employees' training (RMB)	2022	39,304,645	-16.74%
	2021	47,208,500	

Investors

No. of investors met (approx.)	2022	1,100 person-times	83.33%
	2021	600 person-times	

Charity

Total charity donation (RMB)	2022	3,396,517	12.47%
	2021	3,020,061	
Volunteer activities organized	2022	406 times	141.67%
	2021	168 times	
Hours of volunteer services	2022	11,199 hours	186.20%
	2021	3,913 hours	
Total amount of poverty alleviation inputs (RMB)	2022	2,345,644	78.30%
	2021	1,315,549	
Grant under the "Golden Autumn Education Fund" (RMB)	2022	197,160	205.67%
	2021	64,500	

Governance

Proportion of independent non-executive Directors	2022	42.86%	—
	2021	42.86%	
No. of integrity and anti-corruption training carried out	2022	465 times	6.16%
	2021	438 times	
Participants in anti-corruption and integrity education and training activities	2022	42,286 person-times	47.74%
	2021	28,621 person-times	

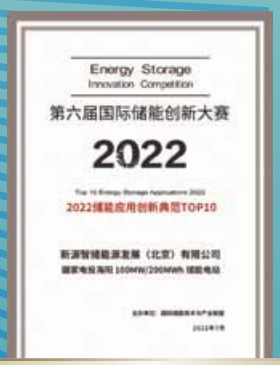
Accolades of the Year

Double Hundred Enterprise

Awarded the title of "Double Hundred Enterprise (雙百企業)" by the SASAC

Best in ESG Reporting Awards (Main Board – Middle Market Capitalization)

Honored by BDO Limited (BDO), one of the five largest accounting firms globally, to receive the "Best in ESG Reporting Awards 2022 (Main Board — Middle Market Capitalization)", in appreciation of the Company's outstanding performance in ESG



2022 Top Ten Energy Storage Application Innovation Models

2022 Person of the Year for Energy Storage Award

At "The 6th International Energy Storage Innovation Competition" organized by the International Energy Storage Alliance, the SPIC Haiyang 101MW/202MWh Energy Storage Power Station Project won the "2022 Top Ten Energy Storage Application Innovation Models" award, and Mr. HE Xi, the Chairman of the Board, was honored with the "2022 Person of the Year for Energy Storage Award"

Excellent ESG Enterprises of 2021–2022

Honored as one of the "Excellent ESG Enterprises of 2021-2022" by Hong Kong Economic Times

Hong Kong Green and Sustainable Finance Awards 2022

Received the "Hong Kong Green and Sustainable Finance Awards 2022" by HKQAA (Hong Kong Quality Assurance Agency)

5th APEC-ESCI Best Practice Awards

The heavy-duty battery-swap project of Qiyuanxin Power won the "Gold Award for Smart Transportation" in the "5th APEC-ESCI Best Practice Awards"

Top 10 Most Influential Brands

Financial Technology Influential Award of the Year

Qiyuanxin Power received "Top 10 Most Influential Brands" and "Financial Technology Influential Award of the Year" for the charging and battery swapping industry in China in 2022 at "The 8th China International EV Charging & Battery Swapping Industry Conference"

Advanced Collective in Promoting High-quality Development in North Bund, Hongkou District

CP Hua Chuang was accredited the honorary title of "Advanced Collective in Promoting High-quality Development in North Bund, Hongkou District" in Shanghai, China

Sustainability Governance

- Governance Structure
- Sustainability Management
- Conceptual Model
- ESG Statement of the Board
- Sustainability Governance Structure
- Board Engagement and Practice in ESG
- Risk Management
- Compliance with Laws and Regulations
- Whistleblowing Policy and Anti-corruption
- Stakeholders Engagement
- Assessment of Material Topics

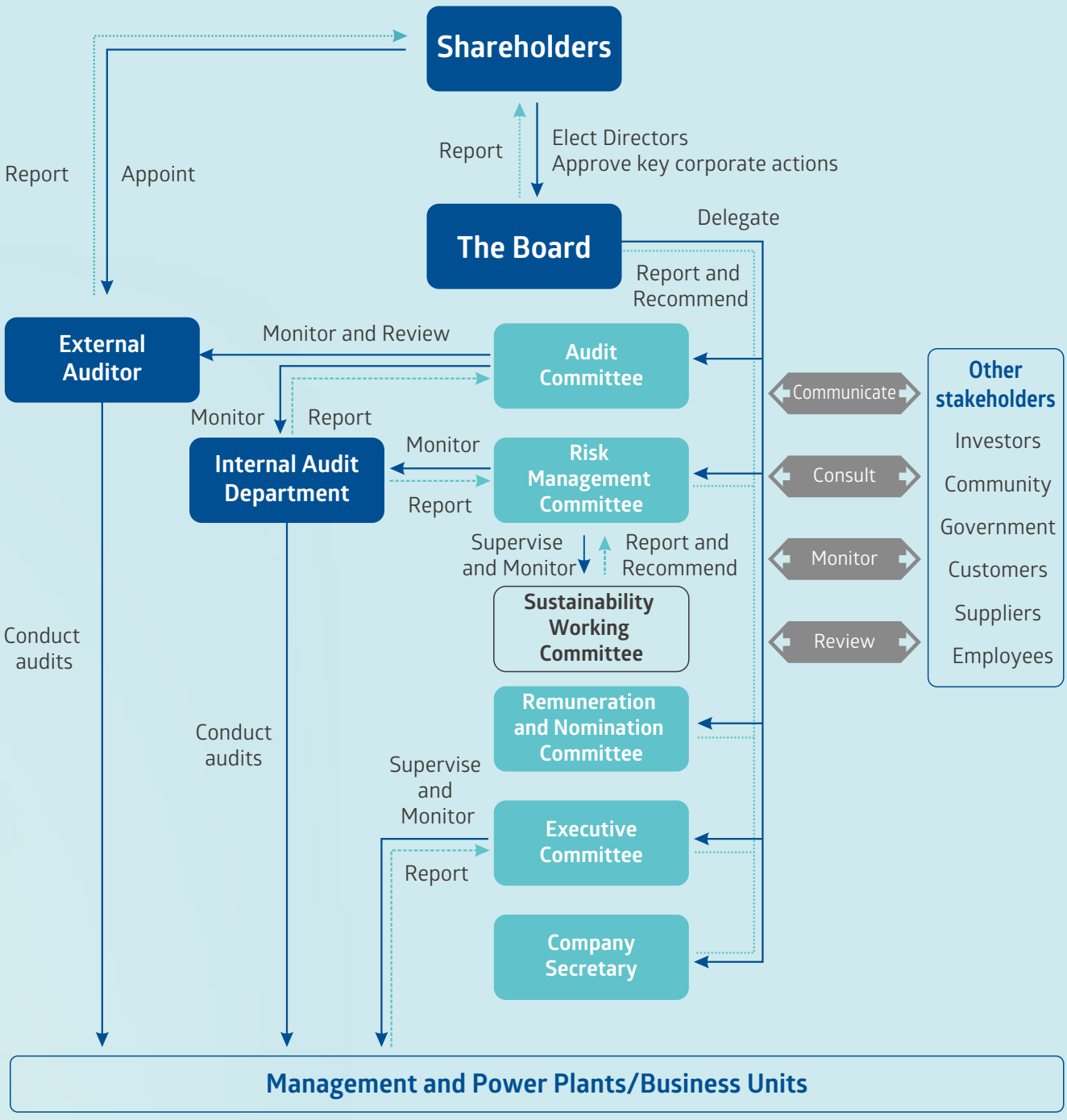

TONGRO
TONGRO
TONGRO

Governance Structure

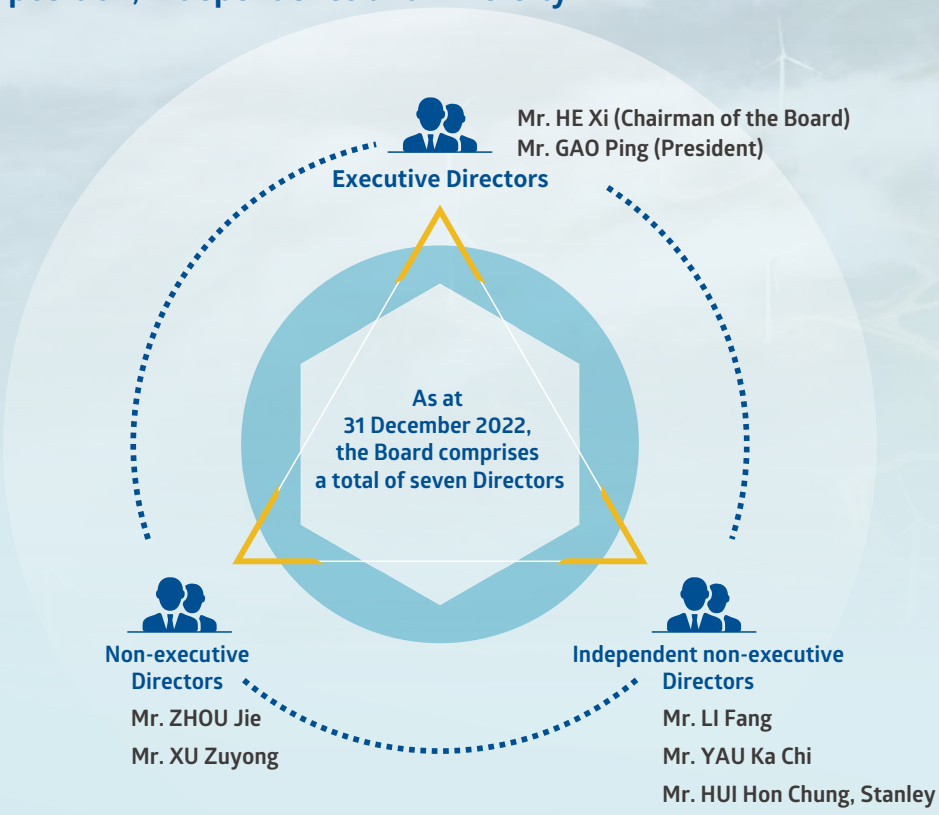
The Board recognizes that good corporate governance is vital to the healthy, long-term and sustainable development of the Group, and the Board is committed to high standards of corporate governance. The Board sets the strategic and directional tones for the development of the Group with the assistance of and advices from its committees, while the management ensures delivering and implementing the decisions of the Board.

We strictly abide by relevant laws, regulations and the rules of regulatory authorities, and continuously improve our corporate governance and organizational structures, and human resources allocation in accordance with our corporate vision and strategic needs, as well as market changes from time to time.

Governance Framework



Board Composition, Independence and Diversity



The Company recognizes that Board independence is key to good corporate governance. The Group has in place effective mechanisms under the corporate governance framework that allow a strong independent Board and that independent views from Directors are conveyed to the Board.

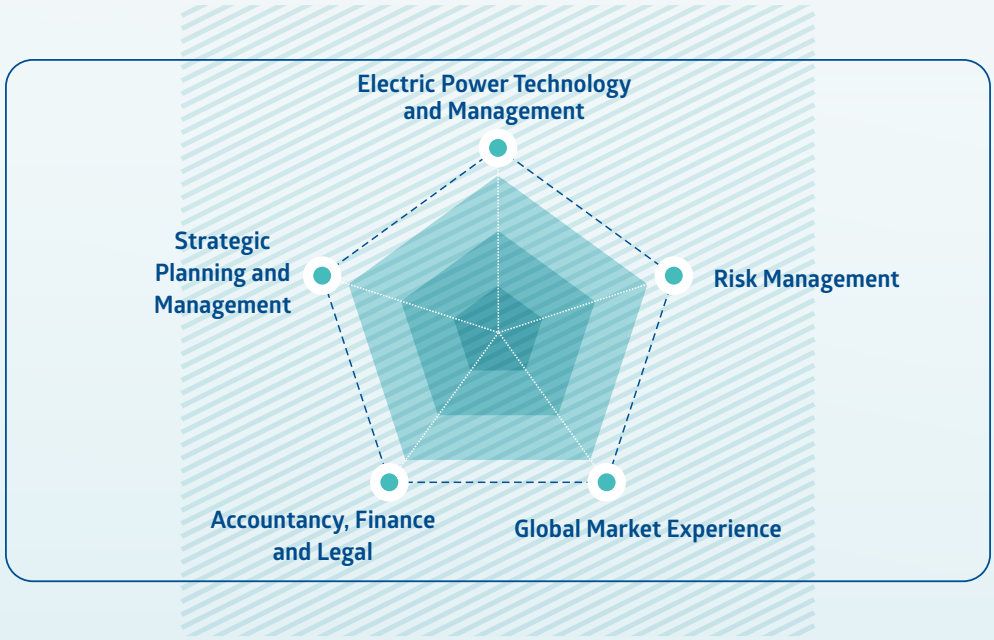
Non-executive Directors (including the independent non-executive Directors) constitute the majority of the Board. More than one-third of our Board members are independent non-executive Directors, helping the Board to make more effective independent judgment.

Both the Audit Committee and the Remuneration and Nomination Committee comprise all independent non-executive Directors, and both committees are chaired by an independent non-executive Director. The Company has a vigorous nomination policy for selection, appointment and re-election procedures and process for Directors.

Independent non-executive Directors are entitled to directors' fees reflecting their membership of the Board committees and additional fees for attendance of meetings. None of these Directors receives remuneration based on the performance of the Group, and none of them are entitled to any incentive program of the Group. All non-executive Directors do not have a service contract with any member of the Group and they have declined from receiving any emolument from the Company.

The Board adopted a "Board Diversity Policy" in August 2013 and reviewed the implementation and effectiveness of the policy annually. To identify suitable qualified candidates to become Board members, it should be based on a number of diverse aspects, including Board members with different background, skills, regional and industry experience, gender and other qualities, that are in balance and complementary with each other, creating synergy, and enabling the Board to function effectively as a whole.

The current Board composition reflects a diverse mix of various experience, capabilities, skills and expertise in the following fields that are suitable for and relevant to the Company's businesses:

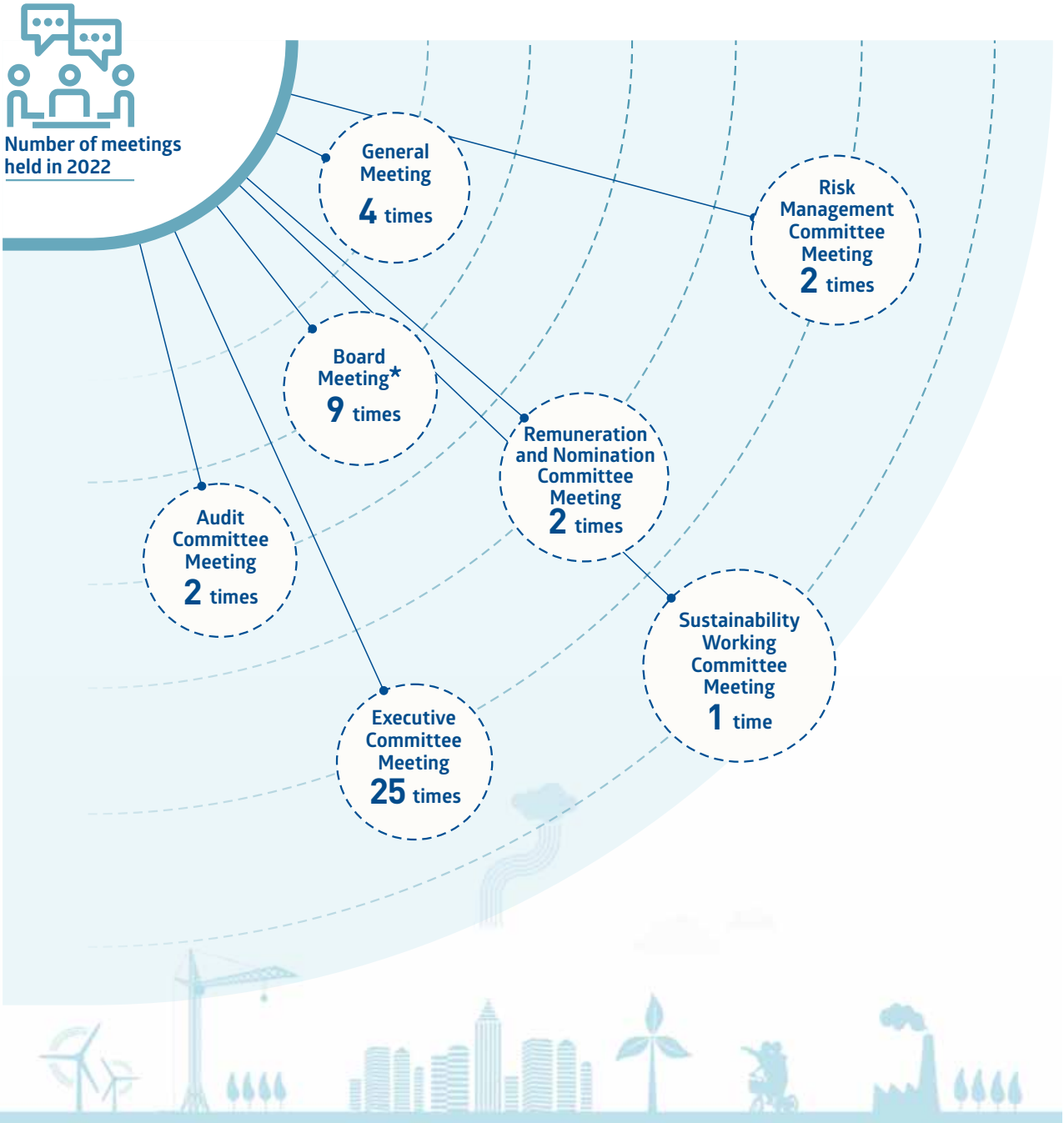


In late March 2023, the Remuneration and Nomination Committee and the Board approved the nomination of Ms. HUANG Qinghua to take up the position of Mr. XU Zuyong who has tendered his resignation as a non-executive Director with effect from the conclusion of the upcoming annual general meeting to be held on 8 June 2023. For details, please refer to the Company's announcement dated 18 April 2023.

Subject to the shareholders' approval of Ms. HUANG's appointment, the Company believes that the Board would reasonably achieve its gender diversity.

Governance Activities

The Company has formed a corporate governance structure with effective checks and balances which the shareholders, the Board, the four committees under the Board and the management operate independently and in coordination.



* Two of which were non-executive Directors meetings.

For further information on the corporate governance activities of the Group during the year 2022, please refer to the Corporate Governance Report contained in the Annual Report 2022.

Sustainability Management

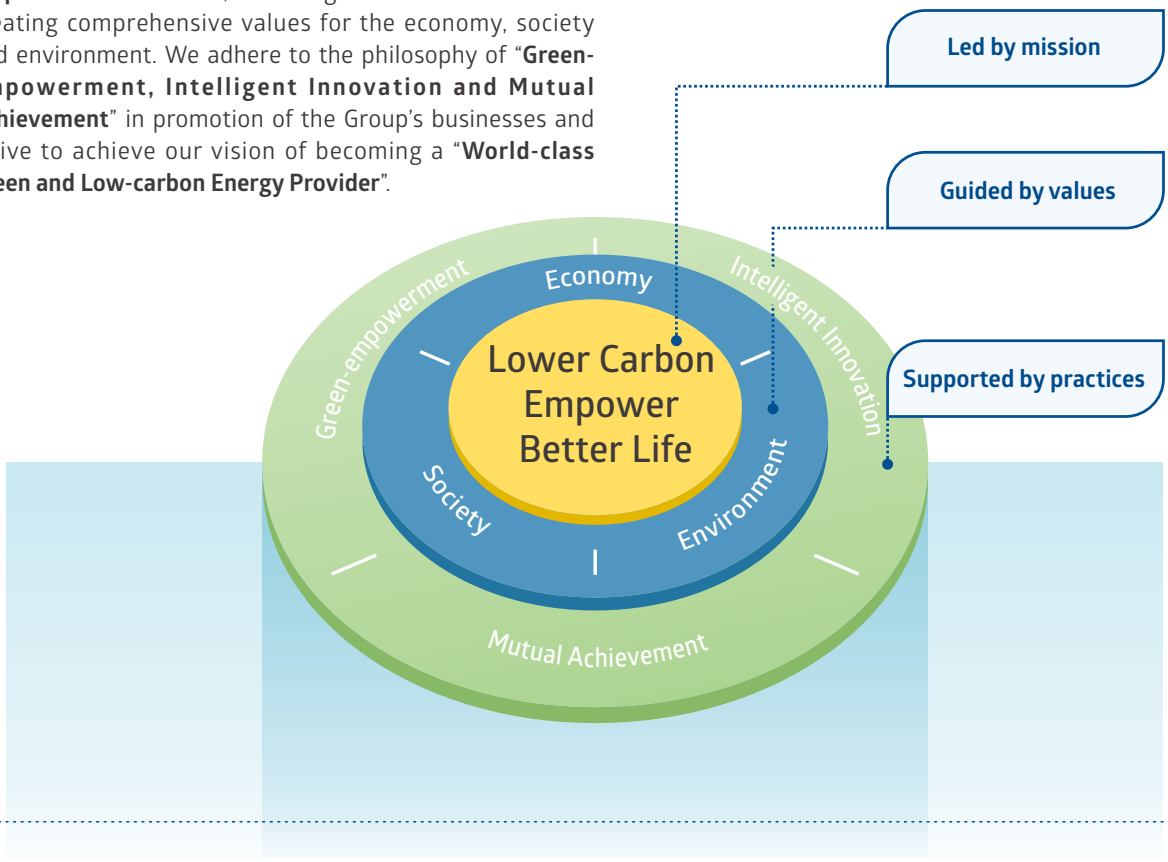
Maintaining effective sustainability governance is pivotal to building a sustainable future of the Group. The Group has established a sound ESG risk management system to enhance its performance and facilitate effective management of sustainability issues. In 2022, the Board, the Risk Management Committee and the Sustainability Working Committee set clear roles and responsibilities for the Group's sustainable development. The Board has regularly reviewed the corporate governance framework and mechanisms of the Company to ensure compliance with national and international best standards and are supported by effectiveness practices.

Under the global trend of increasing focus on ESG matters, integrating ESG into business strategies is increasingly recognized as a core part of good governance and effective risk management. In March 2023, the Board approved the establishment of a new Strategic and Sustainable Development Committee which is separate from the present Risk Management Committee and shall specifically oversee the ESG development of the Group as a whole, monitor changes in ESG-related requirements, supervise the Sustainability Working Committee, and report ESG-related matters to the Board for more regular discussion. The Sustainability Working Committee will then be reassigned as a sub-committee under the Strategic and Sustainable Development Committee accordingly. For details, please refer to the Company's announcement dated 12 April 2023.

We fully complied with the Listing Rules of the Hong Kong Stock Exchange and ESG information disclosure requirements, and disclosed the KPIs of the Company in areas of environmental, social and governance for the year 2022 in detail in this report, which was approved by the Board at the Board meeting held on 23 March 2023.

Conceptual Model

We are committed to the mission of "**Lower Carbon Empower Better Life**", insisting on the orientation of creating comprehensive values for the economy, society and environment. We adhere to the philosophy of "**Green-empowerment, Intelligent Innovation and Mutual Achievement**" in promotion of the Group's businesses and strive to achieve our vision of becoming a "**World-class Green and Low-carbon Energy Provider**".

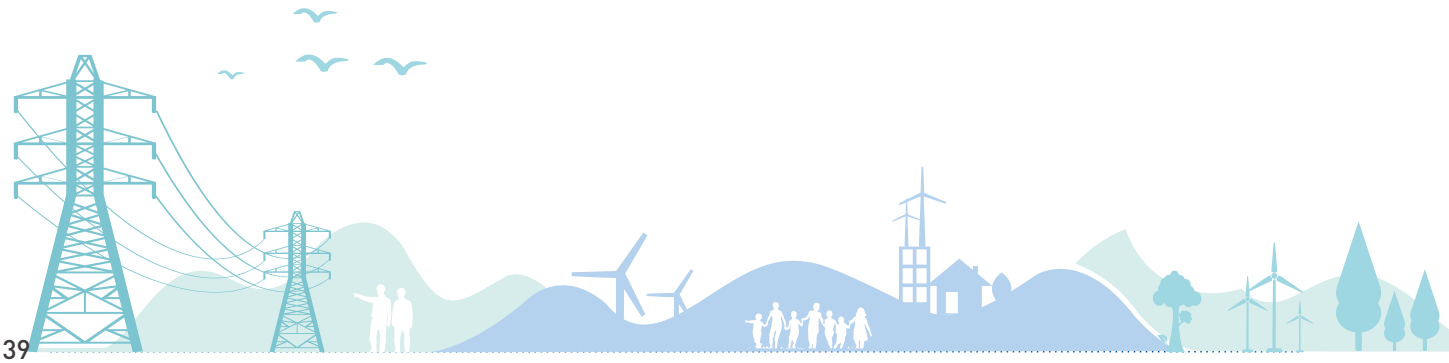


ESG Statement of the Board

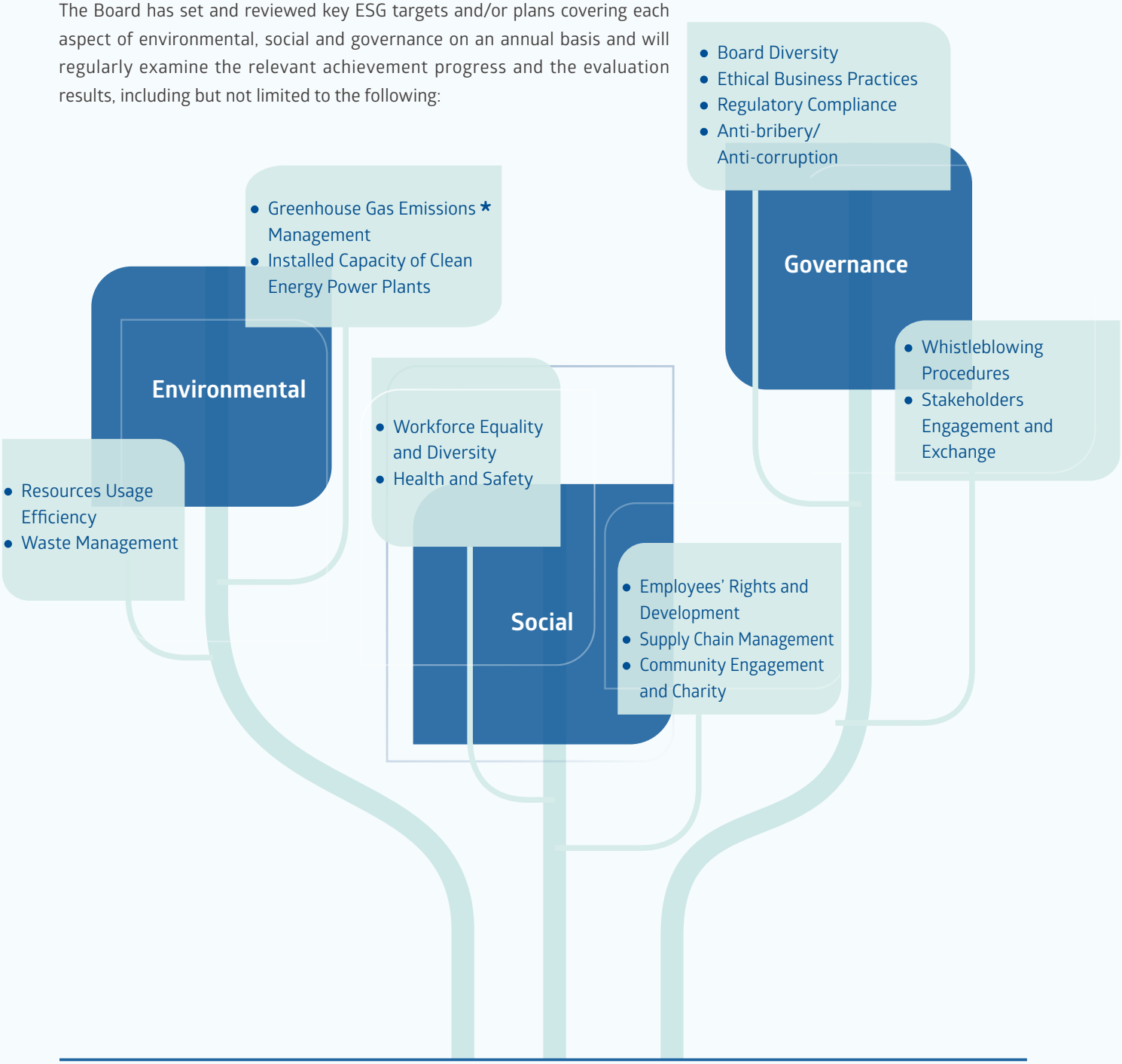
The Board endeavors to promote ESG issues of the Group and attaches high importance to its sustainability management. For this purpose, it has set up a three-tier governance structure. Employing a "top-down" management approach, it identifies, assesses, manages and supervises ESG issues on an ongoing basis to ensure that the Group (i) incorporates ESG issues into overall strategic planning; and (ii) follows our principles to comprehensively improve the Group's ESG management standards so as to achieve the sustainability mission of the Group.

With the assistance of the Risk Management Committee and the Sustainability Working Committee, the Board gives directions and oversees sustainability strategy and risk management in a holistic manner. It also acknowledges the following functions and responsibilities as the leader of ESG initiatives:

- Promote a "top-down" culture to ensure that management has incorporated ESG into the decision-making process and business operations of the Group;
- Understand the potential impacts and relevant risks of ESG issues on the business model of the Group;
- Supervise the assessment of environmental and social impacts of the Group;
- Conduct materiality assessment and implement reporting procedures to monitor the effectiveness of various initiatives;
- Review and approve sustainability reports and other ESG-related management policies of the Group; and
- Meet expectations of investors and regulators.



The Board has set and reviewed key ESG targets and/or plans covering each aspect of environmental, social and governance on an annual basis and will regularly examine the relevant achievement progress and the evaluation results, including but not limited to the following:

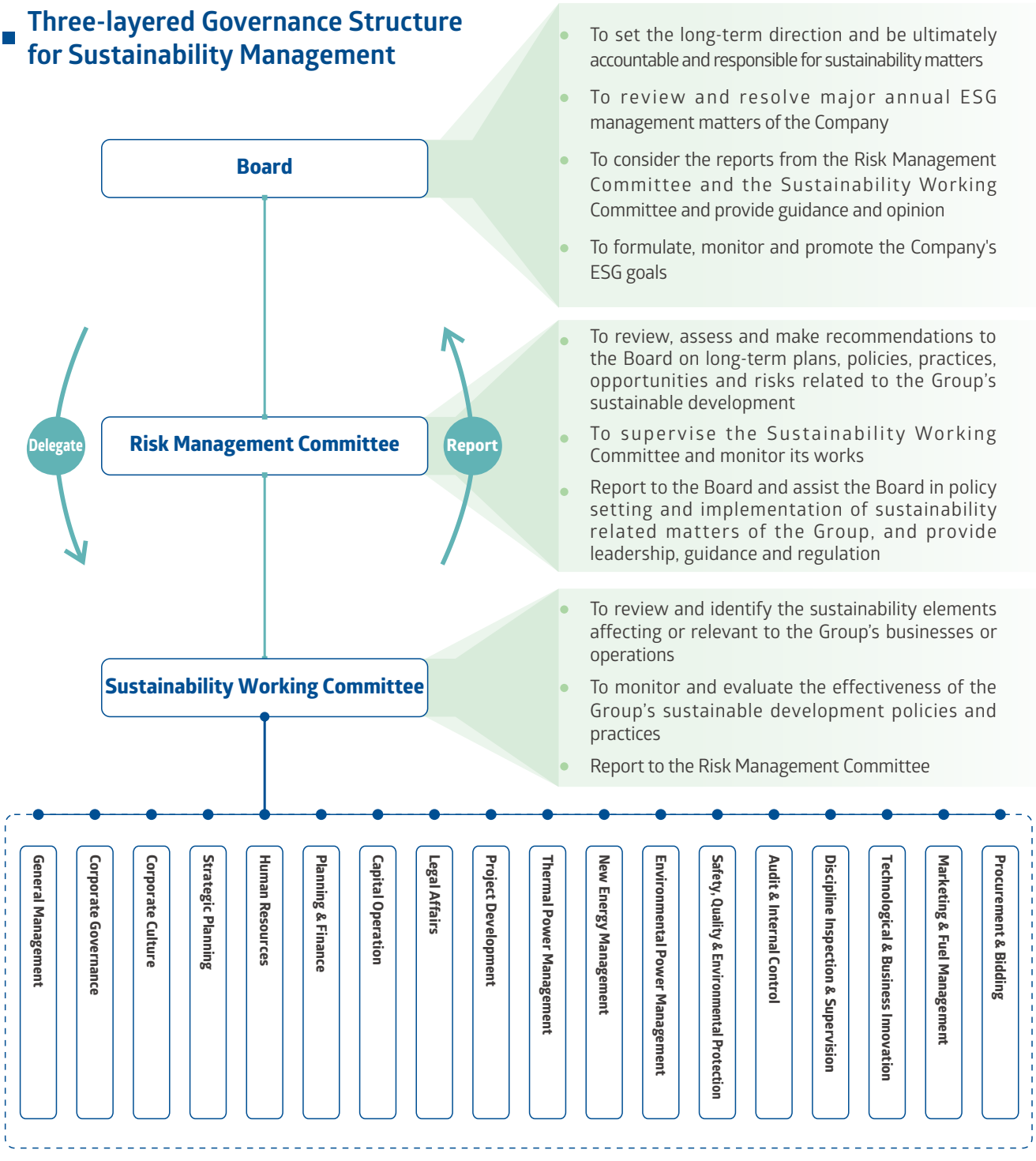


* **Greenhouse Gas Emissions:** Based on our businesses, the Group's greenhouse gas emissions are mainly carbon dioxide, which principally originate from fuel combustion of our coal-fired power plants in the course of power generation.

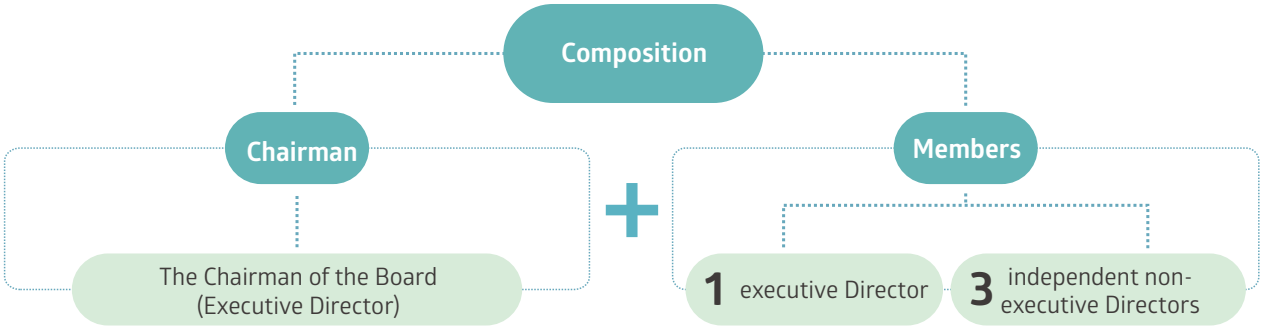
Sustainability Governance Structure

The Company has established a comprehensive organizational structure for sustainable development, in which we count on the Sustainability Working Committee to carry out ESG-related matters of the Group, and to report to the Risk Management Committee and the Board in a timely manner, thereby further promoting the Group's practices for sustainable development.

Three-layered Governance Structure for Sustainability Management



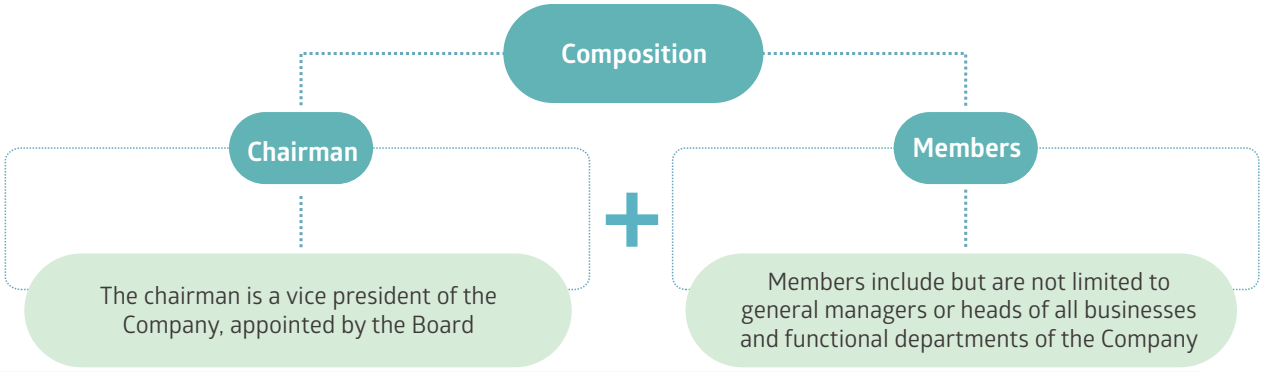
Composition of Risk Management Committee



Number of meetings

- Risk Management Committee meetings are divided into regular meetings and ad hoc meetings. There are at least two regular meetings each year. Ad hoc meetings are convened as and when necessary by committee members or the Board.

Composition of the Sustainability Working Committee



Number of meetings

- Reports at least once to the Risk Management Committee each year. The number of times of reports and meetings of the working committee are determined by its chairman.
- Ad hoc meetings are convened by the chairman of the working committee according to work requirements.

The Board is scheduled to meet at least once annually with ad hoc meetings convened as and when necessary to discuss ESG-related matters. During these meetings, the Board reviews its ESG management approach and strategies, process of evaluating, prioritizing and managing material ESG-related issues, and the progress made against ESG-related goals and targets.

Board Engagement and Practice in ESG

In 2022, the Board, with the assistance of the Risk Management Committee and the Sustainability Working Committee steers and oversees the Group's overall sustainability strategy and sustainability risk management. Information on sustainability risks and performance has been reported to the Board through the Risk Management Committee.

2022 ESG-related Governance Activities

In order to respond to and implement the importance and requirements the Board placed on ESG, management initiated systematic research on the Group's ESG management works and organized multiple discussion sessions on the same. Management focused on the requirements of three different sets of standards, including domestic, international and compliance for companies listed in Hong Kong, and through assessment reports of internationally renowned ESG rating agencies on the ESG rating of China Power, familiarized the performance and observation of China Power in ESG performance from the perspective of rating agencies and comprehended the position of China Power amongst its listed peers, thereby analyzing the current status, advantages and disadvantages of China Power in ESG-related works.

Based on the foundation of preliminary scientific research, management proposed the ESG framework, which defined, among other things, principles, scope, governance structure, mechanisms and specific missions of ESG-related works, to promote sustainability in accordance with national and international norms, and imbed ESG-related works into the development of the Group.

Board

- Approved the Sustainability Report 2021
- Reviewed the questionnaire on material topics analysis in relation to the sustainable development of the Group for 2022
- Deliberated on risk management and governance actions for 2022 proposed by the Risk Management Committee and the Sustainability Working Committee
- Discussed the Corporate Governance Report and follow-up tasks subsequent to the amendments to the Corporate Governance Code and provisions of the Listing Rules, which included revisions on ESG-related matters and the relationship between corporate governance and ESG, etc.

Risk Management Committee

- Reviewed the questionnaire on material topics analysis in relation to the sustainable development of the Group for 2022
- Identified and determined economic, social and environmental risks of the Group for 2022, and formulated relevant responsive measures
- Reported on the risk management report and the production safety risk management report for the first half of 2022

Sustainability Working Committee

- Reported to the Risk Management Committee and the Board on sustainability related work performed in 2022 and work plan for 2023
- Formulated the questionnaire on material topics analysis in relation to the sustainable development of the Group for 2022 and instigated internal and external survey activities

Executive Committee

- Approved systems in relation to safety management such as the "China Power Production Safety Reward and Penalty Regulation" and the "China Power Production Safety Reward Implementation Rules", in order to improve reward and penalty mechanisms in relation to production safety though positive and negative incentives
- Discussed and reviewed the internal audit work report for the first half of 2022, and suggested to use internal audit service providers to fulfill ESG obligations
- Discussed arrangements for management of ESG-related work of China Power, suggested the Company to thoroughly study ESG-related management systems and arrangements for the onshore and offshore corporations of the Group, and prepared a special report on ESG management

2023 ESG Actions and Related Work Plan

In 2022, the Board extensively participated in, and discussed, the annual material topics analysis survey and goal setting in relation to ESG. It has identified 26 material topics in aggregate, and commenced surveying with internal and external stakeholders, which formulated the material topics matrix for 2022. In order to enhance the level of ESG management of China Power, the Board resolved to commence the ESG enhancement action in 2023 (the "**ESG Action 2023**").

Details of China Power's ESG Action 2023

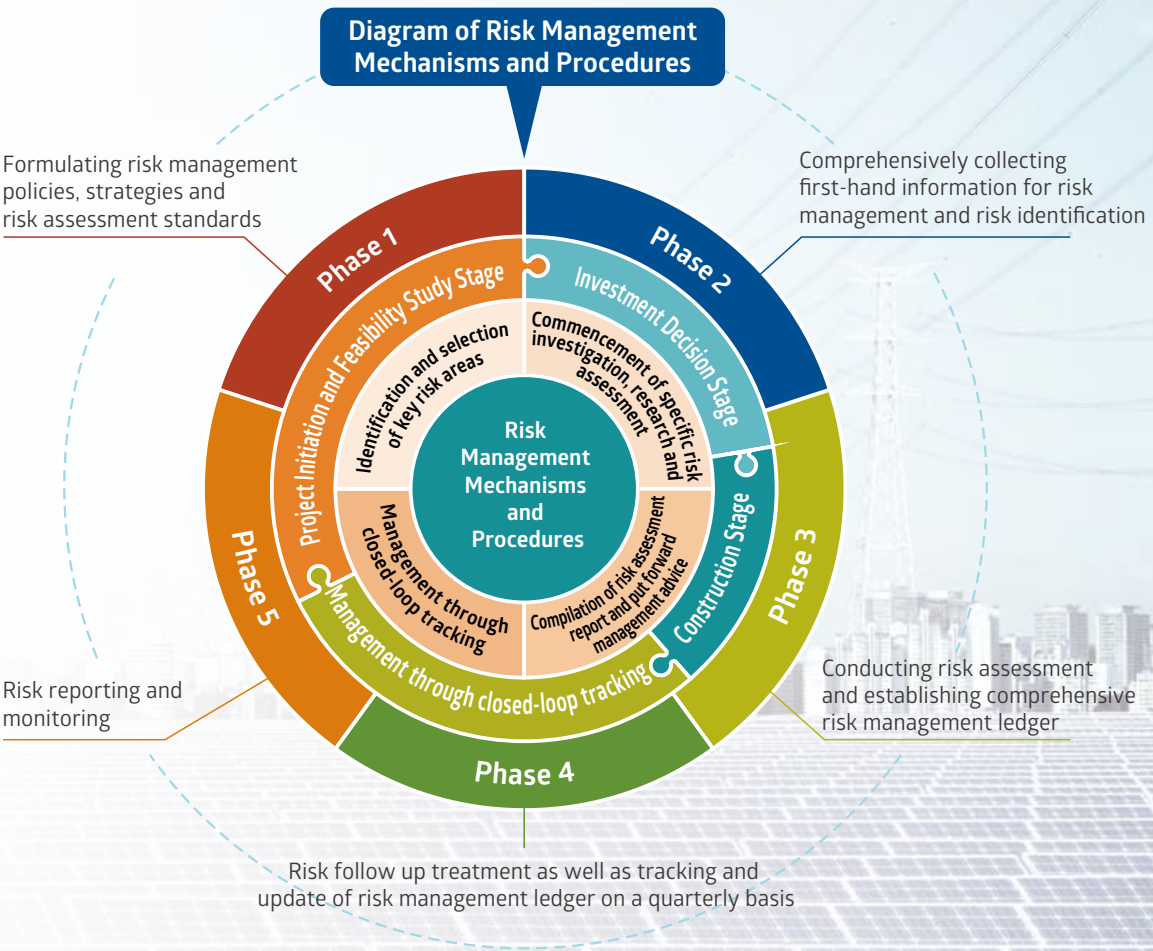
- Refine the plan on "Dual Carbon Goals" strategic transformation and development of the Company;
- Refine the plans and key policies in relation to social responsibility of the Company;
- Create a comprehensive ESG organization working mechanism by benchmarking against national requirements of high quality green development, optimizing the governance system to adapt to the green transformation of the Company, and optimize roles and responsibilities of various functional departments;
- Enhance implementation of strategies and research on policies to highlight strategic leadership;
- Further strengthen working procedures and enhance the quality of professional research works in response to the disclosure requirements of the Hong Kong Stock Exchange on financial risks associated with climate change;
- Optimize the organizational structure of the Group to meet ESG targets and comply with mandatory requirements;
- Perform human resource evaluation and allocation adjustment to meet ESG targets and related work requirements; and
- Commence and organize a series of ESG-related trainings.

Risk Management

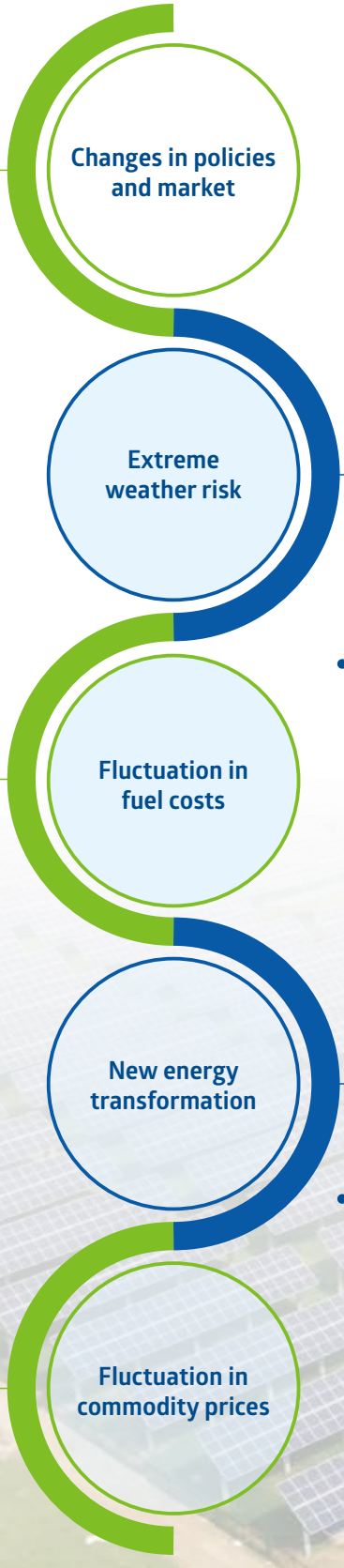
The Board acknowledges that risk management provides strong support and basic guarantee for the high-quality and sustainable development of the Group. To this end, the Board regards risk management as proactive measures for creating efficiencies and insists on building a risk management culture of "value protection, value creation and strengthening core competitiveness" through active risk management activities.

The Group has established a comprehensive risk management organizational system covering the Board, the Risk Management Committee, the management, the risk management department and all employees, and a risk management structure with full integration of three functions of "business, support and assurance" was formed, which promotes risk management responsibilities to all employees and the entire business process.

The Group has adopted the risk management framework standards issued by The Committee of Sponsoring Organizations of the Treadway Commission (and its updated standards from time to time). It has also studied and incorporated the ISO31000 Risk Management Guidelines (internal control and risk management) of the International Organization for Standardization as well as the concepts and management logic of the "Three Lines Model" updated in July 2020 by the Institute of Internal Auditors so as to establish and continuously improve the risk management structure of the Group to meet its strategic and operational needs.



Major ESG Risks of the Group in 2022



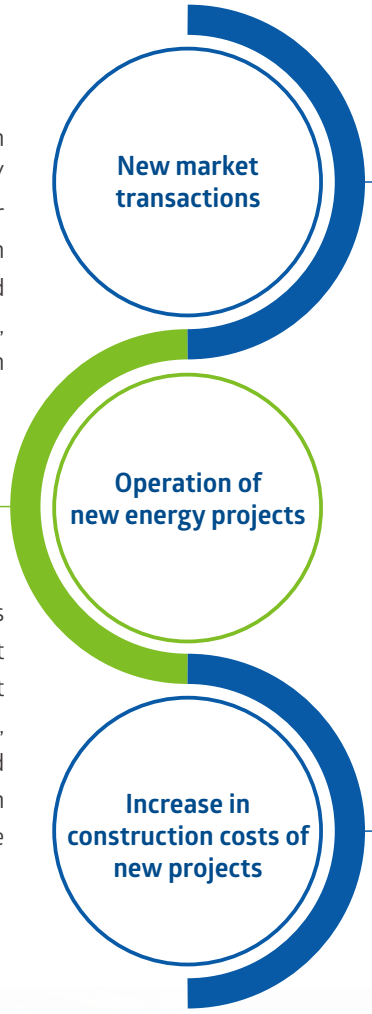
- The weather condition in China in 2022 was complex with significant climate anomalies and frequent extreme weather events. The duration of high temperature in summer reached a record high with more frequent heavy rainfall. There was flooding caused by heavy rainfall in Southern China and Northeast China while regional and periodic droughts became more frequent. The frequent occurrence of extreme weather events was likely to cause damages to assets, reduction in power generation, damages to facilities as well as increase in operation and maintenance costs. Given the reduced availability of water, wind and light resources, the utilization rate of new energy projects decreased, which affected the risks of power supply and revenue.

- The State Council issued the "2030 Carbon Emissions Peak Action Plan", and the Ministry of Ecology and Environment of the State Council published the "Management Measures for Carbon Emissions Rights Trading" and other relevant institutional documents, which set higher requirements on industrial structure and energy structure. In addition, the intense competition of new energy projects in 2022 placed higher demands on investors' investment strategies, execution and management capabilities, which increased the risks of successful bidding for new investment projects.

- The tight supply of coal and the pressure of maintaining stable supply of coal remained throughout 2022. The imbalance between supply and demand was common with coal prices fluctuating within a broad price range. There were risks of uncertainty in safeguarding the supply and purchase prices.

- With the new landscape of rapid "green and low-carbon" transformation and development of the Company, as well as the practical needs of management for various new energy and emerging industries, there is an urgent need to accelerate the enhancement of capabilities in the construction and management of new energy projects.

- Due to the surging prices for commodity materials required for daily maintenance and repair of power generating units, certain suppliers refused to sign contracts or failed to fully fulfill the contracts, which caused a shortage of supply in materials and affected the safe operation of the power generating units.



- The supply and demand situation in the carbon trading and green power/ green certificate markets was unclear with a high degree of uncertainty. Green certificates have been highly priced and lacked a secondary market for trading, which resulted in poor trading liquidity in the market.

- Staffing ratio was insufficient to meet market demand. Newly operating new energy projects also lacked, to a certain extent, staff with the capability in trading of electricity, green power, green certificates and ancillary services, resulting in the increase in operational risks.

- Prices of building materials, components and other materials and equipment have risen sharply, making it difficult to control project construction costs, resulting in over-budget, which led to contractual disputes and delays in construction schedules and delaying the release of investment returns.

Responsive Measures

- Strengthen policy research and market analysis, pay close attention to the introduction of new industry and market policies, interpret the direction of policies, and formulate responsive strategies.
- Carry out comprehensive assessment of coal-fired power generating units with high resources consumption and conduct technical upgrade for energy-saving.
- Consolidate our advantageous position as the first-mover in the "Three New" industries which are "technology-based, service-oriented and light-capital assets", and increase our efforts in supporting and nurturing these industries.
- Carry out solid research and analysis for acquisition of new projects and self-developed projects regarding site selection, natural resources, land resources, power access and consumption and other boundary conditions.
- Increase the number of long-term agreements for coal supply, pay close attention to the utilization rate of long-term agreements, reasonably adjust procurement structure, and control and reduce procurement costs.
- Adjust the management and control capability and mode promptly, and accelerate the establishment of a more sound management system and structure as well as talent pool that are necessary for and in line with the Group's strategic transformational development.

For further information on the Group's overall risks and the related key responsive measures, please refer to the Risk Management Report in the Annual Report 2022.

Compliance with Laws and Regulations

We have developed China Power's legal compliance framework, and promoted the integration of legal risk prevention, compliance management and legal supervision, which is fundamental to the stable and long-term sustainable development of the Group.

Strengthened compliance responsibility management

- Further defined responsibilities at different levels including the Board, the Audit Committee, the Executive Committee, the management, business units, compliance management departments and all employees.
- Established a compliance management system for assignment of responsibilities with the compliance management department taking the lead and directed all subsidiaries of the Company to observe legal compliance.

Enhanced compliance management capacity

- Launched group-wide special activities to promote legal compliance and internal control.
- Carried out compliance inspection of subsidized new energy projects and due diligence of key compliance issues for new energy projects.
- Strengthened compliance review and closed-loop management of investment decision for new projects acquired, identified legal compliance risks and made recommendations on prevention and control.
- Conducted trainings on legal and regulatory compliance for all subsidiaries of the Company.

Continuous improvement of regulatory compliance

- Organized and carried out system completeness check, comprehensively sorted out and identified problems and deficiencies in the Company's regulatory compliance system and formulated rectification and improvement plans.

Case

China Power conducted special training on regulatory compliance requirements for listed companies

On 29 September 2022, China Power organized a special training on regulatory compliance requirements for listed companies. The Company invited external legal advisers to introduce compliance with the laws and regulations of China and Hong Kong and the Listing Rules of the Hong Kong Stock Exchange. A detailed analysis was presented on disclosure of inside information, notifiable transactions and connected transactions of listed companies.

Over 400 employees of the Group in total attended the training, which effectively strengthened the participants' knowledge and practice in respect of regulatory compliance, risk management and internal control related to listed companies, and enhanced their awareness and capability of compliance and risk control.

Whistleblowing Policy and Anti-corruption

Continuous improvement of anti-corruption and whistleblowing policies are inducive to significantly reduce the cost of supervision, open up channels for public supervision, and reduce corporate management risks. We are in strict compliance with laws and regulations regarding corruption and bribery prevention, including the Company Law of the PRC, the Anti-Money Laundering Law of the PRC and the Anti-Unfair Competition Law of the PRC. We continuously improve the internal integrity supervision system, and enhance the focus and effectiveness of anti-corruption work, to create a clean and standard corporate atmosphere.

2022

No. of integrity and anti-corruption training carried out*
465

Participants in anti-corruption and integrity education and training activities
42,286 **person-times**

No. of legal cases regarding corrupt practices
0

No. of anti-corruption special report meetings held at all levels
95

Timely handling of whistleblowing incidents with
100% satisfaction rate

Work Highlights in 2022

Optimization of the oversight mechanism

- Established the "Grand Oversight" model and formulated the "Implementation Rules for Sharing Results of the 'Grand Oversight'" and the "Guidebook for 'Grand Oversight' of China Power", among other things, to form a supervisory network of coordination, integration, complementary advantages, and results sharing.
- Formulated the "Working Measures for Handling of Whistleblowing and Accusations" to regulate the acceptance of whistleblowing, verification, feedback and confidentiality information of the whistleblowers, and to provide incentives for whistleblowing.
- Standardized whistleblowing procedures to explicitly stipulate the reward for "whistleblowers" who reported violations in real names and helped the Group to avoid significant economic losses, while offering protection for the safety of whistleblowers, maintaining strict confidentiality of the reported accusations and any action of retaliation against the whistleblowers will be dealt with severely.
- Set up a counter-checking mechanism for false whistleblowing, which stipulates that whistleblowing and accusations that are considered to be false and fabrication will be handled seriously, and serious cases of false and malicious accusations will be dealt with severely.
- Formulated the "Management Measures for China Power's Regulatory Supervisors" to select and employ personnel who adhere to principles, behave honestly, and are good at detecting problems as internal supervisors to supervise internal fraud and development of a clean administration within the Group. The supervisors have sufficient independence and can directly report to China Power's Regulatory Department. It is clearly stipulated in the aforementioned measures that supervisors shall be strictly protected, and entities and responsible individuals interfering with their performance of duties or retaliating against the supervisors shall be severely penalized.

* Includes various online and offline anti-corruption trainings provided to Directors and employees.

Promoted rectification through case studies

- Thoroughly analyzed the causes of the problems found in the process of handling the whistleblowing and accusations, issued 11 proposals to relevant entities or departments and instructed them to implement the rectification measures to fix any management loopholes.
- Improved management systems in key areas such as the recruitment of employees, financial management and management of overseas projects, optimized the mechanism of delegation, exercise and control of authority, adjusted the checklist of corporate authorities and responsibilities and regulated the boundaries of such authority and responsibilities on a continuous basis.

Conducted supervision and inspection

- Carried out special supervision in respect of fly ash sales and adopted a mode integrating self-investigation, self-rectification and cross-checking to thoroughly investigate the integrity risks in the process of fly ash sales.
- Specialized supervision was carried out on general management staff who performed compliance duty. Focusing on key areas such as operation management, entrusted management, provision of services and execution of tasks, we carried out special governance works, identified 184 problems, completed 171 rectifications, and continuously followed up and urged the rectification of problems, so as to continuously standardize the mechanism for supervision and control of the exercise of authority.
- Carried out special investigation and supervision works to thoroughly investigate the performance of duties, exercise of rights, and integrity of internal management personnel of the Group, and effectively rectified violations by individual management personnel in relation to claiming housing subsidies and other subsidies.

Strengthened integrity education

- Prepared the "Implementation Plan for Strengthening the Formation of Integrity Culture in the New Era", and made the formation of integrity culture an important component of the formation of our honest corporate culture.
- Compiled 24 internal regulations and systems related to integrity operation, and formed a "Compilation of Integrity Operation System", and distributed it to all employees.
- Released 9 typical cases of warning education, and released 11 publicity and educational videos on the "Clean Classroom" column through the official account on WeChat.
- Issued reminder letters to 282 management personnel in our affiliated companies on integrity operation, and educated and guided them to be self-disciplined, well-behaved and set good examples.
- Strengthened integrity education for young management personnel, carried out integrity talks with 460 young management personnel, advised them to hold the "first line of defense" for integrity operation and firmly built the ideological defense line against corruption and bribery.
- Two warning educational conferences were held during the year, which were attended by more than 2,600 employees of the Group. During the conferences, typical cases of non-compliance within organizations were presented by watching warning educational videos together for deterrence of unacceptable behavior.

Case

China Power held a conference on integrity education through case studies

On 5 August 2022, China Power held a conference on integrity education to promote rectification through case studies. Participants watched the warning educational video together, which took typical cases as cautionary examples and guidance, alerting employees to bear in mind compliance with law, firmly adhere to the bottom line of discipline and the red line of law.

Members of the senior management and members of each functional departments at or above managerial level attended the meeting at the Company's office in Beijing. The employees of the subsidiaries of the Company had a respective sub-venue, with over 1,300 members of the leadership team, middle level department-heads, and key positions in key areas of the Group's operations also attended the meeting.

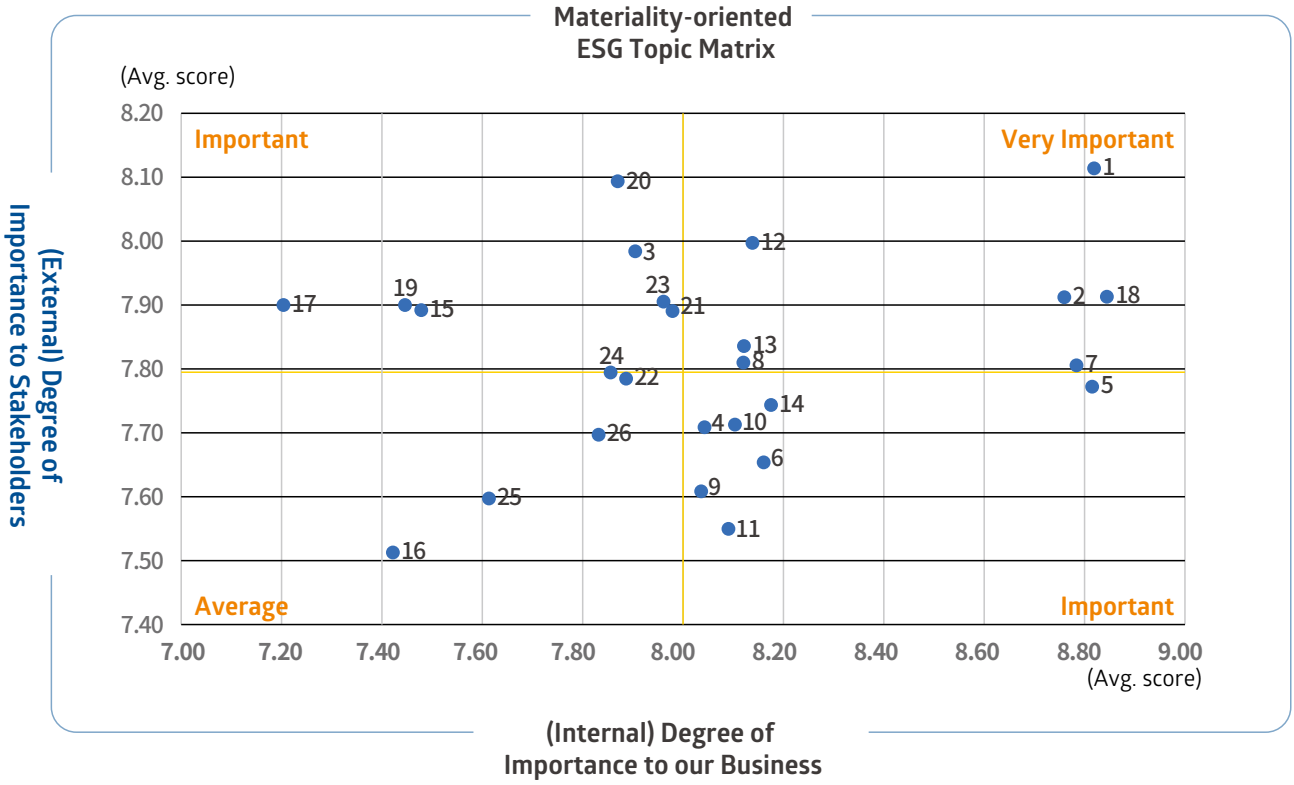
Stakeholders Engagement

Stakeholders	Expectations and Requirements	Modes of Communication and Participation	Our Responses
Regulatory authorities	• Legal compliance • Compliance in operations • Paying taxes according to laws • Energy conservation and emissions reduction • Promoting employment	• Participating in relevant meetings • Reporting on work done • Information submission	• Accelerating the transformation of economic development • Complying with laws and regulations • Maintaining active communication and engagement with relevant regulatory authorities
Investors	• Increasing profitability • Stable dividend distribution policy • Increasing market value • Reducing operating risks of the Group	• Press conference for results announcement • Roadshow • Reverse roadshow • Investors conference • General meeting • Daily communication	• Communicating closely with investors and improving the timeliness of information disclosure • Striving to enhance profitability of the Group • Adopting market recommendations and improving management of the Group
Employees	• Protecting legitimate rights and interests of employees • Ensuring occupational safety and health • Providing reasonable remuneration and benefits • Fostering fair career development opportunities • Showing care for retired employees	• Staff congress meeting • Staff forum • Reasonable suggestion • Openness of factory affairs • Daily communication	• Signing and performing labor contracts according to laws and implementing democratic management • Establishing occupational safety management system and strengthening prevention of occupational diseases of staff • Establishing sound remuneration and benefits policy • Providing systematic career planning and employee development training • Paying visits to and providing services for retired employees
Customers	• Contract performance • Quality assurance • Service guarantee • Mutual benefit and win-win result	• Sales and order-placing meetings • Customer satisfaction survey	• Providing quality, efficient, safe and green energy products and services • Keeping trade secret

Stakeholders	Expectations and Requirements	Modes of Communication and Participation	Our Responses
Suppliers	• Long-term cooperation • Meeting commitments • Open, fair and just procurement • Joint development • Mutual benefit and win-win result	• Supplier meeting • Transparency of tendering and bidding information • Strategic cooperation • Cooperation agreement	• Implementing open and transparent business principles and processes • Standardizing management and performing contracts and agreements • Implementing responsible procurement policy
Creditors	• Strong debt-paying ability • Repaying principal and interest on time • Mutual trust and cooperation	• Cooperation agreement	• Repaying loans as scheduled • Strengthening communication and engagement
Partners	• Building harmonious, interactive and amicable relationship • Achieving win-win result and mutual growth	• Exchange visits among senior management • Strategic cooperation	• Broadening channels of communication and cooperation • Strengthening communication and cooperation with stakeholders
Peers	• Strict compliance with policies and industry regulations • Creating a healthy environment for competition • Promoting the development of power industry	• Industry associations • Seminars	• Ensuring strict compliance with industry policies and regulations • Deepening power system reform and improving core competitiveness of the Company • Strengthening industry communication and promoting industry development
Community	• Supporting local economic development • Protecting the living environment of the community • Building harmonious relationship with the community	• Collaboration and joint contribution • Charitable activities • Publicity activities	• Supporting economic development of the areas where we operate • Organizing environmental protection and charitable activities • Organizing community volunteer service activities

Assessment of Material Topics

We continued to revise and adjust the material topics of the Group and conducted an online questionnaire thereof. In this survey, a total of 1,261 questionnaires were collected, mainly involving management and employees of the Group (internal aspects); and the government, partners, suppliers, regulators, investment institutions, CSR/ESG industry experts, shareholders and the general public (external aspects). According to the statistical results of the survey, the weighted calculation method was ultimately adopted to determine the two-dimensional material ESG Topic Matrix.



Material ESG Topic

No.	Topic	No.	Topic	No.	Topic
1	Serving for implementation of national strategies	10	Reduction of various types of emissions	19	Responsible supply chain
2	Reform and development	11	Conservation of energy and resources	20	Ensuring energy supply
3	Implementation of strategic transformation	12	Development and utilization of clean energy	21	Protection of employees' rights and interests
4	Safeguarding shareholders' rights and interests	13	Technological renovation and innovation in relation to environmental protection	22	Career development of employees
5	Corporate governance by law	14	Conservation of ecological environment	23	Occupational health and safety of employees
6	Risk management	15	Integrated intelligent energy	24	Caring for employees
7	Anti-corruption	16	Green finance	25	Volunteer and charitable activities
8	Intelligent innovation	17	Serving rural revitalization	26	Win-win cooperation
9	Combating climate change	18	Production safety		

China Power
Sustainability Report 2022

Environmental and Climate Governance

- Combating Climate Change
- Promoting Green Power Generation
- Participating in Market-oriented Trading
- Adhering to Green Production
- Protecting the Natural Environment

In full support of China's national goals of "Carbon Emissions Peak" by 2030 and "Carbon Neutrality" by 2060 (the "**Dual Carbon Goals**"), China Power identifies and analyzes the correlation between climate and environmental risks and its businesses, and actively takes actions to address climate change. We have adopted a strategic development model that focuses on the development of clean and low-carbon energy and emerging industries of green energy as the "dual-wheel drive" to fundamentally respond to the core requirements of sustainable development.

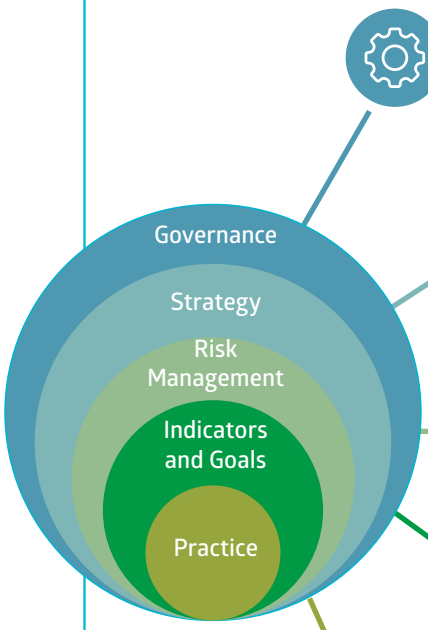
Sustainable Development Goals of the United Nations

6 CLEAN WATER AND SANITATION	Ensure availability and sustainable management of water and sanitation for all
7 AFFORDABLE AND CLEAN ENERGY	Ensure access to affordable, reliable, sustainable and modern energy for all
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Ensure sustainable consumption and production patterns
13 CLIMATE ACTION	Take urgent action to combat climate change and its impacts
14 LIFE BELOW WATER	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15 LIFE ON LAND	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Combating Climate Change

It has become a global consensus to actively address climate change. Against the current backdrop, we have further comprehended the general requirements of the "Dual Carbon Goals" and integrated climate issues into our overall corporate strategy. With reference to the two consultation drafts of "Sustainability Disclosure Standards of IFRS 1 — General Requirements for Disclosure of Sustainability-Related Financial Information" and "Sustainability Disclosure Standards of IFRS 2 — Climate-Related Disclosures" on which the International Sustainability Standards Board (ISSB) sought comments in March 2022, we have further improved our environmental and climate governance system based on the recommendations of the Task Force on Climate-related Financial Disclosures (the "**TCFD**") in an effort to combat climate change.

Climate governance framework of China Power



Governance

The Board established the Sustainability Working Committee under the Risk Management Committee in September 2020 to provide leadership, guidance and supervision on the Group's policy formulation on, and practical implementation of, sustainable development matters.

Strategy

China Power analyzes the impacts of physical and transition risks of its current main businesses brought by climate change to formulate its strategic directions and implement business transformation accordingly.

Risk Management

We have a Risk Management Committee under the Board, which is responsible for supervising the risk management structure of the Group, providing advice to the Board and reviewing its effectiveness. Experienced personnel are directly in charge of the risk management department (audit and internal control), thereby continuously and comprehensively enhancing the risk management system of the Group.

Indicators and Goals

In October 2021, China Power released the Outline of the New Development Strategy, and set the short-, medium- and long-term goals. We have subdivided the goals and assigned various performance indicators in order to conduct annual review with objective and quantitative criteria.

Practice

China Power has regularly invited external professional parties to provide training on ESG knowledge for the management and various functional departments and to review the effectiveness of the Group's ESG-related works.

Governance for Climate Change

Under the Company's three-layered governance structure for sustainability management, the Sustainability Working Committee is the leading body for identifying climate-related issues, analyzing climate-related risks and planning the responsive measures for climate change. The work of the Sustainability Working Committee is reviewed by the Risk Management Committee and ultimately considered and approved by the Board.

Case

Risks in relation to environment and climate change have been taken into account in the Company's risk management

On 25 August 2022, the Board reviewed the "Risk Management Report for the First Half of 2022", and proposed that in the development of new energy business, adequate analysis of environmental and climate change risks should be performed, and contingency plans should be prepared. In this regard, in order to balance development and reduce impact on the environment, the Board proposed to consider the following when conducting our businesses:

Firstly, according to the Company's latest development strategy, we shall adjust from centralized management to decentralized management, in order to reduce management risk from business transformation.

Secondly, we shall actively consider combating environmental and climate change risks in the decision-making process, sort out and plan ahead for new challenges and new opportunities brought by environmental and climate change risks.

Thirdly, we shall further analyze the relationship between major risks, and establish an appropriate firewall mechanism to prevent the spreading of major risks based on existing major risk management mechanisms.

In 2022, China Power suffered a loss of approximately RMB463,000 (tax inclusive) due to climate change.*

Analysis on Climate Change Scenarios

To adequately address the uncertainty of climate change impacts, we have adopted climate scenario correlation analysis to identify and assess the complex impact of climate change risks on business performance at different levels. In order to fully consider the socio-economic and physical risks, we have selected the Shared Socio-Economic Pathways ("**SSP**") of the United Nations' Intergovernmental Panel on Climate Change ("**IPCC**") and combined it with the attributes of the energy and power industry and the policy background of the "Dual Carbon Goals", as well as China Power's business layout for risk assessment.

* The amount is calculated based on the amount of insurance claims.

The IPCC's latest Sixth Assessment Report presents carbon dioxide emissions under different scenarios of the SSP:

Scenarios	Descriptions	Carbon dioxide (CO_2) emissions
SSP1-1.9 SSP1-2.6	Very low and low GHG emission scenarios	CO_2 emissions will fall to net zero by or after 2050, followed by varying degrees of net negative CO_2 emissions
SSP 2-4.5	Medium GHG emission scenario	CO_2 emissions remain at current levels until the middle of this century
SSP3-7.0 SSP5-8.5	High and very high GHG emission scenarios	CO_2 emissions double from current levels by 2100 and 2050, respectively

Complying with the principles of high contrast, balance and science-based selection of climate scenarios, we have selected very low GHG emission scenario (SSP 1-1.9), medium GHG emission scenario (SSP 2-4.5) and very high GHG emission scenario (SSP 5-8.5) to set the assumptions on climate scenarios under the two dimensions, namely socio-economic environment and physical environment.

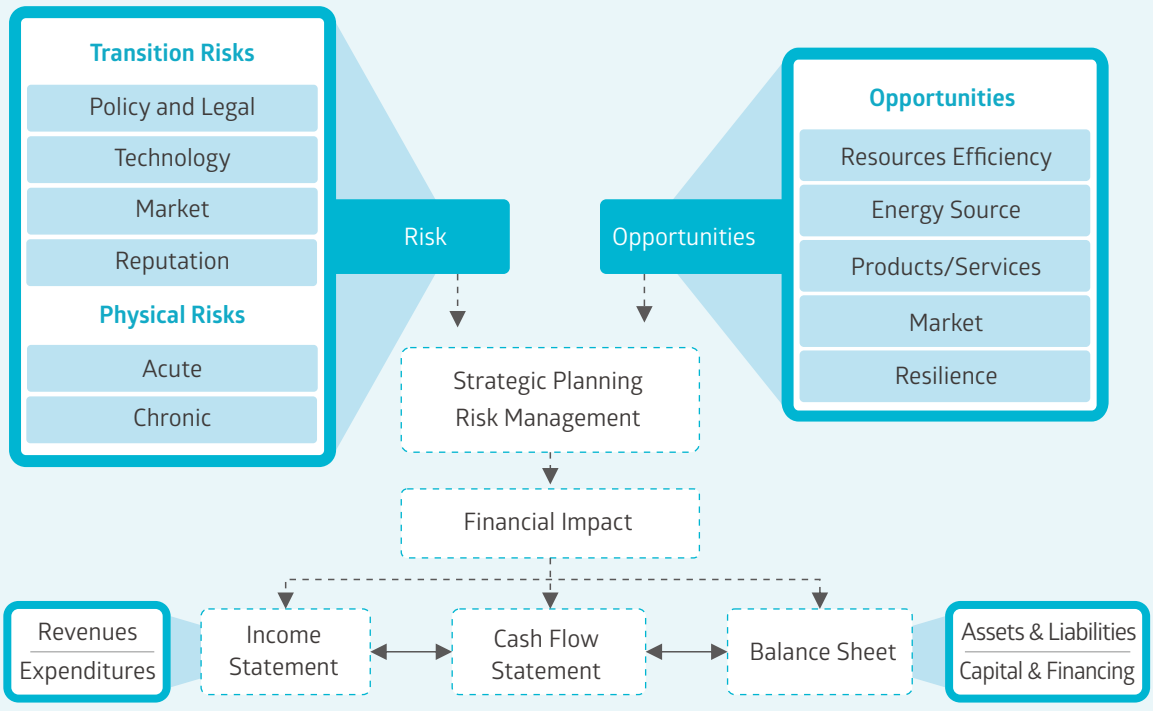
The impacts of climate change, based on the aforementioned assumptions, on the power generation business of China Power include fluctuations in power generation, increased difficulties in safe production and increased financial risk as shown in the table below:

Type of business	Impacts of climate change on China Power's power generation business
Hydropower	• Uneven rainfall can lead to great differences in water resources of certain regions, such as flood and drought, and cause failure in the forecast of water flow stability, which hinders hydropower generation. • Severe cold weather can cause serious damage to hydropower facilities.
Wind Power	• Wind power generation relies heavily on sufficient wind resources and its performance is unstable under extreme weather conditions. • Wind turbines might not be able to function and generate electricity for a certain period when there is only mild wind in the surrounding area due to high temperature and static atmosphere. While in extremely cold conditions, the operation of wind turbines must be suspended for protection.
Photovoltaic Power	• Extremely high temperatures can affect the performance of photovoltaic power generation and cause damages to photovoltaic components and parts such as photovoltaic inverters. • Cloudy and rainy weather also reduce the amount of solar radiation and lead to unstable photovoltaic power generation.
Energy Storage	• The management of China Power is well aware that climate change can easily affect the performance of its power generation business, thus we plan ahead and step up the research and development of energy storage technology.

Climate-related Risks, Financial Impact and Responsive Measures

Through the aforementioned assumptions and analysis on climate change scenarios, we have established the Group's climate risk management process according to the disclosure procedures in the "Guidance on Climate Disclosures" issued by the Hong Kong Stock Exchange, and followed the framework of "Climate-related Risks, Opportunities and Financial Impact" proposed by TCFD, to conduct climate risk identification and analysis. We have assessed the financial impact of each type of risk through qualitative means such as information analysis, management interviews and internal discussions, and quantitative means such as risk scoring, and consequently ranked relevant risks using indicators such as likelihood, level of impact, adaptability and recoverability, and have ultimately compiled a list of risks that China Power is exposed to and formulated countermeasures.

Climate-related Risks, Opportunities and Financial Impact Framework



Source: The framework proposed by TCFD to address climate change


Policy and legal risks
Market and technology risks
Reputation risks
Transition risks
Information analysis, management interviews and internal discussions
Qualitative evaluation
Scoring system
Quantitative evaluation
Evaluation methods
Identification dimensions
Climate-related risks, financial impact and our responsive measures
Physical risks
Acute Damages
Chronic Damages
Risk ranking
Based on the identified transition risks and physical risks, and the quantitative scoring approach in the "Guidance on Climate Disclosures" of Hong Kong Stock Exchange, we have used indicators such as likelihood, level of impact, adaptability and recoverability to rank the relevant risks

Based on the results of the risk analysis, we have identified the current risks and opportunities faced by China Power, analyzed the impacts on the Group and proposed the corresponding responsive measures.

	Type of risks	Descriptions of risks/opportunities	Classification of financial impact	Financial impact	Responsive measures
Transition Risks	**Policy and legal**	■ The State Council issued the "2030 Carbon Emissions Peak Action Plan", and the Ministry of Ecology and Environment published the "Management Measures for Carbon Emission Rights Trading" and other relevant institutional documents, resulting in changes to national policies and related requirements	■ Revenues ■ Expenditures ■ Assets	■ **Impact on business layout:** Dual control policies on energy and consumption vary from region to region. The Group needs to optimize and adjust its business layout and asset portfolio according to local conditions ■ **Increase in compliance costs:** The Group has to devote more resources to comply with increasingly stringent regulatory requirements, and implement higher-quality information disclosure ■ **Increase in operating costs:** There are stricter policy requirements for climate regulation, resulting in higher pricing for carbon emissions, which further restricts the Group's projects development due to environmental protection requirements	■ Gradually adjusting the ratio of coal-fired power generation to new energy power generation, and implementing joint operations of coal and power enterprises ■ Expanding business presence in emerging green energy industries, promoting the development of integrated energy, hydrogen energy, energy storage and green power transportation and exploring "new business segments" ■ Developing and implementing emissions reduction strategies while paying close attention to carbon pricing mechanisms at the location of the relevant asset and at the global level ■ Building a high-quality data quality management system and laying a solid foundation for preparing high-quality disclosure reports on emissions. Improving the climate- related international evaluations to enhance corporate image and reputation through transparent disclosures
	Market and technology	■ The market demands lower-carbon emission products and services ■ Strict requirements on the technological upgrade in clean development of existing coal-fired power assets ■ High level of technical requirements for the stability of new energy power grid connection and consumption ■ Limited room for development of energy storage technology ■ Changes in electricity spot market trading rules ■ Higher requirements posed on carbon trading	■ Revenues ■ Expenditures ■ Assets	■ **Promote asset appreciation:** The R&D of innovative technology and the addition of relevant patents will enrich the intangible assets of the Group, while technological breakthroughs will help prolong the useful lives of the Group's fixed assets ■ **Increase in costs of technology R&D:** Increase in the R&D cost of technologies in the emerging segments such as technological upgrade and reform in environmental protection, new energy consumption technology and energy storage technology ■ **Increase in costs of nurturing professional talents:** Talents in technological reform constitute the foundation of enterprises, therefore, the Group needs to establish and develop professional technological talent teams to strive their best for the development of new business areas	■ Strengthening the cooperation among industry-academia-research-application, and carefully selecting technological pathways in the process of low carbon transition ■ Conducting research on various low carbon technologies through feasibility study and cost-benefit analysis to develop a scientifically sound cost management system ■ Actively planning the business layout in the new energy power generation sector and increasing the proportion of new energy generation to meet market demand ■ Promoting the joint application of energy storage with distributed power generation and centralized new energy power generation ■ Enhancing staff training on professional competence and enhancing technological innovation capability

	Type of risks	Descriptions of risks/opportunities	Classification of financial impact	Financial impact	Responsive measures
Transition Risks (continued)	Reputation	■ Penalties imposed by environmental-related regulatory authorities leading to doubts from market investors ■ Power-related incidents arising from extreme weather leading to negative public opinions	■ Capital ■ Financing	■ **Impact of negative environmental information on reputation of enterprises in the capital market.** If a company is subject to environmental regulatory penalties or has an environmental incident, its financing ability in the capital markets will be affected	■ Strengthening management of investor relationship, protecting investors' right to be informed and enhancing the timeliness of information disclosures ■ Enhancing communication with the community and promoting the understanding of the public on the Company by running various forms of campaigns such as open-days ■ Following the "Sustainable Development Strategy", strengthening the awareness of environmental management and improving the environmental management system
Physical Risks	Acute Damages	■ Extreme weather events such as floods, typhoons, droughts, etc.	■ Assets ■ Liabilities ■ Expenditures	■ **Frequent extreme weather can cause an increase in operating costs.** On the one hand, extreme weather can cause damage to assets, reduce power generation and damage equipment, which will increase operating and maintenance cost. On the other hand, extreme weather may have an impact on upstream fuel suppliers, increasing the cost of supply chain management ■ **Frequent extreme weather can cause an increase in staff costs.** Under prolonged cold or high temperature weather, an enterprise input of subsidies and condolences for on-site working staff may increase	■ Strengthening climate-related risks identification and management, and actively cooperating with institutions such as the Meteorological Bureau to improve emergency planning and emergency management capabilities ■ Performing equipment maintenance effectively and timely repairing damaged equipment following extreme weather events ■ Enhancing the management and training of suppliers and putting emergency plans in place for special conditions ■ Enhancing emergency response capabilities of staff and increasing the input for physical safety and protection of staff in extreme weather conditions
	Chronic Damages	■ Global warming ■ Rising sea level	■ Assets ■ Liabilities ■ Expenditures	■ **Climate change increases management costs.** Rising sea levels may damage some power facilities, resulting in the increase in the costs of infrastructure. Damage to water resources might cause shortage of water supply for hydropower stations and other power generation facilities for cooling, hence increasing the operating costs of enterprises. Furthermore, it will affect the stability of the power generation business and increase management costs in the long term	■ Using climate models to assess the future operations of projects and the resilience of physical assets in the face of extreme weather

Case

Wuqiangxi Power Plant successfully dealt with the largest flood in early June since the construction of the reservoir

From 1 June to 5 June 2022, concentrated rainfall occurred in northern central Hunan Province, and heavy rain occurred locally. At 20:00 on 3 June, Wuqiangxi Power Plant experienced a flood with a peak flow of 25,400 m^3/s. Faced with the largest flood in early June since the construction of the Wuqiangxi Power Plant, the power generation centralized control center predicted the flood and deployed measures in advance. According to the consultation conclusion with the professional meteorological observatory of Hunan Province on the rain condition during flood season, it was predicted that the rainfall concentration period in 2022 would be earlier than previous years from late May to early June. From 1 June, the Wuqiangxi Power Plant controlled the reservoir water level below 96m, down to a minimum of 95.16m, which increased the flood control storage capacity by 270 million m^3. At the same time, it maintained close contact with Hunan Provincial Department of Water Resources, the power grid and the Company's major power plants, and promptly proposed reasonable dispatch plans to ensure flood control safety and the stable operation of power plants such as Wuqiangxi, Wanmipo and Hongjiang.

Case

Digital and intelligent management improved the stability of wind power

Shandong Peninsula South No. 3 offshore wind power developed and constructed by Haiyang Wind Power was connected to the power grid in December 2021 and commenced operation at full capacity in 2022. The project is located in the sea area south of Haiyang City, Shandong Province, with an installed capacity of approximately 300MW. The project has achieved remarkable results in scientific and technological innovation. In the booster station, the high-pressure water mist fire protection system on the bottom cable layer, the suction smoke alarm system and the harmless design and application of fan fire protection were the first at home and abroad. In addition, the project also promoted innovative demonstration and industrial integration, and actively explored multi-energy complementary and multi-business integration development models such as offshore wind power and marine ranching, wind power energy storage, seawater desalination and hydrogen production from seawater, promoting the comprehensive utilization of marine energy and marine space resources.

Digital and intelligent management

Case

Investment in software and hardware improved the efficiency of photovoltaic power

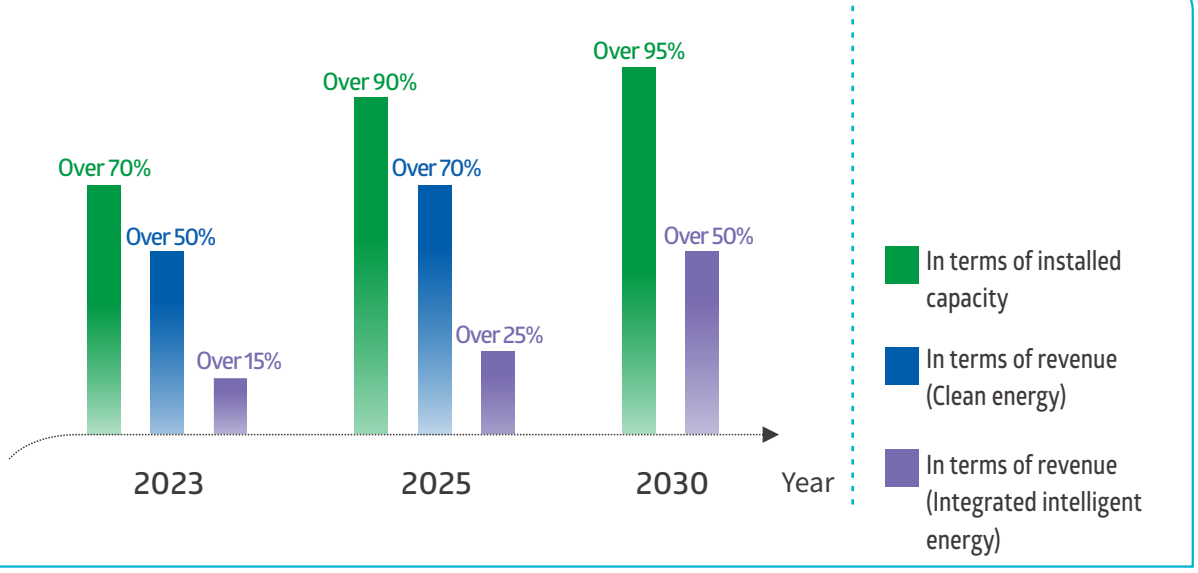
In order to improve the efficiency of photovoltaic power, China Power continues to adjust the inclination angle of photovoltaic modules, improve the photoelectric conversion efficiency of solar modules, strengthen the safety and efficiency of photovoltaic inverters and the daily maintenance of photovoltaic power stations. At the same time, it expands photovoltaic business to "photovoltaic + agriculture", "photovoltaic + fishery", integration of wind power and solar power and many other innovative application scenarios of "photovoltaic +". For example, the 500MW parity agriculture-solar complementary photovoltaic power project located in Luoding City of Guangdong Province was developed and constructed by using more than 12,000 mu of barren hills and slopes and general agricultural land, comprehensively using space resources to develop new energy.

Climate Action Plan and its Progress

In line with the Company's published strategic paths, our objectives are divided into short-term, medium-term and long-term to facilitate the follow-up and assessment of annual progress.

Actions during the Year		Targets Achieved
Promoted the leapfrog development of the principal clean energy segment and optimized the power asset structure	Upgrade in clean development of coal-fired power assets	➤ Clean energy and environmental power • Consolidated installed capacity: **20,519.2MW** • Accounted for approximately **64.94%** of the total consolidated installed capacity ➤ Achieved green power trading of **2,095,032MWh** ➤ Signed **115** co-operation agreements with major customers, representing an installed capacity of **6,733MW** of completed projects
Development and construction of large-scale centralized energy base	Participated in green power market trading	
Development of emerging green energy industries, integrated intelligent energy, energy storage, green power transportation and hydrogen energy	Expanded the scope and content of cooperation with, among others, local governments at all levels, major customers, and upstream and downstream enterprises involved in the power industry	

Targets relating to clean energy of the Group (%)



Promoting Green Power Generation

During the year under review, we improved the energy consumption management of coal-fired power generating units, promoted the transformation and upgrading of power generating units, continued to change the development mode of coal-fired power, and developed clean coal-fired power.

2022

Desulphurization facilities for coal-fired power generating units
Operational ratio: **100%**
Efficiency ratio: **99.39%**

Denitration facilities for coal-fired power generating units
Operational ratio: **100%**
Efficiency ratio: **89.52%**

Investment in environmental protection technological upgrade of coal-fired power generating units amounted to
RMB 64,210,000

Type	Unit	2021	2022	Change	Change (%)
Net coal consumption rate[1]	g/kWh	301.16	302.37	1.21	0.40%

Strengthening energy consumption management

We formulated "China Power Production and Operation Key Points in 2022" and "China Power One Plant One Strategy Plan for Indicators of Energy Consumption", and on the basis of optimizing coal consumption by coal-fired power generating units, as well as power, oil, gas, heat and water consumption by plants and consumption of other materials, carried out supervision of specific production units with abnormal energy consumption indicators, and strengthened targeted energy consumption management.

Promoting upgrade of power generating units[2]

Focusing on the target to develop new power systems, we continued to push forward the transformation and development of thermal power, completed the flexibility upgrade of 4 power generating units of Yaomeng Power Plant and Dabieshan Power Plant in the "Three-Upgrade Linkage Project", which increased their system regulation capacity by approximately 380MW, and provided the basis for an increase in ancillary service revenue. We completed energy-saving upgrade of 9 power generating units, which comprehensively enhanced the market competitiveness of power generating units, driving clean, efficient and flexible features in the rapid reform of thermal power.

Notes

(1) Net coal consumption rate: Average consumption of standard coal for supplying 1kWh power. Net coal consumption rate in this report (g/kWh) = standard coal for power generation (tonnes)/power supply (MWh)*1,000

(2) The Group completed the ultra-low emission renovation of the coal-fired power generating units in 2021, which greatly promoted the clean generation of the thermal power. In 2022, the Group deepened the transformation of environmental protection technology, mainly investing in flue gas efficiency improvement of environmental power, the replacement of flue gas denitrification catalyst and precipitator filter bag replacement, and upgrade of wastewater system of power plants.

Participating in Market-oriented Trading

Against the backdrop of ever-changing power policies and the market, we intensively participated in green power market transactions. Under the increasingly stringent policy requirements on management and control over carbon emissions and related transactions, we complied with the requirements of a series of policies such as the "Administrative Measures for Carbon Emission Rights Trading (Trial) (《碳排放權交易管理辦法(試行)》) (Order No. 19 of The Ministry of Ecology and Environment)". We have properly studied, researched, analyzed and planned the business layout of carbon market trading to enhance the ability to respond to the power market and incorporate ourselves into the green power trading landscape actively.

In 2022, China Power participated in market-oriented power trading:

Hydropower generating units obtained a total power production quota of approximately **583,650 MWh**
Average price **RMB190.48/MWh**

Wind power generating units obtained a total power production quota of approximately **6,651,900 MWh**
Average price **RMB503.4/MWh**

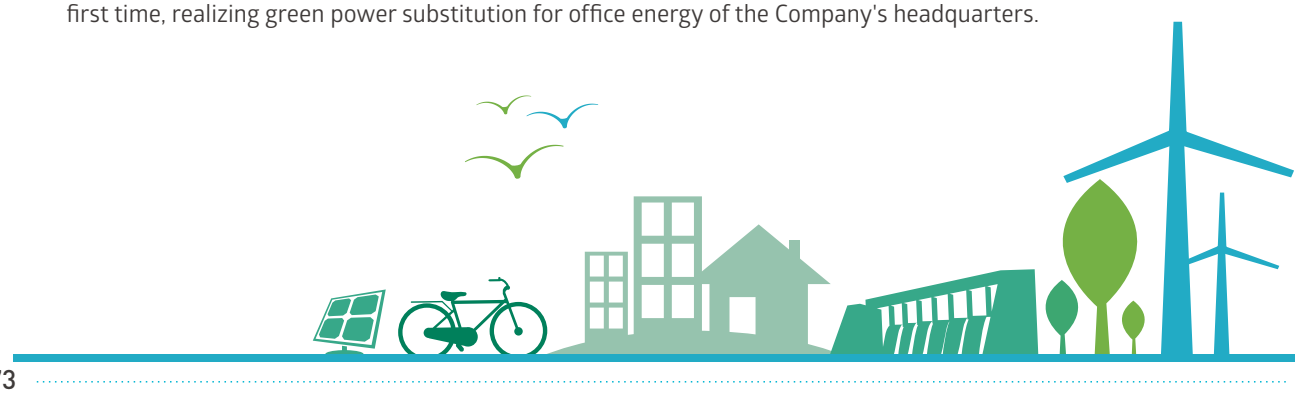
Participated and completed green power trading amounted to **2,095,032MWh**

Broadening the green power trading market

- We have organized all parity new energy projects to be mindful of provincial-level green power trading policies, seek users who need green power, and seize opportunities for green power trading. In 2022, China Power carried out green power trading in Gansu, Ningxia, Shanxi, Liaoning and Hebei, and continued to expand the scope of green power trading.
- We have made full use of channel resources of various thermal power companies, electricity sales companies and strategic partners to develop the green certificate market, understand and grasp customer needs, and strengthen green certificate marketing. In 2022, China Power sold a total of 105,735 green certificates.

Carrying out the practice of green power trading

- We have organized and held meetings on green certificate and green power trading, guided and urged all new energy projects to extensively commence the application for green certificates.
- We have actively promoted the sales of green power and green certificates of projects such as Chaoyang photovoltaic power, and the trading volume accounted for approximately 90% of the annual power generation.
- Shandong Company has successfully purchased 220 green certificates through the power trading platform for the first time, realizing green power substitution for office energy of the Company's headquarters.



Case

Wu Ling Power completed the first carbon emissions reduction market transaction

On 19 September 2022, Wu Ling Power received Dongping Hydropower Project's settlement statement for participating in the Voluntary Emission Reduction (VER) market.

Covering the period from 1 October 2012 to 31 March 2017, the audit on carbon emissions reduction of Dongping Hydropower Project recorded a total of 1.052 million tonnes of emissions reductions. The transaction price was RMB8/tonne, and the sales revenue was RMB8.416 million.

Case

"Tong'an Industrial Park – Integration of Agriculture, Photovoltaic Power and Tourism" was selected as one of the Sino-European Innovation and Cooperation Demonstration Projects on Carbon Neutrality of 2022

Located in Tong'an District, Xiamen, the entrusted management project of Tong'an Industrial Park which integrates agriculture, photovoltaic power and tourism has adopted the "photovoltaic+" approach to drive the integrated development of the green industry with high quality, realizing "three uses on one land, two farms with one water and three harvests in one season". Being highly valued by the Fujian Provincial Government and the Xiamen Municipal Government, the project has been listed as a demonstration project for the rural revitalization in Xiamen and a scientific research base for agricultural science for primary and secondary schools in Xiamen. It is also a "KOLs' hot spot for social media" regarding the development of the local green industry.

The industrial park has built 26 novel intelligent greenhouse photovoltaic bases, which generate electricity on the upper level, grow vegetables on the lower level, and raise and farm fish beneath the vegetable farms. Making use of the space outside the bases, it has installed fruit gardens, herb gardens and some floral art sculptures so as to enhance research and learning experience, leisure and sight-seeing for tourists.

According to preliminary calculations, the photovoltaic greenhouse bases can generate approximately 12.88 million kWh of electricity annually, producing approximately 4.2 million catties of vegetables, melons and fruits and approximately 5 million catties of fish and shrimps. Compared with coal-fired power plant with the same capacity, it can reduce the emissions of carbon dioxide by approximately 12,200 tonnes, sulphur dioxide by 347.94 tonnes and nitrogen oxides by approximately 173.97 tonnes per year.

Adhering to Green Production

We save energy and reduce consumption in production, and adhere to the principle of green production. We effectively control various emissions in production, and help achieve pollution prevention and control.

Carbon Emissions Management

Following the policies such as the "Notice on the Promulgation of the Implementation Plan on the Setting and Distribution of National Aggregate Carbon Emissions Rights Trading Quota 2019–2020 (Power Generation Industry)" (Guo Huan Regulations Climate [2020] No. 3), "Administrative Measures for Carbon Emission Rights Trading (Trial)" (Order No. 19 of The Ministry of Ecology and Environment), "Plan on Establishment of a National Carbon Trading Market (Power Generation Industry)" (Fa Gai Climate Regulations [2017] No. 2191), and the "Interim Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading" (Fa Gai Climate [2012] No. 1668). During the year under review, we actively responded to emissions reduction requirements of the government, promoted carbon emissions practices in accordance with SPIC's "Carbon Emissions Management Measures", strengthened the auditing management of carbon emissions data, and improved the Company's carbon emissions management.

Carbon Dioxide Emissions

	Scope	Unit	2020	2021	2022
Total *	Scope 1	tonnes	46,957,000	53,691,340	61,730,728
	Scope 2	tonnes	/	25,410	168,593
Density	Scope 1	g/kWh	838	800.61	546.57
	Scope 2	g/kWh	/	0.38	1.49

* The increase in equivalent amount of carbon dioxide emissions in 2022 compared with previous years is mainly attributable to the addition of multiple power plants through acquisition and self-development during the year.

The Company engaged China General Certification, Co., Ltd. (北京鑒衡認證中心有限公司), an independent third party professional technical services firm, to assess the Group's greenhouse gas emissions information in 2022.

Scope 1	Scope 2
It covers greenhouse gas emissions directly generated from the operations owned or controlled by the Group, including: • Emissions from production fuels • Emissions from fuel consumed by corporate vehicles • Emissions from natural gas used in the staff canteen • Leakage of sulphur hexafluoride	It covers electricity and heat purchased externally which are necessary for operating and production activities of the Group.

Calculation: Emission = activity level data × emission factor

Among which:

1) Emissions from production fuels mainly include burning of fossil fuels and waste incineration. The data refers to actual consumption. The emission factor is determined in accordance with the "Corporate Greenhouse Gas Emissions Accounting Methodology and Reporting Guide for Power Generation Facilities" promulgated by the Ministry of Ecology and Environment of the PRC and the IPCC;

2) Activity level data for leakage of sulphur hexafluoride refers to the filling amount for equipment using sulphur hexafluoride, the leakage coefficient, and the Global Warming Potential calculated at the default fugitive rate determined by IPCC; and

3) Activity level data for electricity and heat purchased externally refers to the actual amount purchased, while the emission factor adopted is the national default rate promulgated by the Ministry of Ecology and Environment of the PRC.

Enhance carbon emissions auditing

- We have commenced the Company's carbon emissions management, and organized subsidiaries to carry out carbon emissions management in accordance with the relevant requirements of the "Corporate Greenhouse Gas Emissions Accounting Methodology and Reporting Guide for Power Generation Facilities (revised edition in 2022)" to avoid the risk of non-compliance with carbon emissions requirements.
- We have carried out internal self-examination and self-correction of carbon emissions data management loopholes so as to improve the accuracy of carbon emissions data management.

Strengthen carbon emissions monitoring

- We have carried out carbon emissions management inspections, strictly followed the relevant requirements of the national accounting guidelines, carried out sampling, analysis and testing of carbon content data of coal as fired on a monthly basis, and further standardized fundamental statistics on carbon emissions.
- We have carried out carbon emissions monitoring pilot work at Pingwei Power Plant II.

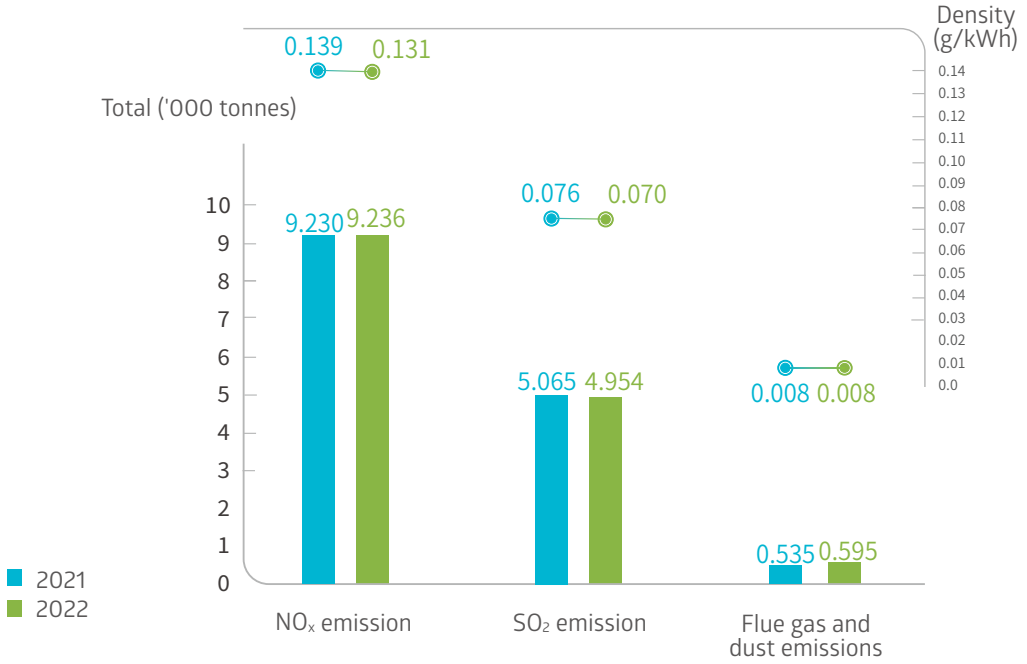
Improve carbon management capabilities

- We have carried out carbon emissions exchange training and carbon emissions management knowledge training, and carried out internal carbon emissions management exchanges to jointly improve the level of carbon emissions management.
- We have organized and carried out carbon emissions management experience exchange and carbon emissions reduction technology exchange and promotion, and regularly reported updates on the status of the Group's carbon emissions management.

Energy Saving and Emissions Reduction

We have strictly	In 2022
Abided by laws and regulations such as the Air Pollution Prevention and Control Law of the PRC, the Emission Standards for Air Pollutants from Thermal Power Plants (GB13223-2011), Ambient Air Quality Standards (GB3095-2012) and formulated the Management Measures for Air Pollutants to standardize the handling of pollutants generated in the production process of enterprises, strengthen the management of gas emissions from production equipment, and ensure that all types of gases emitted are in compliance with the above laws and regulations.	Waste gas, wastewater, noise and other pollution emissions indicators of the Company's thermal power units met the requirements of national (local) standards.
Implemented standards such as the Integrated Wastewater Discharge Standard (GB8978-1996), Wastewater Quality Control Index for Limestone — Wet Gypsum Desulphurization of Coal-fired Power Plants (DL/T997-2020) and complied with the Company's Management Measures for Water Pollution to standardize the management of water pollutants (wastewater) discharged during the production process.	There was no incident of pollutant emissions exceeding the limit in each environmental power generation plant, both the hourly average and daily average of flue gas indicators met the requirements, and the furnace temperature was maintained at not lower than 850°C.
Complied with the Laws of the PRC on the Prevention and Control of Environmental Pollution by Solid Waste and the Standards for the Storage and Landfill Pollution Control of General Industrial Solid Waste (GB18599-2020), and we have strengthened the disposal of various waste during the production process in accordance with the Solid Waste Management Measures.	Fly ash was chelated and stabilized, and after passing the test, it was transported to the landfill for safe landfill disposal, or disposed of by cement kilns with a disposal rate of 100%.
Continued to promote rectification of issues and enhancement works in relation to the ecological and environmental protection of key units and related industries of the Group, and promoted the improvement of ecological protection and management of pollution prevention and control.	The compliance rate of landfill leachate, production wastewater and domestic sewage treatment was 100%. Various environmental monitoring was carried out in an orderly manner, and no indicators exceeded the limit.

Emission Types	Categories	Unit	2021	2022	Change	Change (%)
Discharge of industrial wastewater	Total	'000 tonnes	0	0	0	/
Discharge of hazardous solid wastes	Total	'000 tonnes	0	0	0	/
	Density	g/kWh	0	0	0	/
Discharge of non-hazardous solid wastes	Total	'000 tonnes	2,344	1,757	-587	-25.04%
	Density	g/kWh	35.17	15.56	-19.61	-55.76%
Water consumption for production	Total	million tonnes	102.58	117.14	14.56	14.19%
	Water consumed per unit	g/kWh	1,540.00	1,620.18	80.18	5.21%



Note: Thermal power plants used Continuous Emission Monitoring System (CEMS) of flue gas to monitor emissions in the atmosphere in real time, with emission values automatically generated by the system based on the above calculation methods and includes actual measured emissions of nitrogen oxides, flue gas and dust and sulphur dioxide mainly from China Power's thermal power generation business.

Density calculations: adopted power generation as the denominator for calculations based on the actual circumstances of China Power i.e., emissions density = total emissions/annual power generation.

Solid hazardous waste and non-hazardous waste: counted in accordance with specific classification and catalogues of the requirements of the Ministry of Ecology and Environment of the PRC.

Monitoring of environmental protection in production

- We have organized a total of 9 units including Fuxi Power Plant to carry out special supervision of ecological and environmental protection and special inspection of hazardous chemicals. A total of more than 260 problems were discovered, 36 management suggestions were proposed, interviews were conducted with 2 units, and a supervision order was issued to 1 unit.
- We have further standardized the supervision and management of hazardous chemicals and environmental protection technologies of thermal power plants, so as to ensure the safe, stable and compliant operation regarding the handling of hazardous chemicals and environmental facilities, and prevent the occurrence of hazardous chemical and environmental accidents.
- We have analyzed the environmental assessment and status of soil & water conservation of new energy units, and updated such relevant information on the Group's operation supervision platform.

Pollutant monitoring management

- Atmospheric pollutants in thermal power plants have been monitored in real time by Continuous Emission Monitoring System ("**CEMS**"). The monitoring indicators included flue gas flow, measured concentration of pollutant emissions, discounted density and oxygen content, etc. The pollutant emissions were automatically calculated and generated by CEMS, and transmitted to competent departments of ecological and environmental protection at all levels in real time.
- For water pollutants (if any) of each thermal power plant, in accordance with the requirements of the license for discharging pollutants, wastewater on-line monitoring system and manual monitoring (the monitoring unit must have corresponding water pollutant CMA qualification and issue an official report) were adopted to obtain the density and quantity of pollutant emissions.

Effectiveness of production emission management

- We have strengthened the management of unorganized emissions, implemented the national plans for comprehensive air pollution control in autumn and winter, implemented the management of unorganized emissions in the transportation, loading, unloading, storage and transfer of materials such as coal and ash, the reclamation of ash and slag dumps, etc., and the greening of slopes along railways. We have also increased the proportion of clean transportation of bulk goods.
- We have organized and completed (2022-2024) calculation and analysis of pollutant emission assessment targets. Flue gas purification and efficiency improvement in Haikou Phase I has commenced, and flue gas purification and efficiency improvement in Haikou Phase II was completed. We have continued to improve the environmental protection performance of thermal power generating units of China Power.
- We have further promoted wastewater treatment, strengthened the operation, maintenance, upgrading and transformation of thermal power wastewater treatment facilities, and promoted the implementation of zero discharge of wastewater in qualified projects.
- We have completed the construction and upgrading of domestic sewage treatment facilities for hydropower and new energy enterprises.
- We have completed the upgrading of the domestic sewage treatment system of Pingwei Power Plant, carried out the upgrading of rain and sewage diversion system of Yaomeng Power Plant, and achieved rain and sewage separation.

Case

Dabieshan Power Plant won the title of "Water Conservation Enterprise in Macheng City" in 2022

Dabieshan Power Plant won the title of "Water Conservation Enterprise in Macheng City" in 2022. In the last two years, Dabieshan Power Plant has invested nearly RMB6 million in the upgrading of coal-containing wastewater system, oily wastewater system, reverse osmosis concentrated water utilization and other projects, reducing the amount of water replenishment by 400,000 m^3 per year. At the same time, taking the development of a water conservation society in accordance with relevant laws and regulations as the starting point, it reused 800,000 m^3 of domestic sewage, approximately 2,400,000 m^3 of backwater from ash yards, and 100,000 m^3 of coal-containing wastewater, with a reusing rate of 100%. It achieved zero discharge of wastewater, and established an efficient, clean, low-carbon, recycle and green management system, improving the efficiency and conservation of water for industrial use.

Resource Utilization

We emphasize the recycling of production resources. Through systematic management, platform construction and capability improvement, we have improved the utilization efficiency of energy and resources and effectively saved energy and resources.

In 2022

Comprehensive utilization rate of power generation by-products*: **87.55%**

Improve management system

We have further revised and improved the "Management Measures for Integrated Utilization of Coal-Fired Power By-product Resources", assigned main responsibilities, and strengthened management of integrated utilization of resources of power generation companies.

Strengthen platform management

We have strengthened the construction of a cloud-based platform on information for the integrated utilization of resources, and used the power generation by-product integrated utilization business of CP Guorui to carry out the construction of a cloud-based platform for the resource utilization of solid wastes. The "cloud-based platform" is dedicated to use in sales management, trading and industrial innovation of power generation by-products. It has since been promoted and launched at 5 subsidiaries of the Company for trial run.

Enhance management level

We have supervised and urged all units to strengthen training for fly ash management personnel and improved preventive measures from a business and personnel perspective. We have also increased electronic monitoring equipment for key aspects of the system through business communication and information construction, and improved preventive measures from a technical perspective. We have established normalized supervision and inspection with monthly summaries and quarterly inspections, carried out mutual inspection and exchange within the system, and improved the standard of management.

* For our business, the recycling of waste by the Group principally represents the recycling and reuse of the by-products from power generation such as fly ash. Comprehensive utilization rate of power generation by-products = (accumulative annual sales volume of power generation by-products/accumulative annual output of power generation by-products)*100%

Protecting the Natural Environment

We adhere to the concept of green development, and conscientiously implement the requirements of ecological civilization construction and the national strategic goals of "Carbon Emissions Peak and Carbon Neutrality". We have formulated China Power's One Plant One Strategy Plan for Indicators of Energy Consumption, applied the concept of lower carbon and environmental protection in practical actions, and developed demonstration benchmark projects for ecological and environmental protection, so as to build a harmonious and shared green ecological homeland.

Advocating Green Office

We vigorously advocate green production and lifestyle. We integrate the concept of green, low carbon and environmental protection into all aspects of operation, adhere to the concept of green office, minimize the negative impact on the environment during the production process and optimize the use of energy and resources to protect the clear waters and blue sky with practical actions.

Indicator	Category	Unit	2021	2022	Change	Change (%)
Office paper used	Total	Tonnes	37.26	77.14	39.88	107.03%
	Density	kg/'000	0.0011	0.0018	0.0007	63.64%
Power consumption of office buildings	Total	MWh	12,750.1	29,075.3	16,325.2	128.04%
	Density	kWh/'000	0.367	0.678	0.311	84.74%
Fuel consumption of corporate vehicles	Total	Liters	674,790.45	1,186,702.57	511,912.12	75.86%
	Density	Liter/'000	0.019	0.028	0.009	47.37%
Water consumption of office buildings	Total	Tonnes	201,153.19	272,847.71	71,694.52	35.64%
	Density	Tonne/'000	0.0058	0.0064	0.0006	10.34%
Natural gas consumption	Total	m^3	/	409,967.88	/	/
	Density	m^3/'000	/	0.01	/	/

Recycling of waste and obsolete materials

- We have strengthened the management of waste and obsolete material, with a dedicated department responsible for the management and recycling of waste and obsolete materials, and formed a disposal mechanism for waste and obsolete materials.
- We have established a sound management system for waste and obsolete materials, and put forward management and disposal rules for key aspects such as the identification, recycling, handover and disposal of waste and obsolete materials to ensure that key aspects of waste and obsolete material disposal form a strictly closed loop.
- We have actively promoted the recycling and disposal of waste and obsolete materials from decentralized management to centralized management, from offline operation to open bidding, and standardized the management of the recycling and disposal of waste and obsolete materials.

Carrying out low carbon and environmental protection activities

- We have implemented centralized procurement of office supplies and launched the initiative of paperless office.
- Designated property personnel are responsible for the switching on and off of lighting in office areas.
- We have strictly restricted the purchase of gasoline for corporate vehicles. The fuel cards of all corporate vehicles adopt the form of principal and supplementary cards, which are tied to vehicles. The money depositing in principal fuel cards is conducted by vehicle dispatchers or special personnel.

Protecting the Ecological Environment

We always attach importance to the protection and construction of the ecological environment, constantly standardize the management of the ecological environment, strive to improve the management capability and level of ecological protection, strengthen the protection of biodiversity and natural habitats, and promote the development of a resource-efficient and environmentally friendly society.

2022

- No ecological and environmental protection violations and emergencies
- No serious incidents in relation to environmental pollution and exceedance of average hourly environmental protection indicators

Improving the ecological and environmental protection management system

- We have established the awareness of green and high-quality development, and implemented policies complementary to the "14th Five-Year" Plan for the National Economic and Social Development of China in relation to the proposal for ecological and environmental development, annual work plan and key objectives and tasks.
- We have revised the Company's "Management Regulations on Supervision of Ecological Environment Protection", and continued to improve the Company's environmental protection supervision system and management norms.
- We have implemented China Power's ecological and environmental protection responsibility system, and inspected ecological and environmental protection investment and list of environmental protection transformation projects and implementation effects of the transformation, etc.

Improving the ecological and environmental protection management capability

- We have enhanced the rectification effect of the "two checklists" (i.e. Positive List for Environmental Impact Assessment Approval (環評審批正面清單) and Positive List for Supervision and Law Enforcement (監督執法正面清單)) of ecological and environmental protection, and established a list of ecological and environmental protection problems identified and resolved them on an individual basis to promote closed-loop management of ecological and environmental protection issues.
- We have carried out environmental risk assessment in accordance with relevant laws and regulations, improved contingency plans for environmental emergencies, and implemented the requirements for responsive measures to heavily polluted weather.
- We have constructed ecological and environmental demonstration benchmarks projects such as Niutoushan Hydropower, and new energy power stations such as Chunyangshan Wind Power and Shijiahu Photovoltaic Power.

Case

Proliferation and release of natural species improved the ecology of Xijiang River significantly

The fishway of Changzhou Hydraulic Complex, located in the strategic passage of the Xijiang River, is an important channel for fish breeding in the Xijiang River Basin. Every year, tens of thousands of fish species migrate smoothly through the fishway to upstream. 2022 was the 13th year for the proliferation and releasing of natural species in Changzhou Hydraulic Complex. Guangxi Changzhou Hydropower has always practiced the concept that "Clear waters and green mountains are as good as mountains of gold and silver". In addition to the four major species of carp, in the proliferation and releasing for this year, Xijiang local characteristic fish species have been added, and a total of eight species comprising 6 million fish fries have been released into the Xijiang River Basin, further improving the ecological environment of the Xijiang River Basin.

Case

Integrated development of "photovoltaic + ecological governance"

Yuding Photovoltaic Power Station is located in Yuding Town, Zhongning County, Zhongwei City, Ningxia Hui Autonomous Region. The power station has adopted the mode of simultaneous governance and construction. While installing photovoltaic panels, it has sown grass seeds suitable for growing in the desert, and planted drought-tolerant plant lycium barbarum saplings on both sides of the road. A total of nearly 10,000 mu of grass seeds have been sown successively, and nearly a thousand saplings have been planted. With the completion of the power station, the sown grass seeds and saplings have gradually grown. By virtue of the shading effect of the photovoltaic panels and the water for regular cleaning of the photovoltaic panels, the vegetation growth is improving, which plays the role of windbreak and sand fixation. The surrounding environment of the station has also been greatly improved.

China Power
Sustainability Report 2022

Intelligent Innovation and Energy Ecosystem

- Comprehensive Implementation of New Strategies
- Developing New Energy
- Nurturing Emerging Green Energy Industries
- Promoting Integrated Intelligent Energy
- Energy Technological Innovation
- Digital Industrial Transformation
- Safety Production

Under the trend of clean, diversified, digitalized, and intellectualized energy transformation, China Power promptly responded to changes and proactively sought changes, and continuously deepened systematic reform and innovation in development concepts, institutional mechanisms and strategic transformation. In 2022, China Power persisted in innovation-driven transformation and development, and continued to consolidate its advantages in clean energy industries such as wind power, photovoltaic power and hydropower, focused on promoting the construction of large-scale clean energy bases with multiple synergetic and complementary energy forms, vigorously developed emerging green energy industries that constitute various key aspects of the new power system, continued to explore the construction of a comprehensive intelligent energy system, and continuously seek innovations and breakthroughs in areas such as technical, model, management and services to build an intelligent energy ecosystem.

Sustainable Development Goals of the United Nations

	Ensure access to affordable, reliable, sustainable and modern energy for all
	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
	Make cities and human settlements inclusive, safe, resilient and sustainable

Comprehensive Implementation of New Strategies

In 2022, we comprehensively promoted the implementation of the Company's new strategies, with a focus on clean energy transformation. We continued to accelerate and expand the scale of development of emerging green energy industries, and steadily promoted the high-quality development of the Company.

Management of strategic planning implementation

- Continuously optimized the strategic transformation planning of China Power, and established and improved the relevant strategic planning system.
- Comprehensively adjusted and optimized existing coal-fired power assets, actively implemented the State's "Joint Operations of Coal and Power Enterprises" (煤電聯營) policy. We completed the partial disposal of interest in two coal-fired subsidiaries, namely Dabieshan Power Plant and Yaomeng Power Plant to China Coal Group, and promoted the smooth launch of cooperation between coal and power enterprises.
- Prepared development plans for emerging green energy industries and formed a "professionalized and regionalized" integrated body for sharing management and governance of the new industries' development and operations within the Group.
- Successfully completed the acquisition of 23 clean energy companies with a total installed capacity of nearly 2,160MW. Upon completion of the acquisition, the proportion of the Company's installed capacity of clean energy has increased rapidly by more than 3 percentage points.

Developing New Energy

In 2022, the Group continued to make efforts in the development of its principal business of clean energy, seized opportunities to develop clean energy projects such as photovoltaic, wind power and hydropower and rapidly increased the proportion of installed capacity of clean energy, with steady year-on-year growth in installed capacity and power generation of new energy projects. Besides, we strived to promote the construction of centralized large-scale energy bases with multiple synergetic and complementary energy forms, and promoted the widespread use of clean energy within and across regions.

Installed Capacity of Clean Energy

As at 31 December 2022, clean energy

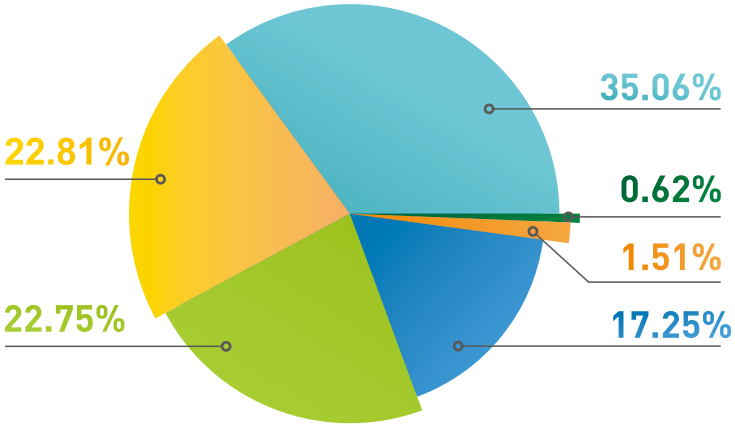
accounted for approximately
64.94 %
of the total consolidated installed capacity
↑ 12.78 percentage points

consolidated installed capacity
20,519.2 MW
↑ 35.96 %

power generation
40,999,427 MWh
↑ 8.28 %

Clean energy power generation equivalent to a reduction in carbon dioxide emissions of
26,102,786 tonnes

As at 31 December 2022, the consolidated installed capacity of the Group by types of power plants is as follows:



Consolidated Installed Capacity (MW)

Hydropower	5,451.1
Wind Power	7,189.3
Photovoltaic Power	7,206.6
Natural Gas Power	475.2
Environmental Power	197.0
Coal-fired Power	11,080.0
Total	31,599.2

On the basis of continuously expanding the scale of clean energy development such as onshore wind power, photovoltaic power and hydropower, the Group made breakthroughs in the development of offshore wind power and offshore photovoltaic projects in 2022.

Offshore Wind Power

➤ **Actively expanded the layout of offshore wind power in Shandong Province**

- An offshore wind power project with an installed capacity of 300MW was completed and commenced operation
- An offshore wind power project with an installed capacity of 500MW obtained approval to commence construction
- Two offshore wind power projects with an installed capacity of 450MW each obtained construction quota

➤ **Plans to develop several offshore wind power projects**

- We have completed the first draft of the proposal for the Phase I offshore wind power project (5,000MW) in Zhangzhou of Fujian Province; and actively promoted offshore wind power projects in Sheyang of Jiangsu Province, Jiangmen of Guangdong Province, and Luannan in Tangshan City of Hebei Province.

Offshore Photovoltaic Power

➤ Successfully obtained the construction quota of 3,550MW of offshore photovoltaic power projects which accounted for 31.56% of the competitive allocation quota of offshore photovoltaic power in Shandong Province in 2022.

Continue to consolidate the advantages in the environmental power generation industry

- The Group has 8 environmental power generation plants with a total installed capacity of 197MW.

Ensure environmental power generation

- To address the potential shortage of municipal waste supply subsequent to the commencement of operation of infrastructure projects, the Company formulated the "Special Plan for Improving Waste Volume in Environmental Power Plants", and adopted the policy of "one plant, one policy" to tap the potential waste processing capability of each power plant.
- Strengthened equipment management and strictly controlled unplanned suspension to ensure long-cycled, continuous, safe and stable operation of environmental power generating units.

Case

Promote the ecological construction of Hainan Island

Four environmental power plants located in Hainan Island have a total installed capacity of 100MW and a daily waste processing capacity of 4,800 tonnes. In 2022, these companies continued to tap the potential of existing power generating units, eliminated equipment safety defects in a timely manner, and achieved long-cycled operation of generating units. After implementation of enhancement transformation work of the furnace flue gas system of no. 3 and no. 4 power generating units of Haikou China Power Environmental Power Generation Company Limited* (海口中電環保發電有限公司), their operating reliability, environmental protection capability and economic indicators have been further improved. Their emissions indicator has even surpassed the latest emissions requirements in Hainan Province and achieved good social benefits and practical experience.

Large-scale Clean Energy Base Projects

In 2022, the Group promoted the planning, construction and commissioning of large-scale clean energy base projects, and planned to promote inter-provincial and super-large-scale clean energy base projects to unleash the synergetic advantages of multiple complementary clean energy forms and significantly enhance the overall benefits of clean energy use.

Clean energy base projects were planned, commenced construction or commenced operation successively

- **Multi-energy complementary 1,000,000kW new energy base project in Macheng City of Hubei Province:** Phase I of 400,000kW achieved full capacity power grid connection during the year.
- **CP Pu'an 1,000,000kW integrated wind-photovoltaic-thermal and energy storage demonstration project:** Has been included in the "14th Five-Year" power development plan of Guizhou Province.

Planned construction of inter-provincial, super-large-scale clean energy base projects

- **Completed the planning of "Mongolia Electricity into Anhui":** Followed the national policy on planned construction of ultra-high voltage lines and inter-provincial clean energy base to coordinate the energy and socio-economic advantages across provinces and realize the complementary advantages and synergetic development of various regions. The project is supported by the National Development and Reform Commission, the People's Government of Anhui Province and relevant authorities of the State Grid, and will push for the project to be included in the national "14th Five-Year" Plan as soon as possible.

Multi-energy Complementary 1,000,000kW New Energy Base Project in Macheng City

Case

The 400MW "Photovoltaic +" demonstration project in Guyuan County, Hebei Province was connected to the power grid for power generation

On 29 June 2022, Hebei Guyuan 400MW "Photovoltaic +" Demonstration Project achieved full capacity power grid connection and electricity generation. After the project's commencement of operation at full capacity, it can deliver approximately 640,000MWh of clean energy through the "Zhangbei-Xiong'an" ultra-high voltage line annually, providing secured and reliable green energy for the economic development of the Beijing-Tianjin-Hebei region, especially the Xiong'an New Area, and driving the development of related industries in the region.

Case

Qingshuijiang Integrated Hydropower, Wind and Photovoltaic Multi-Energy Complementary Energy Base

Qingshuijiang Integrated Hydropower, Wind and Photovoltaic Multi-Energy Complementary Energy Base is located in Southeast Qian Prefecture, Guizhou Province. It has a planned new energy capacity of 800MW, including 350MW of photovoltaic power and 450MW of wind power. The project extends across Hunan and Guizhou provinces and connects to both State Grid and China Southern Power Grid. It is also the first 500kV grid-connected and direct dispatch new energy project of the dispatch network of Central China Grid. Upon completion, the project can increase the utilization rate of the existing power transmission system, give full play to the multi-year natural regulating function of Sanbanxi Reservoir, and achieve the integration of hydropower, wind and photovoltaic multi-energy complementary power generation, as well as significantly increase the overall efficiency of the system.

Nurturing Emerging Green Energy Industries

Focusing on the future of energy transformation and committed to providing sustainable clean energy for modern industrial development and social life, the Group has carried out innovative practices in the "New Energy+" ecosystem. Surrounding key elements of new power systems, such as distributed, micro-grid, energy storage and artificial intelligence, the Group has focused on developing emerging green energy industries such as energy storage, green power transportation, colored photovoltaic and hydrogen energy in accordance with the model of "pilot demonstration first and high-quality implementation to follow" (示範先行、精品落地).

Performance in 2022

Energy Storage

- Xinyuan Smart Storage, the Company's subsidiary principally engaging in the energy storage segment, has developed a total of 14 energy storage projects, with the installed capacity of energy storage reaching 1,551MWh, with projects are located in Shandong Province, Xinjiang Uygur Autonomous Region, Hunan Province, Mexico and other places. The operating income reached almost RMB900 million and the profit before taxation exceeded RMB40 million for the year 2022.
- During the year, Xinyuan Smart Storage was selected as the "Demonstration Enterprises in Science and Technology Reform" and "National High-and-New-Tech Enterprises" by the SASAC and the "Unicorn Growth Enterprise" by SPIC. It also entered into an overseas contract for the construction of an energy storage power station project in Puerto Penasco Port, Mexico.
- Xinyuan Smart Storage's zero carbon smart factory and production line have been constructed in Fangshan, Beijing and commenced production in November 2022.
- **Compressed air energy storage business made a new breakthrough**
  In November 2022, China Power entered into a framework agreement with the People's Government of Hengyang and 雪天鹽業集團股份有限公司 (Snowsky Salt Industry Group Co., Ltd.*) in respect of a 100MW-level salt-cavern compressed air energy storage innovation demonstration project, pursuant to which the parties are expected to jointly develop the first compressed air energy storage project in Hunan Province.

Colored Photovoltaic

- Xinyuan Jinwu was established on 26 April 2022. It is an emerging industrial platform for photovoltaic colored spraying and novel green building materials established by the Group with the concept of "new energy + green construction". It is also the only high-tech company in China with full color micro-coating technology and product development capability, principally engaged in the research and development of colorization technology for photovoltaic power generation materials, colorization processing, technical services, and comprehensive utilization of obsolete photovoltaic modules. Xinyuan Jinwu owns 102 patents and actively participates in the preparation of national standards for the green construction materials industry.
- During the reporting period, the production base of Xinyuan Jinwu has been established in Tongzhou, Beijing, with filing approval obtained from the Tongzhou Municipal Bureau of Economy and Information, and the lease and handover of the factory buildings completed. Its facilities in the production base are expected to complete testing by the end of July 2023, and the production line will commence operation and trial runs in early August.
- Xinyuan Jinwu is a leading unit of the "China Micro Energy Network Collaborative Innovation Platform (中國微能源網協同創新平台)" and the "China Carbon Neutrality Green Development Innovation Platform (中國碳中和綠色發展創新平台)". It organized the "Low Carbon Energy and Zero Waste Future" forum jointly with China Industry-University Research Institute Collaboration Association. It also participated in activities such as Deyang World Clean Energy Equipment Exhibition, Shenzhen Hi-Tech Fair and the Celebration of HKSAR 25th Anniversary Science and Technology Achievement Exhibition.
- Xinyuan Jinwu won the "2022 China Industry-University-Research Cooperation Innovation Award", which showcased the outstanding contributions of Xinyuan Jinwu. This award was established with the support of the Ministry of Science and Technology and the National Technology Award Office.

Green Power Transportation

- In 2022, Qiyuanxin Power of the Group's green power transportation segment completed RMB1 billion Series A financing. It was honored by the APEC Energy Smart Community with a gold award in the "Smart Transportation" category, as the "Top 10 Most Influential Brands" and the "Financial Technology Influence Award for the year" in China's charging and battery swapping industry.
- Qiyuanxin Power actively promotes networked energy services, completing full coverage of heavy-duty truck battery-swap in three pilot cities, namely Tangshan, Baotou and Yibin. Besides, it built a green and intelligent transportation system, and completed the first inter provincial heavy-duty truck battery-swap network in China along the Yangtze River in Chongqing, operated the first photovoltaic direct power supply and battery-swap station in Ningxia, completed the first concrete mixer truck project for battery-swap in Hainan Province, and built the first municipal heavy-duty truck battery-swap power station in Wuxi. It focuses on research and development of technologies around charging and battery swapping equipment, intelligent terminals and control systems.
- We built a model project of zero-carbon green power transportation in Chaoyang City, which has started the construction of charging and battery swapping stations and charging piles for buses, and completed the tender for 300 green buses.

Hydrogen Energy Business

- The Yanqing Garden Hydrogen Refueling Station in Zhongguancun was the first to be granted a license to operate a hydrogen refueling station in Beijing and is the first hydrogen refueling station in Beijing with both 35 MPa and 70 MPa hydrogen refueling capacity. During the 2022 Beijing Winter Olympic Games and Winter Paralympic Games, the station provided 692 times of refueling services for 60 hydrogen-fueled passenger vehicles, replacing 35 tonnes of diesel fuel, and reduced 120 tonnes of carbon dioxide emissions and 2.3 tonnes of nitrogen oxide compound emissions.

Other Emerging Businesses

- The Group also actively plans other emerging businesses. In line with the low-carbon development direction of the Company's strategy, the Group is currently exploring ways to promote the expansion of presence in sectors such as "Photovoltaic, Energy Storage, Direct Current and Flexibility" (PEDF) (a novel building energy system solution that integrates photovoltaic power, energy storage and power distribution), virtual power plants, urban redevelopment and integrated clean energy solutions.
- Focusing on plans for the emerging business of "new energy + modern agriculture", the Group established CP Chunhe and CP Nongchuang by way of joint investment. Currently, CP Nongchuang has become the only "New Energy Pilot Unit for Facilitating Rural Revitalization" as expressly confirmed by the National Rural Revitalization Administration.

Case

Launching of the first 3,000-tonne-level pure-electric container vessel with chargeable and swappable batteries in China

In 2022, the first 3,000-tonne-level pure-electric container vessel with chargeable and swappable batteries in China "Ganghang Chuantu 01 (港航船途01)" was jointly designed and developed by the green power transportation segment of China Power and Anhui Provincial Port and Shipping Group Co. Ltd., Anhui Chuantu Digital Technology Co., Ltd., Shanghai Jiao Tong University, Wuhan University of Technology and other well-known universities and enterprises. The launching ceremony was held in Wuhu City, Anhui Province, which also marked the country's first inland river high-quality "zero carbon demonstration route" officially set sail. The pure-electric battery-swap container vessel has obvious ecological and environmental protection and economic benefits, with zero emission and no pollution during the voyage, saving energy costs by about 35% as compared with traditional vessels for the same voyage, while it can also significantly shorten the voyage time and improve the overall transportation efficiency by about 15%.

Case

China Power's energy storage industry development moving towards internationalization

On 28 April 2022, China Power entered into a cooperation agreement with Mexico-based SESELEC (墨西哥斯莱克公司) and Zhejiang Chint Electrics Co., Ltd (浙江正泰電器股份有限公司), by way of online and offline cloud gathering from Beijing, Mexico and Shanghai, respectively, to jointly promote the Phase I of a 120MW photovoltaic project in Puerto Penasco Port, Mexico. According to the agreement, Xinyuan Smart Storage, China Power's energy storage business platform, will provide advanced energy storage equipment and technology in the cooperation project, marking the first step in the internationalization of China Power's energy storage business.

Promoting Integrated Intelligent Energy

We are committed to seeking energy integration solutions, using intelligent information technology, exploring and practicing the interaction and optimization among power source, power grid, power load, energy storage and usage ("**Source-Grid-Load-Storage-Usage**"), building customer-oriented energy service ecosystem, and setting up a new type of user-centric power system.

Work Highlights in 2022

Established Energy Demonstration Projects

- Northern Shandong Integrated Intelligent Industrial Park (魯北綜合智慧產業園) became the first approved Source-Grid-Load-Storage integration project in China, and was included in the "14th Five-Year" power plan of Shandong Province.
- Solidly promoted demonstration projects such as the Chaoyang County (朝陽縣) Model House Version 2.0 and the Chaoyang "Three Network Integration (三網融合)"* project.
- Orderly promoted zero-carbon smart energy demonstration projects of Wuhu Power Plant and CP Chaoyang.

Developed Large-scale Projects

- Xinjiang Hutubi Source-Grid-Load-Storage project obtained 300MW construction quota.
- Xinjiang Karamay Urho Source-Grid-Load-Storage project obtained 1,000MW construction quota and was placed on the list of the second batch of national Shagehuang (沙戈荒) large-scale wind-photovoltaic energy base commencement projects.
- CP Pu'an 1,000,000kW Wind-Photovoltaic-Thermal-Storage Integration Demonstration Project was included in the "14th Five-Year" power development plan of Guizhou Province.

* "Three Network Integration (三網融合)": Based on the energy network, integrating social networks, connecting the government affairs network, and in in-depth cross-border cooperation with Internet companies. We build a rural comprehensive smart energy industry expansion model with multi-element and multi-subject participation.

Case

The first "Source-Grid-Load-Storage"* Integrated Project in Northern Shandong

The "Source-Grid-Load-Storage" Integrated Project in Northern Shandong Integrated Intelligent Industrial Park is led by China Power and joined by the leading enterprises of related industries in China. It constructs a new material industrial base with new energy batteries, such as lithium batteries, as the main components, a booster station and power supply and distribution network with the capacity of 50MW wind power, 450MW photovoltaic power and 220kV, a 140MW/280MWh energy storage system and 2×80MW peaking combustion engines, as well as an integrated control platform equipped with a "Source-Grid-Load-Storage" system. After completion, the average annual power generation will be about 887,742.68MWh, representing an annual saving of about 267,654 tonnes of standard coal compared to thermal power projects with the same capacity. It will facilitate the transformation of the regional energy structure to clean and low-carbon energy, promote energy conservation and emissions reduction, drive the high-quality development of resource-based industries, and positively contribute to local economic stability and development.

Case

Integrated intelligent zero carbon power plant for regional low carbon transformation

Wu Ling Power is committed to building an integrated intelligent zero-carbon power plant in Hunan Province. It will combine a power source with an installed capacity of 1,200MW, a novel energy storage system of 820MW/1,640MWh, an adjustable load of 1,050MW and develop shallow geothermal heating and cooling, therefore reducing the strain on power load. Upon completion, it can supply the power grid at a peak capacity of 1,870MW, peak shaving capacity of 2,690MW and frequency regulating capacity of 1,640MW. It will realize local consumption of green energy and zero carbon power generation, thereby providing strong support for the low carbon transformational development and ensuring power supply of Hunan Province.

Case

Zero carbon cold chain logistics park electricity replacement

The Guilin Branch of Guangxi Company and Guilin Wanhe Agricultural Products Co., Ltd. (桂林萬禾農產品有限公司) reached a strategic cooperation alliance, and entered into the "Guilin Zero-Carbon Cold Chain Logistics Park Alternative Project Cooperation Framework Agreement" to create the first "new energy+" project in Guilin City, Guangxi Zhuang Autonomous Region through mutually beneficial cooperation, which would integrate green power transportation and integrated smart energy, taking an innovative step towards the construction of high-quality logistics parks.

★ "Source-Grid-Load-Storage" is an abbreviation for "power source", "power grid", "power load" and "energy storage", which can precisely control the interruptible load and energy storage resources of the society through various forms of interaction such as source-source complementation, source-grid coordination, grid-load interaction, grid-storage interaction and source-load interaction, in order to improve the balanced operation of a dynamic power system in a more economic, efficient and safe way. In essence, it is an operation mode and technology to maximize the utilization of energy resources.

Energy Technological Innovation

The Group is gradually transitioning from investment-driven to innovation-driven, by acquiring core competitiveness, brand influence and high-return operating efficiency from technological innovation, with a goal to turn the Company into a technology-based clean energy flagship listed company with core technological competitiveness. With this goal in mind, we are constantly improving our technological innovation system and mechanism, fully stimulating the vitality of technological innovation, and building a "value pool" for corporate growth.

Institutional Guarantee of Technological Innovation

The Group actively implements the "Three-Year Reform Action of State-owned Enterprises" of SASAC on optimizing the economic layout and structure of State-owned enterprises, deepening the reform of mixed ownership system and improving the market-oriented operation mechanism. The Group strives to improve the infrastructure of the technological innovation system, strengthen the protection of intellectual property rights, stimulate the vitality of systems and mechanisms in relation to technological innovation of energy, and provide it with sufficient protection.

Improve innovation management

- Strengthened the management of technological innovation and scientific research projects, revised relevant systems of the Group, and provided solid institutional guarantee for the management of technological innovation. It covered technological innovation management, scientific research project management, technological innovation awards, technological innovation work assessment, intellectual property rights protection and other dimensions comprehensively, including "Science and Technology Innovation Management Regulations", "Scientific Research Project Management Measures", "Measures for the Management of Science and Technology Awards" and "Management Measures for Assessment and Evaluation of Science and Technology Work".

Protect intellectual property rights

- Revised the Company's "Intellectual Property Rights Management Regulations" and formulated "Management Measures for Transformation of Scientific and Technological Achievements" to strengthen the Group's intellectual property layout in various fields and enhance protection of scientific research achievements.
- Strengthened protection of scientific and technological achievements and organized awards for scientific and technological achievements by focusing on rewarding intellectual property rights obtained for protection of scientific and technological achievements.

Investment in and Transformation of R&D Achievements

Increased investment in science and technology and enlisted a large number of highly professional scientific research talents with master's, doctor's or post doctoral degree to create a novel and scientific research-oriented energy enterprise.

2022

Total investment in technological R&D
approx. RMB947 million
⬆127.34%

No. of patents obtained 170
⬆47.83%
including
- 105 utility model patents
- 58 invention patents
- 7 design patents

No. of technological projects launched
269
⬆26.89%

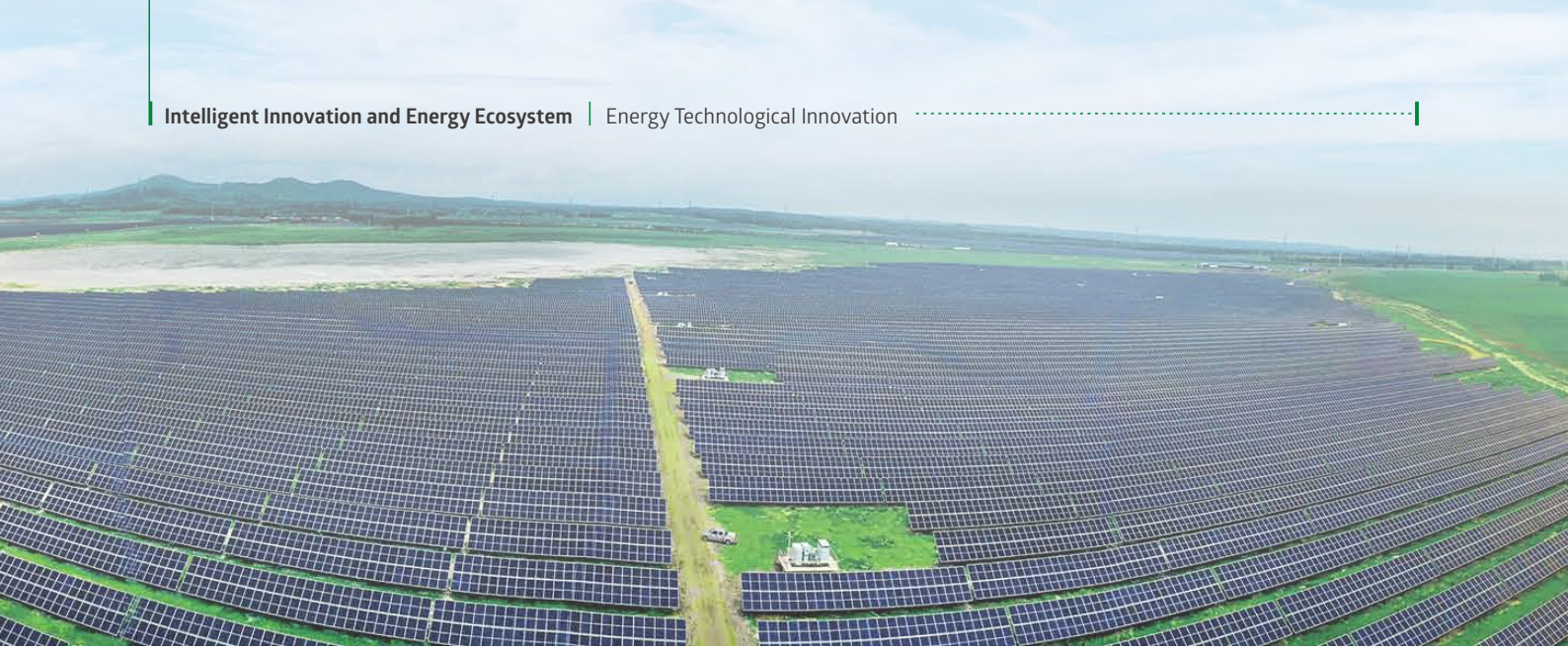
No. of registered software copyrights
40
⬇6.98%

No. of various innovative achievements attained
252
⬆245.21%

Chaired and participated in the formulation and revision of
73 standards
⬆108.57%

Included

- 1 **National Innovation Demonstration Project**
  "Deyang Economic Development Zone Distributed Energy Station Project Gas Turbine Innovation and Development Demonstration Project"
- 2 **Innovation Demonstration Projects of SPIC**
  "Small Multi-energy Complementary Zero Emission Energy Supply Test System (Yanqing Garden Hydrogen Refueling Station)"
  "Phase I of (Advanced) Hydrogen Production Project of China Power Hydrogen Energy Industrial Park II"
- 1 **Project listed in the SPIC Green Energy Emerging Industry Benchmarking Project Datebase**
  "Hunan Hengyang 100MW-level Salt Cavern Compressed Air Energy Storage Innovation Demonstration Project"



In 2022, we actively cultivated innovation, focused on promoting the application of scientific research achievements. We introduced China Power's new technologies, new business forms and new models in emerging industries to the market, and formed the "value chain" of industry development. By focusing on building emerging green energy industries, we intend to form a new business pattern that incorporates both scientific and technological innovation and value creation.

Unleashing the power of innovation

- Promoted the deep integration of "industry, academia, research and application". The Company established postgraduate workstations in cooperation with colleges and universities, gave full play to the advantages of talents, disciplines, science and technology and resources of universities and research institutions, and promoted the gradual improvement of the Company's technological innovation system and improved its independent innovation capability.
- Carried out science and technology exchanges. In 2022, the Company organized and participated in various technological innovation exchange activities for 13 times, including 8 times online and 5 times offline.

Fostering achievements in innovation

- Sorted out all the achievements in innovation in emerging green energy industries. Applied for SPIC emerging green energy industry benchmarking database and innovation achievement database in batches.

Implementing innovation incentives

- Increased incentives in innovation and entrepreneurship. The Company promoted the reform of equity incentive for an enterprise focused on "science reform demonstration" to stimulate the enthusiasm and creativity of staff and talents for entrepreneurship.

Case

Xinyuan Smart Storage has been rated as a "Demonstration Enterprise in Science and Technology Reform (科改示範企業)" and a "National High-and-New Tech Enterprise (國家高新技術企業)" by SASAC

Focusing on the positioning of "light-asset, market-oriented, scientific innovation", Xinyuan Smart Storage has made greater efforts to cultivate and enhance its technological innovation capability, established a smart energy operation and management platform, developed an Energy Management System (EMS) for energy storage, designed an integrated trading platform and conducted research and development for the Power Conversion System for energy storage, promoted intellectual property reporting and strengthened research and development team building. Among them, the Power Conversion System (PCS) for energy storage has completed external testing of a series of sample sets with the indicators exceeding the national standards. The operation of energy storage power station and the Energy Management System (EMS) have been successfully applied to the projects in Golmud, Qinghai Province and Jining, Shandong Province.

We are speeding up the design and development of an artificial intelligence operated and maintenance platform and the construction of a zero-carbon power plant integrated with dispatching and trading. Xinyuan Smart Storage was granted 17 patents, 22 software copyrights and 8 compilation standards. In line with its capacity for technological innovation, Xinyuan Smart Storage has made every effort to optimize the corporate governance structure of a modern enterprise, initially forming a hierarchical delegation system, implemented various market-based selection and appointment mechanisms of human resources and explored effective medium- and long-term incentive mechanisms.

Case

Industry-academia-research and conversion of the Air Compression Energy Storage Project in Hengyang, Hunan Province

Hunan Hengyang 100MW Class Salt-cavern Compressed Air Energy Storage Demonstration Project has made full use of the abundant salt-cavern resources in the Hengyang region, catering to the actual needs of the project. We will conduct technological research and development works in various areas with Tsinghua University and China Petroleum Engineering Institute (中石油工程院) to support the project implementation and the construction, which will principally serve the peak shaving and frequency and phase modulation of the power grid in Hunan Province. It will also serve as an independent energy storage and power station to participate in the medium- and long-term power market or the power spot market in Hunan Province, and provide leasing of shared energy storage services for new energy power generation enterprises such as wind and photovoltaic power. Upon completion of the project, its flexible and fast adjusting power regulation characteristics can effectively smooth the fluctuation of power output from new energy such as wind power and photovoltaic power. The project will also be able to participate in peak shaving and relieve pressure of the power grid and improve the quality of power supply and the safety of grid operation. In addition, the project will act as a reference solution plan and reliable guarantee for the construction of new power systems based on new energy and for the large-scale new energy development projects regarding "Three Types and One Area (三類一區)" in China. The project will be significant as it will be the first compressed air energy storage Project in Hunan Province and the largest compressed air energy storage project based on salt-cavern air storage method in China.

Promoting the Science and Innovation Achievements of "Going Global"

We promote the science and innovation achievements of "Going Global" by actively connecting with large platforms and participating in global communication meetings in order to increase the recognition of our achievements.

Connecting to the platform of SPIC

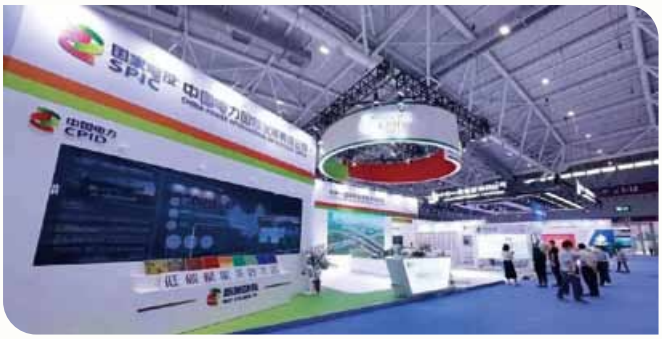
The technology and products of emerging green energy industries have been connected to the "Technology Headhunting" and "Online Collection Mall" of SPIC to realize new technology, new business mode and the new model of "Going Global".

Participating in global hi-tech fairs

Through active participation in hi-tech fairs so as to showcase our energy storage products and comprehensive process solutions, integrated intelligent energy solutions in battery swapping, and colorful photovoltaic core technology system.

Case

China Power showcased latest achievements in transformation and development



From 15 to 17 November 2022, the 24th China Hi-Tech Fair ("**Hi-Tech Fair**") was held in Shenzhen with the theme of "Science and Technology Reform Drives Innovation, Science and Technology Innovation Drives Development". China Power, as a co-organizer, set up a booth with the theme of "**Lower Carbon Empower Better Life**", and introduced Xinyuan Smart Storage's energy storage products and comprehensive process solutions of "modular combination, mobile deployment and intelligent operation", and Qiyuanxin Power's integrated intelligent energy solution for battery swapping of "wind-photovoltaic-storage-charge-exchange for vehicles (風光儲充換車)", and Xinyuan Jinwu's unique "Photovoltaic Module Full (Colored Micro-Layer (CMT)) Core Technology System" and product application scenarios. This "appearance" fully demonstrated the transformation and development achievements of China Power and the charm of new energy industries, attracting a total of more than 3,000 visitors, and was well received by the market.

Scan to see China Power's Booth at the "Hi-Tech Fair"

Digital Industrial Transformation

We accelerate and upgrade on digital transformation, push forward the Group to further enhance intelligentization, continuously strengthen the digital construction of information, promote data sharing and utilization, and inject new development momentum into the digitalization of industry.

Upgrade information system

- In 2022, we promoted internal resource sharing, upgraded technology and information management systems, and applied Robotic Process Automation (RPA) and financial sharing robots, large and complex engineering design and construction of the whole process of building information modeling (Building Information Modeling) and digitalization application projects, etc.

Case

Digital exploration of the country's first photovoltaic direct power supply battery-swap station

Qiyuanxin Power's photovoltaic direct power supply battery-swap station in Yinchuan was successfully completed. The project innovatively developed integration of heavy-duty truck battery-swap and energy storage, intelligent centralized management and control system for distributed battery-swap station, and successfully achieved technological breakthroughs in charging batteries for heavy-duty battery-swap trucks directly through distributed photovoltaic power supply. It has established a new model of "zero carbon intelligent logistics" in which the whole process is visible and controllable and has realized all-round digital intelligent management and control of transportation vehicles.

Case

5G digitalization brings "acceleration" to hydropower projects

The "5G Cloud Collaborative Intelligent Hydropower Engineering Construction and Application" of Wuqiangxi Power Plant expansion project of Wu Ling Power was successfully selected as one of the "100 Landmark Projects of Hunan Province Digital New Infrastructure (2022)" announced by the Hunan Provincial Department of Industry and Information Technology. The project has comprehensively carried out digital transformation in the field of hydropower engineering and created the first 5GSA exclusive engineering application transmission network in the domestic hydropower industry. It has established a multi-scenario and fully connected 5G to the high-speed industrial internet and formed a "data highway" based on 5G Internet of Things architecture, providing a high-speed and high-quality network to support the collaboration and control of hydropower engineering digitalization projects.

Case

Intelligent mobile inspection system for booster stations

In November 2022, Pingwei Power Plant completed the construction of a dedicated 5G network communication for the entire plant area and the 500kV/220kV booster station robot inspection technology project. For the first time, this project creatively integrated 3D digital technology with robot front-end perception coupled with back-end algorithm technology, combining 1:1 3D virtual simulation modeling of the booster station with robot applications, and displaying the route and results of the robot's inspection and patrol in real-time in the complex working environment of the booster station in 3D virtual simulation scenes with realistic and visualized graphics.

Safety Production

We always adhere to the safety concept of "any risk can be controlled, any violation can be prevented, and any accident can be avoided". Combined with the "Three-year Action of Special Rectification of Production Safety", we built a good safety barrier for production and development, with a focus on solidifying the foundation and controlling from the source, the assignment of responsibility and execution mechanism as the base, and with innovation means and safety enhancement technology as the support.

Strengthening Security Management

To continuously solidify the foundation of safety management, we continued to carry out the construction of the safety, health and environmental management system, which promoted the further improvement of safety management mechanism, carried out practical production safety special activities, strictly implemented production safety due diligence inspections, prevented and solved major safety risks from the source, and improved the overall safety management level.

2022

Released a total of **2,211** emergency plans

74 comprehensive emergency plans

1,400 specified emergency plans

2,386 on-site handling plans

No general and serious safety, quality and environmental accidents

No general and serious casualties[1] and equipment accidents[2]

No accidents related to dam leakage/collapse of dam in reservoirs and ash reservoirs and flooding of power plants

No general and serious fire accidents

No general and serious power safety accidents

No general and serious traffic accidents

No general and serious responsible network security incident

Achieving continuous and safe production for **365** days within the year, in which Wuqiangxi Power Plant achieved the maximum continuous safe production of nearly **10,000** days since it was put into operation

	2020	2021	2022
Number of work-related fatalities occurred in each of the past three years	0	0	0
No. of work day lost due to work-related injuries	0	0	0

Sound security system

- To improve the safety management system, we compiled the "Occupational Health and Labor Protection Management Measures", "Safety Risk Identification and Grading Control Management Measures" and other management systems, and formulated the "China Power Strives to Create a Safety Production Benchmark Enterprise Program" to improve the safety production management level.
- To enhance the safety, health and environmental management system, we formulated the "2022 Safety, Health and Environmental System Enhancement Plan", and guided Pingwei Power Plant to formulate the "Work Plan for the Construction of Four-diamond Benchmark Enterprise in Safety, Health and Environmental Management Systems", and continued to deepen and promote the construction of the safety, health and environmental system.

Strengthen safety supervision

- Set up a safety inspection team to carry out on-site inspections of key projects, utilized remote video for safety supervision, carried out special safety inspections and phase inspections on projects under construction, set strict deadline for rectification with feedback closed-loop.
- Piloted third-party supervision of safety production, organized experts in the system to conduct safety inspections of 29 new energy construction projects, raising 335 issues and making 211 management recommendations.

Prevent security risks

- Prepared "Safety Risk Identification and Grading Control Management Measures" to regulate safety risk management, effectively implemented risk grading control, reduced safety production risks and prevent production safety accidents.
- Organized safety risk management training, carried out hazard identification and risk assessment, effectively applied risk assessment results, implemented risk prevention and control measures and risk classification and control.
- Strengthened safety control over the timing, area and activity of risks, strengthened risk prevention key stages and key points of construction to ensure that the safety and quality of construction projects can be controlled.

Notes

(1) General and serious casualties: Pursuant to requirements of "The Regulations on the Reporting, Investigation and Disposition of Production Safety Accidents" promulgated by the PRC, refers to accidents causing personal injuries or deaths in the process of production and operating activities

(2) General and serious equipment accidents: Equipment accidents causing direct economic loss in the amount of RMB1 million or above

Enhance Security Capacity

We attach great importance to safety production and always adhere to the goal of "zero death, zero accident". We comprehensively improved the emergency management capacity, strengthened safety education and publicity, fundamentally established full awareness of production safety, and enhanced safety production capability of all employees.

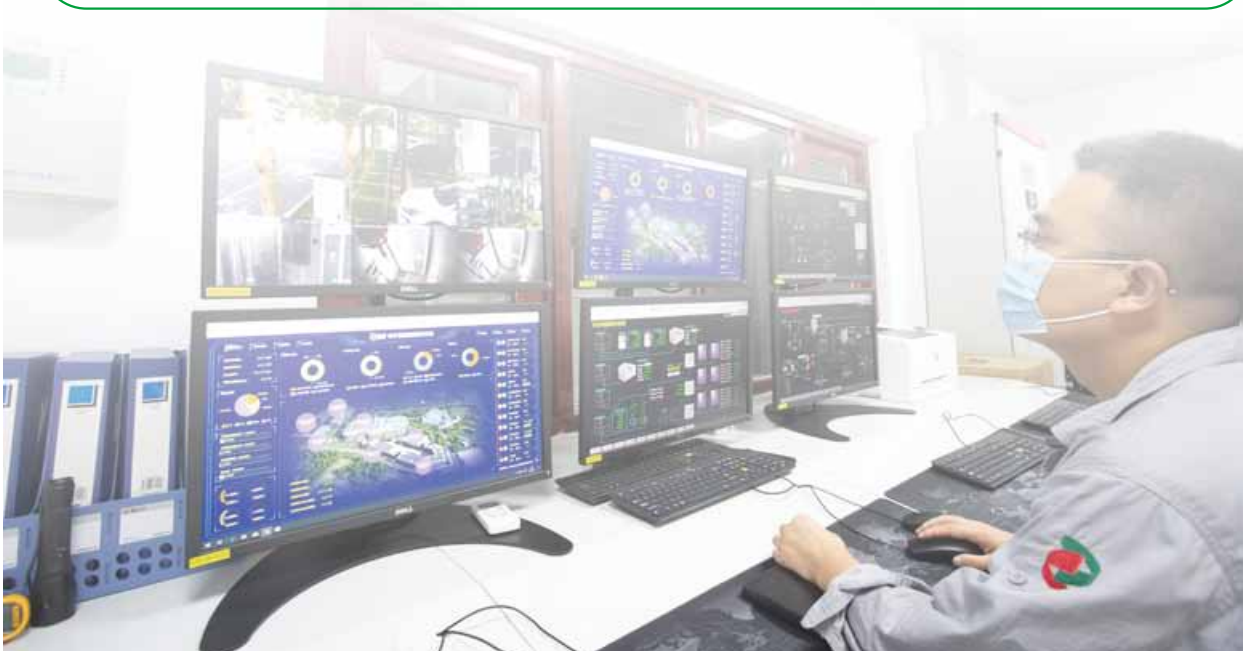
2022

Emergency drills organized
3,665 times ↑ 35.74 %

No. of participants in the emergency drill
46,642 person-times ↑ 70.06%

Safety education and training programs organized
4,561 times ↑ 264.88 %

No. of participants in safety production training
147,638 person-times ↑ 80.07%



Case

Multimedia intelligent classroom for security training

Changshu Power Plant has integrated various intelligent terminals such as safety training intelligent terminals and VR accident experience all-in-one machines to build a multimedia intelligent classroom for safety training, integrating scenes and functions such as "warning, training, experience, and assessment". It has realized access training and assessment and normalized safety training and supervision for technical personnel, providing strong intelligent means to support the resolution of safety management problems.

- To strengthen the safety team building and give full play to the leading role of safety demonstration team, we promoted the overall improvement of safety construction of the team, aiming to get through the "last mile" of safety management.
- Strengthened on-site construction safety management comprehensively based on the "Thirty Key Requirements for the Prevention of Construction Safety Accidents in Electric Power Construction Projects".

- Revised the rules of production safety incentives. Obvious problems found in various types of safety inspections have been reported, while those who completed the tasks and objectives from their superiors during specified periods were either criticized or commended promptly.
- Formulated a special work plan for the implementation of "zero death" reinforcement measures in China Power. We strictly implemented the "Twenty Measures for Strengthening the Target of Zero Death in Safety Production of Group Companies under the New Situation", and incorporate "zero death" in safety production into the JYKJ assessment indicator system.

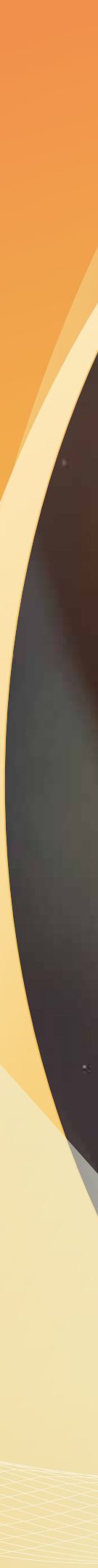
- Vigorously carried out various safety education and training to improve the safety skills of staff at all levels.
- Combined with "Safety Production Month", "Safety Lecture", "Publicity Day" and other activities, we carried out publicity and learning on a full range of our safety culture system and connotation through multiple channels, such as our WeChat public account, Diantouyi (電投壹) platform (the instant messaging software of the Company) and our website.

- Conducted emergency drill training to continuously improve the level of emergency response capabilities as well as self and mutual aid skills.
- Completed the optimization of the contingency plan and revision of on-site disposal plan, and promptly assessed the reasonableness of the contingency plan, thereby enhancing the applicability and practicality of the contingency plan.
- Carried out assessment of the emergency response capacity of operation level entities to improve the level of compliance and standardization of their emergency management.

China Power
Sustainability Report 2022

Mutual Achievement and Social Connection

- Career Development of Employees
- Responsible Supply Chain
- Securing Energy Supply
- Rural Revitalization
- Joint Development with the Community
- Engagement with Shareholders



Over the years, China Power has been working with various internal and external stakeholders to grow together and achieve mutual success and mutual achievement. We work to promote rural revitalization, build a responsible supply chain, serve employees' growth and development, and carry out community building with our all-out efforts, so that the results of our corporate development can continuously benefit all stakeholders and the wider community, and enhance their sense of achievement, happiness and security.

Sustainable Development Goals of the United Nations

1 NO POVERTY	End poverty in all its forms everywhere
2 ZERO HUNGRY	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3 GOOD HEALTH AND WELL-BEING	Ensure healthy lives and promote well-being for all at all ages
4 QUALITY EDUCATION	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5 GENDER EQUALITY	Achieve gender equality and empower all women and girls
8 DECENT WORK AND ECONOMIC GROWTH	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
10 REDUCE INEQUALITIES	Reduce inequality within and among countries
11 SUSTAINABLE CITIES AND COMMUNITIES	Make cities and human settlements inclusive, safe, resilient and sustainable
17 PARTNERSHIPS FOR THE GOALS	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Career Development of Employees

The Group is committed to providing a stable and safe working environment for employees, help them develop their personal careers while protecting their rights, provide them with practical assistance in difficult times with care and attention, and ensure that they are treated fairly and with respect while enhancing their sense of well-being.

Workforce Equality and Diversity

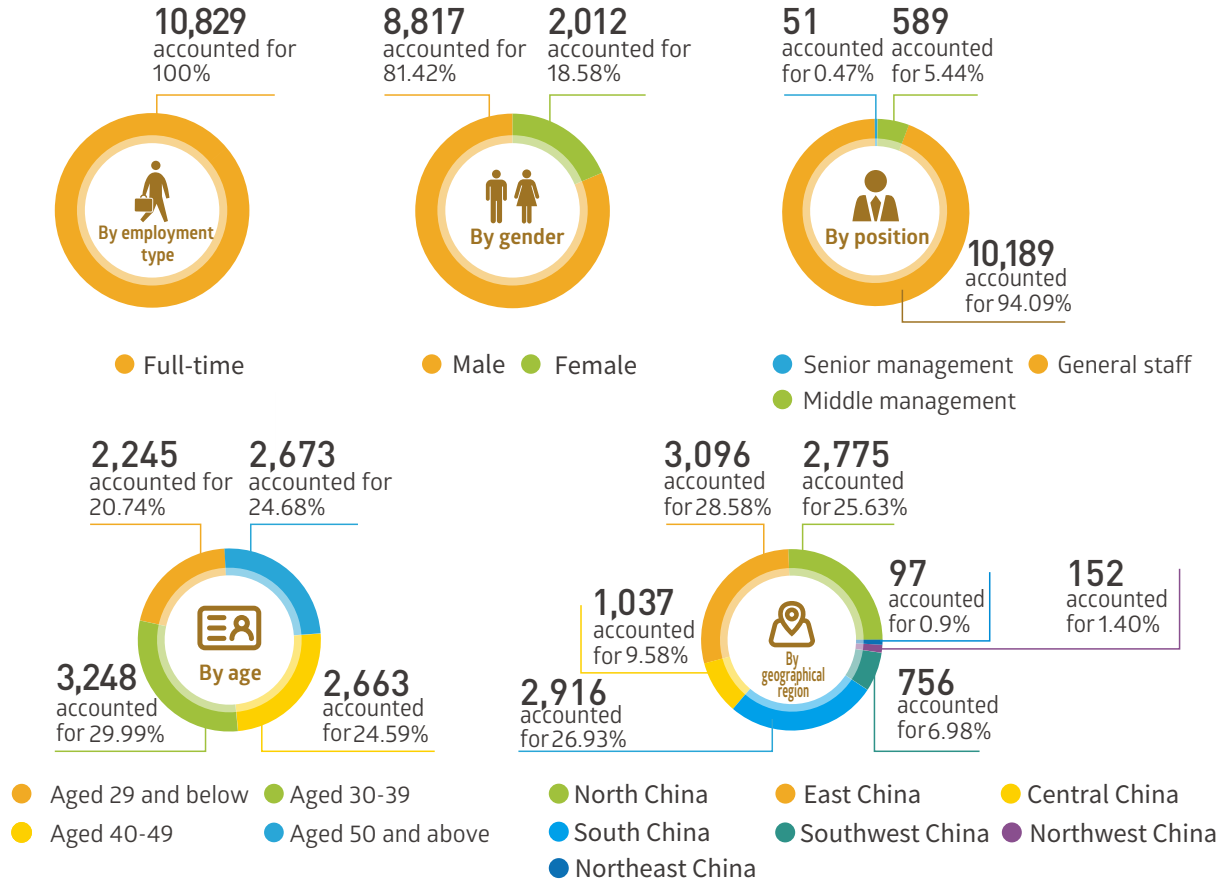
2022

Percentage of employees covered by labour contracts and social insurance maintained at
100%

Total number of employees
10,829

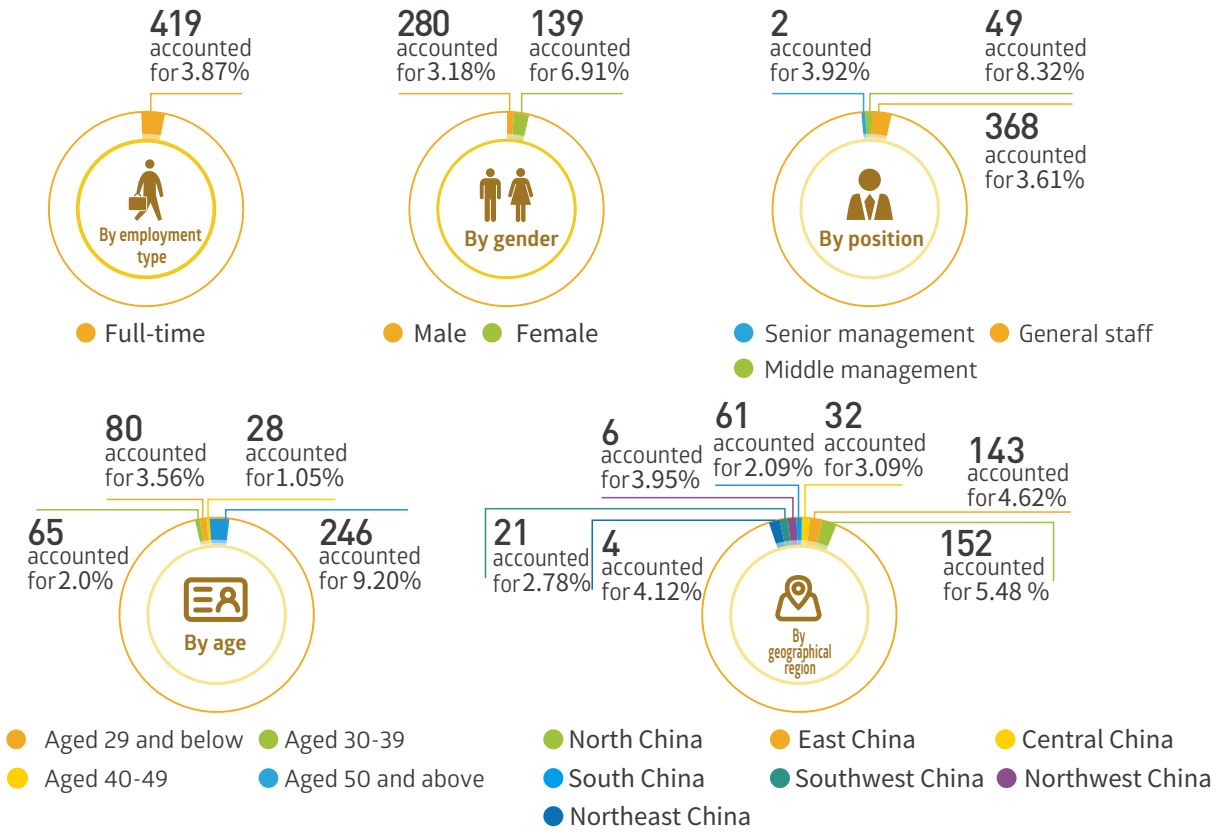
Newly joined fresh graduates
427

Total number of employees in 2022



	Senior Management			Administrative Executive			Technical Personnel		
	Total	Female	Proportion	Total	Female	Proportion	Total	Female	Proportion
2022 (as a base year)	51	3	5.88%	3,319	1,076	32.42%	7,459	933	12.51%
2030 (Target year)	9%-11%			33%-35%			13%-15%		

Employee turnover rate in 2022 *



The Group actively promotes equal and diversified employment, prohibits any form of discrimination in processes such as recruitment, employment and promotion, and ensures that both male and female employees of the Group will be entitled to equal pay for the same position with equal development opportunities. In order to achieve the goal of gender diversity, we have made dedicated efforts to ensure equal development opportunities and various benefit packages for female employees at different level of positions.

* Employee turnover refers to employees resigned voluntarily, retired or passed away during the reporting period, and the percentage shown refers to employee turnover rate in the corresponding category.

Facilitate Development of Employees

We attach great importance to employees' growth and success. We build up our talent reserve through multiple channels, cultivate talents by various means and broaden room for their multi-level career development. In addition, we constantly improve the entire process of employee cultivation mechanism in a bid to achieve a harmonious integration of employees' growth with the continuous development of the Company.

2022

Percentage of employees from different positions who received training
100%

Total hours of employee training
734,720 hours

Total investment in employee training *
RMB39,304,645

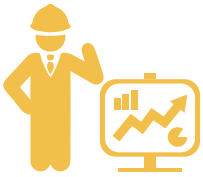
Employee training by position

Type	Hours per Capita (approx.)	Training Coverage Rate
Senior management	73	100%
Middle management	61	100%
General staff	68	100%

Employee training by gender

Type	Hours per Capita (approx.)	Training Coverage Rate (100%)
Male	69	100%
Female	61	100%

* Included various types of internal and external training expenses and travel and accommodation expenses incurred during the reporting period.



Facilitating career development

- Enhanced employee's capabilities in operations management, professional technology, and operational skills.
- Promoted exchange and learning and rotational training for young talents to improve the team's overall academic qualification, title level, working ability, and major problem solving skills, etc.

Reforming personnel selection and employment mechanisms

- Compiled "China Power's Work Proposal on Promoting Employment Term and Contractual Management for Managers" in order to enhance management efficiency.
- Completed organizational reform and personnel reallocation of the headquarters, and established a refined and efficient headquarters structure and management chain.
- Insisted on attracting talents by market-based open recruitment and organized 24 market-based open recruitment activities for 62 positions in 2022.
- Strenuously promoted cadre rejuvenation. As at the end of December 2022, young management accounted for more than two-thirds of the newly appointed cadres during the year.

Training and reserving talents

- We formulated the “Implementation Rules for Management of On-the-job Training, Secondment and Learning” and made plans to assign organization cadres who lacks basic-level experience to junior positions for training. In order to equip employees with a better understanding of frontline production and industry development, we provided an opportunity of “Back to Base-level, Work at Frontline” training for every graduates employed from campus recruitment.
- We arranged training for middle-level cadres and project managers, training for knowledge and skills of conventional thermal power and new energy, training for language, internationalized development, and sales and marketing. We built and dynamically managed a professional talent pool for accumulation of talents for the transformational development of the Company.
- We extensively launched and organized various competitions for employees to put into practice the idea of “Competition Promotes Training, Competition Promotes Learning".

Reforming the remuneration allocation system

- Deeply implemented reforms of incentive mechanisms, standardized various types of incentives and promptly fulfilled incentive obligations, thereby enhanced the fairness and effectiveness of incentives.
- Optimized the performance-based remuneration system and introduced a new development performance indicator and quarterly performance appraisal in addition to monthly and annual performance appraisals, to promote the optimization of remuneration structure and align it with the transformational development of the Company, and as such, broke the tradition of allocation of remuneration without merits, and fully stimulated proactiveness and creativity of individuals.

Safeguard the Rights and Interests of Employees

We strictly comply with the relevant laws and regulations of the PRC and of the place where we operate. We have formulated the Group's "Management Measures for Labor Contracts" and "Management Measures for Employees' Rewards and Punishments" to promote the complementary alignment of talent management with development of the Company. We frequently seek opinions of and suggestions from employees. We strive to protect the rights and interest of employees while accumulating the wisdom of employees for the transformational development of the Company.

2022

No. of labour dispute case	No. of proposals received from staff representatives	Implementation rate of proposals received from staff representatives
0	312	99.68%

Protection of human rights

- Strictly abided by the laws and regulations such as the "Labor Law of the People's Republic of China", the "Labor Contract Law of the People's Republic of China", and the "Regulations on Prohibiting the Use of Child Labor".
- Eliminated all forms of discrimination against labor, opposed forced labor, prohibited the employment of child labor, opposed discrimination based on religion, race, region, age, disability, etc., and insisted on equal pay for the same position.

Proposals from employees

- The Group collects opinions from its employees in the form of proposals on specific issues such as production and operation, reform and development, salaries and wages, living and welfare.
- Each year, a proposal committee meeting of employee representatives is convened to discuss proposals submitted by employee representatives, of which viable proposals will be approved for implementation and the department assigned for implementation will commence works in relation to execution of the proposals.

Caring for Employees' Livelihood

We followed the "Management Measures for Employees Caring Activities" of the Group, and organized a wide range of staff activities on a regular basis and continuously giving care to employees in need by taking practical actions.

2022

Grant to employees from "Extreme Medical Condition Relief Fund" *	Assistance to employees with difficulties	Helped children of staff with difficulties pursuing further education	Grant under the "Golden Autumn Education Fund"
RMB 957,038	228 cases	27 cases	RMB197,160
⬆ 26.69%	⬆ 8.06%	⬆ 58.82%	⬆ 205.67%

Caring for those in need

- Wu Ling Power and the Hunan Provincial People's Hospital entered into a hospital-enterprise joint development agreement, which assisted 14 employees and their families to overcome difficulties in treating urgent, serious and fatal medical conditions.
- Wuhu Power Plant has aptly handled members' profile management, payment of membership fees and induction of new members for the "Extreme Medical Conditions Relief Fund", and handled the transfer of files and information of incoming and outgoing members. In 2022, we applied for funding from the "Extreme Medical Conditions Relief Fund" on behalf of 5 employees.

Caring under exceptional circumstances

- Proactively hosted various activities, such as guaranteed power supply and sending warmth and coolness to those in need during different seasons.
- Fuxi Power Plant formulated the "Action Plan for Caring during Pandemic Prevention and Control" and arranged 11 specific caring measures.
- Pingwei Power Plant distributed sympathetic supplies to workers stationed in the factories in two phases totaling RMB177,000.
- We have tracked and tackled practical medical problems faced by employees. Dabieshan Power Plant prepared health packages for all employees and distributed 397 packages of medication and equipment in total.

* Extreme Medical Conditions Relief Fund: If employees have been diagnosed with serious medical conditions as unanimously endorsed by the insurance industry, the management committee of the "Extreme Medical Conditions Relief Fund" for employees of the Company will provide grants to employees according to their circumstances. Intended recipients include members, spouse of members and their children under the age of 18 who have been diagnosed with serious or critical illness thus resulting in family and livelihood difficulties.

Enrich lives of employees

- Fuxi Power Plant hosted activities such as online fitness competitions, football competitions, and playing cards competitions.
- CP Huayuan established 5 home interest groups, and held various activities, including online singing competition and "Cloud Lecture Room".
- Wuhu Power Plant guided the project department to build "Employee's Home", improved working and living conditions of employees stationed abroad and held self-learning, recreational and sports activities.

Guaranteed life and health

- Wuhu Power Plant solved critical problems faced by employees in relation to commuting and resting of night shift by measures such as increasing the frequency of night-time shuttle buses.
- Changshu Power Plant installed 4 automatic external defibrillators (AED), and organized employees to participate in professional first-aid training to effectively ensure the life, health and safety of employees.

China Power launched Lantern Festival and Women's Day activities

AED equipment was provided by Changshu Power Plant

Case **Held the "Cervical Vertebra Health, Health Preservation in Spring" Activity**

On 23 February 2022, CP Guorui held "Cervical Vertebra Health, Health Preservation in Spring" health day activity for relieving employees with common shoulder and neck discomfort caused by sedentary works. In this activity, through Traditional Chinese Medicine meridian testing, cervical vertebra rehabilitation guidance and other methods, healthcare doctors disseminated knowledge about cervical vertebra healthcare and exercises on site to relieve shoulder and neck muscle soreness and waist and back muscle discomfort of employees caused by sitting for prolonged periods. Besides, CP Guorui introduced the importance of health preservation in spring and health preserving methods such as diet, exercise, and lifestyle to employees, with a view to relieving discomfort symptoms, improving quality of life and improving health index.

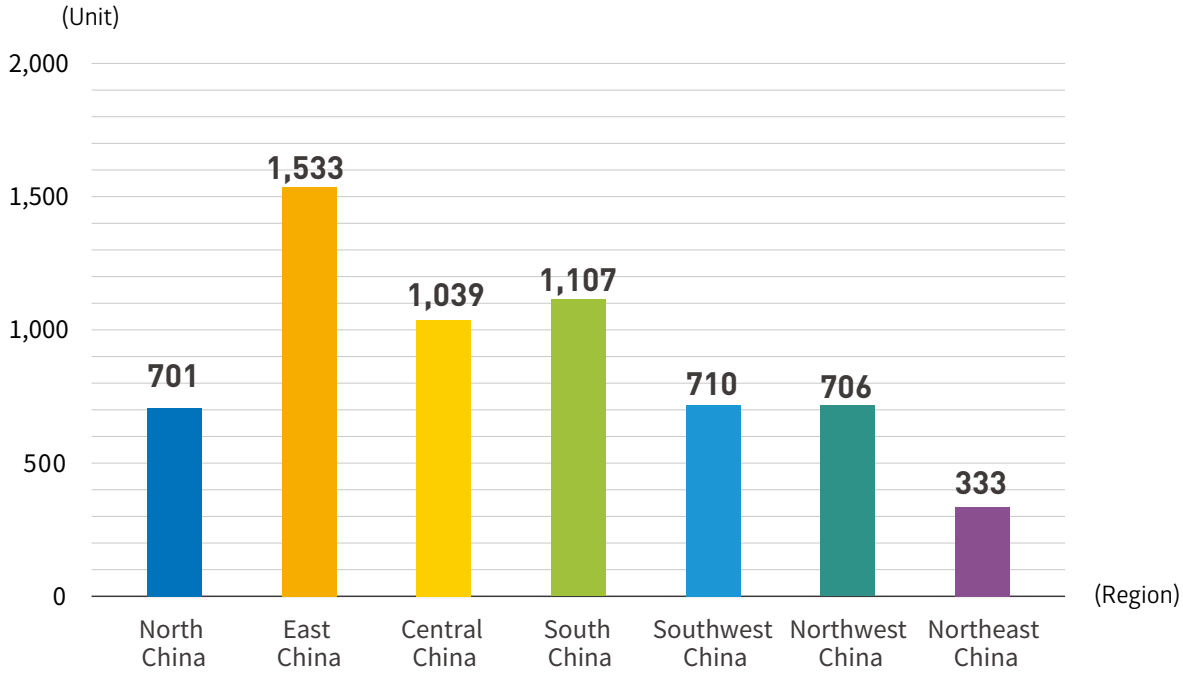
China Power launched "Sending Warmth in Spring Festival" activities

Wuhu Power Plant extended sincere greetings to frontline production staff

Responsible Supply Chain

We have integrated the concepts and technologies of green, low-carbon and environmental protection into all aspects of procurement to create a green, low-carbon and responsible supply chain.

Number of Suppliers by Geographical Region and Green Procurement



Enhanced Management of the Green Procurement Plan

Fully considered green and low-carbon factors such as energy saving, water saving, environmental protection, recycling, low-carbon, regeneration and organic features, and implemented procurement plans based on the principles of minimum consumption, minimum emissions and optimal performance.

Increased Procurement of Green and Low-carbon Products

Selected green suppliers and products with green environmental protection labels, and selected raw materials, components and other products which are recyclable and have low pollution.

Green Procurement

Strengthening Green and Low-carbon Acceptance and Delivery

Persisted in the concept of green and low-carbon, adopted the low-carbon, green and environmentally-friendly management means and technical means to implement green and low-carbon acceptance and delivery.

Promoted Recycling of Waste and Old Materials

Recycled waste and old materials and sold to recyclers in a timely manner by reverse logistics to realize green and low-carbon recycling.

Supply Chain Risk Control

The Group has formulated a series of tendering and bidding and supply chain management systems. The Group has strengthened the whole process of supply chain management and comprehensively enhanced supply chain risk identification and control by strictly regulating suppliers' qualifications, strictly controlling the tendering and bidding process, and strictly reviewing and penalizing suppliers' misconducts.

2022

No. of audits performed on suppliers[1]	No. of suppliers found with defects	No. of suppliers blacklisted	Training coverage for suppliers	Open procurement rate[2]
13,701	305	210	98.89%	99.82%

Supplier selection and tendering process management

- Strengthened supplier qualification review: Comprehensively reviewed the legality of suppliers' business qualifications, previous performance, legal disputes, etc.
- Strengthened the review of compliance of the tendering and bidding process: According to the requirements of relevant regulations, bids should be evaluated under the supervision of the inspection department to identify collusive behaviors throughout the qualification review process, such as the bidder IP address, bid author, and quotation.
- Evaluated supplier qualification comprehensively: For bidding of more complex projects, the "comprehensive evaluation method" should be adopted to evaluate bid. In other words, we used the scoring method to calculate the overall scores according to the respective weightings, with an evaluation expert committee established to conduct evaluation of each bidder based on the bidder's technology, commercial credit, and bid evaluation price.

Identification and management of supply chain risks

- Strengthened identification and control of supply chain risk and enhanced analysis and countermeasures for key risks of supply chain, such as coal and material supply and procurement price risks, bulk commodity price fluctuation risk and project cost risk to improve the risk resistance capability of the Group's supply chain.

Supplier management and misconduct management

- Strengthened contract performance management of suppliers, carried out evaluation and grading of performing suppliers during the year and applied the evaluation results.
- Continuously strengthened management of suppliers with serious misconduct records. Pursuant to the "Management Measures for Misconduct of Suppliers" of the Company, we censured in writing 85 suppliers in 10 batches in 2022. There were 221 suppliers with severe misconduct records during the censure period.

Notes

(1) Based on the number of audits performed on different or the same supplier.

(2) Potential suppliers were invited to participate in the procurement via open tender, open competitive negotiations or open request for quotations.

Securing Energy Supply

In 2022, with the global economy in recovery, electricity demand of the society increased rapidly. Furthermore, a number of factors, including frequent extreme weather such as high temperature and drought, further exacerbated the imbalance between power supply and demand. We refined our working mechanisms and cooperated with governments at various levels, power grids at various levels and power supply bureau, and upstream and downstream regional fuel supply enterprises vigorously to ensure supply of coal, electricity and heat, in order to guard the bottom line of people's livelihood, development and safety, defend the bottom line of ensuring energy supply safely, thus shouldering one of the most important social responsibilities of energy and power enterprises.

Implement the responsibilities for guaranteed supply of electricity

- Implemented the responsibilities for guaranteed supply of electricity by establishing a leading team and a working group for guaranteed energy supply of China Power, refining the working procedures and appointing the accountable departments and responsible persons.
- Reinforced the responsibilities for guaranteed supply of electricity at each level by creating China Power's emergency maintenance response mechanism, establishing a high-level leading team for emergency maintenance response and organized 57 professional and competent emergency maintenance teams.

Guarantee supply of coal-fired power

- Actively cooperated with major coal enterprises and suppliers to guarantee support for supply of resources and improve assurance of the delivery.
- Brought in China Coal Power under China Coal Group as a strategic partner to enhance coal supply under long-term agreement and improve overall supply guarantee capacity of coal-fired power segment of China Power.
- Enhanced expedited delivery and transportation of coal at mines and ports, conducted daily tracking, ten-day analysis and monthly summary to refined management of long-term agreements.
- Procured approximately 1.43 million tonnes of imported coal, representing a year-on-year increase of 260,000 tonnes, through procurement by scientific methods and differentiated pricing.
- Proactively commenced research on coal markets of different countries and entered into a cooperation memorandum with a Mongolia-based coal enterprise, thereby developing new channels for imported coal from other countries.

Optimize resource allocation

- Actively implemented deployment pursuant to the requirements of the PRC and SPIC with regards to "joint operations between coal and power enterprises" and professionalized consolidation of State-owned enterprises, to accomplish the mission of guaranteed energy supply. We established the platform company, Xinyuan Ronghe, for joint operation of coal-fired power with China Coal Group and completed the partial disposal of 4,760MW coal-fired power projects of Yaomeng Power Plant and Dabieshan Power Plant, thereby optimizing asset allocation.
- During the summer peak season, we delivered over 7 billion electricity sold in total across provinces and regions to provinces with insufficient supply in central and eastern China to respond to inter-provincial demand for mutual assistance, and obtained more than 700,000MWh electricity at higher prices by inter-provincial spot and regional auxiliary service markets, which effectively increased the revenue of power generation enterprises.

Case **Brought in coal supply from Mongolia to enhance the industry chain**

In September 2022, China Power, Qinhuangdao Lijing Trading Co., Ltd. and Erdenes-Tavantolgoi JSC (ETT) signed a memorandum of cooperation, which organized coal export trade and logistics services in Mongolia and formed a stable international long-term supply pipeline of high-quality thermal coal. This cooperation marked a new breakthrough of China Power to expand imported coal sources and added a new country for logistics trade, creating a new template for energy and industry cooperation along the China-Mongolia Economic Corridor.

Repairing Shangqiu Thermal Power's power generating unit during summer peak season

Coal storage site for ensuring sufficient fuel supply for electricity generation

Rural Revitalization

Focusing on the dual national goals of "Carbon Emissions Peak and Carbon Neutrality" and "Rural Revitalization", the Group has explored the establishment of the development model of "New Energy + Modern Agriculture", developed a platform for emerging businesses that offers system solutions for rural revitalization of the whole region and created new driver for rural revitalization so as to realize the comprehensive social values of "beautiful village, rich farmer, excellent governance, and prosperous industry".

In 2022, CP Nongchuang formally became a pilot enterprise that the National Rural Revitalization Administration had issued a statement to support, with the Xinjiang Cocodala Super Ranch and Beijing Daxing Agricultural-Photovoltaic Complementary Intelligent Energy Demonstration Project progressing in an orderly manner. CP Chunhe made new breakthrough in "new energy + intelligent agriculture" and successfully obtained 200MW photovoltaic production quota of 1,000,000kW-level photovoltaic power generation base project located in Sanduntan, Minle County, Zhangye City through competitive allocation.

Case **Supported rural revitalization with household photovoltaic power**

On 26 June 2022, the CP Guorui household photovoltaic project of the Southern Hebei Power Grid, which is the first pure distributed household photovoltaic project of China Power, completed grid connection for power generation for the first time. This project spans 42 counties (county-level cities) in 6 cities in Southern Hebei Province, such as Shijiazhuang. It rented roofs of farm houses to install photovoltaic panels for power generation and grid connection and has increased income for more than 20,000 households. After the whole project is completed, it is estimated that the average annual on-grid electricity will be 618,850MWh. Compared to thermal power plants with the same power generation capacity, this project can save about 185,655 tonnes of standard coal every year and reduce 501,268.50 tonnes of carbon dioxide emissions.

"Following the installation of the household photovoltaic system, rooftop maintenance is handled by dedicated personnel. Now, rain will not leak through in the summer and snow will not accumulate on the roof in the winter. Besides, we all earn a rental income every year. This money may not seem much to a rural family, but it helps pay daily expenses and that gives me hope!"

—Villager at Zhao County, Shijiazhuang

Case **Realized the innovative model of "carbon finance + integrated intelligent energy"**

China Power launched the first infrastructure (similar REITs) financial product backed by thermal power assets as underlying assets and issued the first "rural revitalization" panda bond in the PRC.

Case Built an integrated intelligent energy demonstration project for rural revitalization

CP Nongchuang is actively developing intelligent photovoltaic agriculture by transforming a once-deserted "no man's land" into a 1,000-mu "intelligent photovoltaic + agriculture" model base, i.e. "CP Nongchuang Valley · Low Carbon Eco-Industrial Park". The park adopts EAPV even-light photovoltaic agricultural system, which refracts the sunlight through specially designed optics of pressure groove glass to supplement the light intensity under the photovoltaic panels. The solar panel can rotate automatically in response to the change in angle of sunlight. The integrated intelligent energy control platform (Tianshu I) is used for the overall integration of energy and intelligent management of the park, and the electricity generated is used for the greenhouses in the park as a priority, truly achieving zero pollution and zero emissions, and empowering the agricultural facilities as a whole.

The distributed photovoltaic power station in the park adopts the "self-powered with surplus power integrated into grid" model, which can generate 8.11 million kWh of electricity per year. In addition to meeting the demand of electricity for all agricultural facilities in the park, more than 60% of the remaining electricity can be transferred to the power grid, bringing real benefits to the farmers. So far, the project has increased the income of around 200 villagers in the vicinity. In December 2022, a 5.88MW distributed photovoltaic power station in the park was partially connected to the power grid.

Case Helped rural revitalization with "Industrial Development+Educational Support+ Power E-procurement"

Wu Ling Power and Yuanling County Government jointly carried out targeted industrial and education assistance activities. On 25 July 2022, Wu Ling Power held an opening ceremony for the activity of "Enterprise and Local Government Cooperation, Joint Revitalization Promotion" and the 2022 SPIC "Remote Education Assistance" key teachers training class in Yuanling County, Hunan Province. At the ceremony, more than 10 high-quality agricultural products in Yuanling County were officially launched on SPIC's "power E-purchase" platform and have expanded to the whole country. In addition, Wu Ling Power donated RMB1.41 million to Yuanling County Government for industrial and education assistance.

Opening ceremony of "Remote Education Assistance"

Case Commencement of China Power's Hebei Luannan "Dual Carbon" * rural revitalization project

On 7 September 2022, China Power's Hebei Luannan "Dual Carbon" rural revitalization project held a commencement ceremony. The project includes the Luannan County 80MW household distributed photovoltaic project and a beautiful village construction project in Liying Village, Yaowangzhuang Town, which marks a new breakthrough of China Power in the development of green and low-carbon industries in the Beijing-Tianjin-Hebei area and the development of rural revitalization demonstration projects. Upon completion of this project, it is estimated that in 2025, gross power generation will be about 2,500,000MWh, saving about 30,000 tonnes of standard coal every year and reduce annual emissions of about 3,000 tonnes, 1,500 tonnes and 80,000 tonnes of sulfur dioxide, nitrogen oxide and carbon dioxide, respectively. Furthermore, the implementation of this project will drive the transformation of local industrial structure and promote employment with apparent economic, social and environmental benefits.

Case Jiangxiang Village Zero-carbon and Digitalization Rural Revitalization Project

CP Changxing and Changshu City of Jiangsu Province jointly developed the "Jiangxiang Village Zero-Carbon and Digitalization Rural Revitalization Project". Capitalizing on integrated energy utilization and Digitalization platform development, the project realized investment value and supported the comprehensive development of ecosystem, production and livelihood in rural areas through various business models, including the sale of agricultural by-products and cooperation on cultural and tourism projects.

Jiangxiang Village Zero-Carbon and
Digitalization Rural Revitalization Project

* The national goals of "Carbon Emissions Peak" by 2030 and "Carbon Neutrality" by 2060 shortly referred to as "Dual Carbon" or "Dual Carbon Goals".

Joint Development with the Community

Over the years, the Group has continued to reach out to the communities and the general public, formulized and standardized its voluntary services, community welfare and poverty alleviation while expanding the scope of transparent communication and broadening the channels for public communication to promote "joint development, joint governance and mutual sharing" with the community.

Promoting Transparent Communication

In accordance with the "Management Measures for Information Disclosure" and "Corporate News and Publicity Management Measures", we have established an all-round and multi-platform transparent communication channel to readily disseminate the Company's information to stakeholders through various platforms. We timely sorted out and responded to key concerns of stakeholders, such as media, shareholders and the public. This communication channel enhances the effectiveness, convenience, and pertinence of information communication.

Established diversified communication channels

- Conducted stakeholders-targeted research on 2022 ESG-related issues to understand the expectations of stakeholders about the Company.
- Annual public open days are held on a regular basis and various members of the community such as employees' families and students are invited to visit the Company.

Enhanced information disclosure

- Strengthened communication and cooperation with the media and notified major media platforms of corporate news and information in a timely manner to enhance our corporate influence.
- Coordinated business departments and units involved with disclosure to streamline and analyze the information to be disclosed according to statutory requirements, promptly completed information disclosure such as annual reports and announcements. In 2022, we published over 100 announcements on the websites of the Hong Kong Stock Exchange and the Company.
- Strictly complied with the Listing Rules and all statutory information disclosure requirements applicable to the Company. Fulfilled all statutory information disclosure required in a compliant, timely, accurate and complete manner.

Committing to Volunteer Services

Pursuing the spirit of "dedication, friendship, mutual assistance and progress" in our volunteer services, we have formulated the "Management Measures for External Donation", the "Management Measures for "Yingshanhong" Youth Volunteer Service Activity" and other regulations. We give back to the public with our passion, and develop volunteer services into a new social trend within and outside the Group based on public welfare activities, and make the light of civilization shine more brightly.

2022

Total charity donation
RMB 3,396,517
↑ 12.47%

Total amount of poverty alleviation inputs
RMB 2,345,644
↑ 78.24%

No. of volunteer activities organized
406

No. of staff registered as volunteer
1,823

Participants in volunteer activities
3,902 person-times

Hours of volunteer services
11,199 hours

China Power volunteer team held volunteer activities in the community of Hong Kong

Assisted students to pursue their studies and dreams

- Wu Ling Power continued to carry out "Helping Students From Afar" activities to support local education, assisted core teaching personnel in impoverished areas to enhance their quality and ability through summer camps, face-to-face training, visits and exchanges, and consultation and counselling. As of the end of 2022, aggregate investment of nearly RMB5 million was made in training 239 primary and secondary school principals and teachers, and 642 students have benefited from various student aid donations.
- Pingwei Power Plant, Wuhu Power Plant and Shenyang Energy Investment continued to carry out education support activities under the "Yingshanhong — CP Act of Light" Program on an ongoing basis.
- Guangxi Company established the "SPIC Green ASEAN Scholarship" to reward 200 outstanding international students from ASEAN countries in Guangxi Minzu University every year.

Committed to volunteer and charitable activities

- During the fifth wave of COVID-19 pandemic in Hong Kong, China Power donated masks and hand sanitizers to the community. We received a letter of appreciation from the Economic Affairs Department of the Liaison Office of the Central People's Government in Hong Kong.
- In 2022, the Company's Hong Kong Affairs Department organized a total of 10 community volunteer activities in Hong Kong. These activities had 62 participants and lasted for 216 hours. 1 volunteer received the certificate of appreciation issued by the Hong Kong Home Affairs Bureau. 2 volunteers won the 2022 Bronze Award for Outstanding Volunteers granted by the Hong Kong Chinese Enterprises Association. 4 volunteers won Excellence Award for Volunteers for Pandemic Prevention and Control granted by the Wong Tai Sin District Committee in Hong Kong.

Engaged in pandemic prevention and control

- Dabieshan Power Plant initiated all its employees to respond to the initiative of charitable fundraising for the fight against the pandemic promoted by Macheng Charity Federation and the Red Cross Society and donated RMB76,516.11 in total.
- Employees of CP Huayuan and other fellow companies joined the frontline of pandemic prevention and control to conduct volunteer activities and participated in the pandemic containment frontline in communities.

Case **Wuhu Power Plant conducted the "small hands in big hands·low-carbon travel" volunteer activity**

On 30 May 2022, just before the International Children's Day, Wuhu Power Plant conducted the "small hands in big hands·low-carbon travel" — "Yingshanhong — CP Act of Light" activity in Xiushi Primary School, Tanggou Town, Jiujiang District, Wuhu City. Wuhu Power Plant promoted education on "fishery photovoltaic complementary project", disseminated the concept of green and low-carbon and donated school supplies to students in the school to encourage them to study hard, grow up healthily and jointly build a green and better home.

Case **Guangxi Company founded the "SPIC Green ASEAN Scholarship"**

To combine the policy of "education is priority for the centennial planning" and the mission of "creation of green value", the Company spread the green development concept to overseas international students from ASEAN countries, encouraged them to study hard, develop holistically and become major talents for the promotion of clean energy transformation and development in ASEAN countries. In May 2022, Guangxi Company formally founded the "SPIC Green ASEAN Scholarship" in Guangxi Minzu University with a total amount of RMB5 million. The scholarship will be distributed to 200 outstanding international students from ASEAN countries in Guangxi Minzu University every year for a period of 5 years.

CP Huayuan volunteers assisted in pandemic prevention and control in community

Wuhu Power Plant conducted the "small hands in big hands·low-carbon travel" volunteer activity

"SPIC Green ASEAN Scholarship" donation ceremony

China Power volunteer team visited elderly living alone in the Wan Chai community of Hong Kong

Engagement with Shareholders

We have strictly implemented the requirements under the Hong Kong Companies Ordinance and the Listing Rules. Besides, we actively conduct communication and publicity work for investors and strive for maintaining positive relations with shareholders and market participants.

2022

No. of investor communication meetings held

approx. **200** sessions

No. of investors met online and offline

over **1,100** person-times

⬆**83.33%**

General meetings organized

4 times

Enhanced communication with investors

- At general meetings, we actively and positively responded to shareholder's questions to deepen independent shareholders' understanding and recognition of the operating activities and development strategy of the Company.
- Submitted 13 proposals for shareholder's consideration, including the acquisition of clean energy assets projects, share incentive scheme, and financial service framework agreements. All these issues were approved.
- Developed communication strategies for domestic and overseas institutional and individual investors, met and exchanged with investment institution personnel by online press conferences, roadshows, phone calls, videos, etc. Actively responded to investor inquiries by email, and minimized the impact of the pandemic on communication.

Boosted market influence

- Throughout the year, the Company released more than 120 pieces of information on the financial platform through newsletters, reviews, corporate account news, and other methods, garnered more than 6 million follows, and continuously expanded its influence in financial media, financial institutions, and other aspects.
- Actively communicated with domestic and overseas investment bankers and securities brokers to ensure that the investing public could gain better understanding of China Power's current development through the major market players like CICC, J.P.Morgan and Changjiang Securities. The Company also cooperated with Guotai Junan Securities, Sealand Securities and TF Securities for the first time in 2022.

Press conference for annual results 2021

Investors Exchange Activity

Index of KPIs

	Subject Areas	Content	Page
A Environment	A1 Emissions	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	76-81
		A1.1 The types of emissions and respective emissions data.	76-81
		A1.2 Direct (Scope 1) and energy indirect (Scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	76-77
		A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	79-80
		A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility.	79-80
		A1.5 Description of emission target(s) set and steps taken to achieve them.	76-81
		A1.6 Description of how hazardous and non-hazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.	79-81
	A2 Use of Resources	General Disclosure Policies on the efficient use of resources.	82-84
		A2.1 Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	83
		A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	80, 83
		A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	82-84
		A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.	82-84
		A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	N/A
	A3 The Environment and Natural Resources	General Disclosure Policies on minimizing the issuer's significant impacts on the environment and natural resources.	85-86
		A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	85-86
	A4 Climate Change	General Disclosure Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	59-75
		A4.1 Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	62-75
	B1 Employment	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	116-124
		B1.1 Total workforce by gender, employment type, age group and geographical region.	116
		B1.2 Employee turnover rate by gender, age group and geographical region.	117

	Subject Areas	Content	Page
B Social	B2 Health and Safety	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe. working environment and protecting employees from occupational hazards.	109-112
		B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	109
		B2.2 Lost days due to work injury.	109
		B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.	109-112
	B3 Development and Training	General Disclosure Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	118-120
		B3.1 The percentage of employees trained by gender and employee category.	118
		B3.2 The average training hours completed per employee by gender and employee category.	118
	B4 Labour Standards	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child or forced labour.	121-124
		B4.1 Description of measures to review employment practices to avoid child and forced labour.	121-124
		B4.2 Description of steps taken to eliminate such practices when discovered.	121-124
	B5 Supply Chain Management	General Disclosure Policies on managing environmental and social risks of the supply chain.	125-128
		B5.1 Number of suppliers by geographical region.	125
		B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	125-128
		B5.3 Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	125-128
		B5.4 Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	125-128
	B6 Product Responsibility	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	N/A
		B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	N/A
		B6.2 Number of product and service related complaints received and how they are dealt with.	N/A
		B6.3 Description of practices relating to observing and protecting intellectual property rights.	102-103
		B6.4 Description of quality assurance process and recall procedures.	N/A
		B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	N/A
	B7 Anti-corruption	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	51-54
		B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	51
		B7.2 Description of preventive measures and whistle-blowing procedures, and how they are implemented and monitored.	51-54
		B7.3 Description of anti-corruption training provided to directors and staff.	51-54
	B8 Community Investment	General Disclosure Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	132-136
		B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	132-136
		B8.2 Resources contributed (e.g. money or time) to the focus area.	132-136

Technical Glossary and Definitions

Technical Glossary and Definitions	
"Annual Report 2022"	the annual report of China Power for the Year 2022
"ASEAN"	Association of Southeast Asian Nations
"attributable installed capacity"	the proportionate amount of installed capacities of a power plant attributable to the Company based on the percentage of equity interest held by the Company in that power plant
"Board"	the board of Directors of the Company
"consolidated installed capacity"	100% installed capacity of a company that is deemed as a subsidiary in the Group's consolidated financial statements
"Director(s)"	director(s) of the Company
"green certificate"	an "electronic ID card" for green power issued by a renewable energy power generation enterprise. It is identified with a unique serial number and used to prove and account for the power generation and use of renewable energy. The generation of each green certificate means that 1,000 watt (1 kWh) of electricity generated by renewable energy has been connected to the power grid
"green power"	the electricity generated by renewable energy power generation projects, but the types of technologies covered vary from country to country (or from region to region). The current concept of green power in the PRC refers specifically to electricity generated by photovoltaic power (excluding distributed photovoltaic) and wind power generation projects
"green power transactions"	green power trading refers to medium and long-term electricity transactions with green electricity products as the subject matter, to meet the needs of electricity users to purchase and consume green electricity, and to provide corresponding green electricity consumption certification. It is a brand-new trading product established within the framework of the medium- and long-term electric power market system
"Group" or "We"	the Company and its subsidiaries from time to time
"Hong Kong"	Hong Kong Special Administrative Region of the PRC
"Hong Kong Companies Ordinance"	Companies Ordinance, Chapter 622 of the Laws of Hong Kong (as amended from time to time)

Technical Glossary and Definitions	
"Hong Kong Stock Exchange"	The Stock Exchange of Hong Kong Limited
"installed capacity"	the manufacturers' rated power output of a generating unit or a power plant denominated in kW, MW
"JYKJ"	the four-in-one institutional system of "Plan-Budget-Assessment-Incentives"
"KPI"	key performance indicator(s)
"kW"	kilowatt, equals to 1,000 watts
"kWh"	kilowatt-hour, a standard unit of energy used in the electric power industry. One kilowatt-hour is the amount of energy that would be produced by a generator producing one thousand watts in one hour
"Listing Rules"	the Rules Governing the Listing of Securities on the Hong Kong Stock Exchange
"market-power"	electricity trading in the open market
"MW"	megawatt, that is, one million watts. The installed capacity of a power plant is generally expressed in MW
"MWh"	megawatt-hour, which is equal to one thousand kWh
"NDRC"	National Development and Reform Commission
"net coal consumption rate"	average consumption of standard coal for supplying 1kWh power (deducting self-used power)
"PRC" or "China" or "State"	the People's Republic of China (for the purpose of this sustainability report excluding Hong Kong, Macau Special Administrative Region of the PRC and Taiwan)
"RMB"	Renminbi, the lawful currency of the PRC
"SASAC"	the State-owned Assets Supervision and Administration Commission of the State Council
"SDSJ"	Based on the benchmarking incentive mechanism of "dual benchmarking and dual incentives", by introducing benchmarking tools and focusing on core value management elements such as volume, price and cost, determine industry-representative key industry indicators
"standard coal"	coal with an energy content of 7,000 kilocalories per kilogram

Abbreviation of Companies	
"Changshu Power Plant"	江蘇常熟發電有限公司 (Jiangsu Changshu Electric Power Generating Company Limited*), an associate of the Company
"Changshu Thermal Power"	中電常熟熱電有限公司 (China Power Changshu Thermal Power Company Limited*), a subsidiary of the Company
"Changzhou Hydropower"	國家電投集團廣西長洲水電開發有限公司 (SPIC Guangxi Changzhou Hydropower Development Co., Ltd.*), a subsidiary of the Company
"China Power" or "Company"	China Power International Development Limited (中國電力國際發展有限公司)
"CP Changxing"	上海中電長興未來發展有限公司 (Shanghai CP Changxing Future Development Co., Ltd), a subsidiary of the Company
"CP Chaoyang"	中電 (朝陽) 新能源有限公司 (China Power Chaoyang New Energy Company Limited*) , a subsidiary of the Company
"CP Chunhe"	中電投春禾科技有限公司 (China Power Investment Chunhe Technology Co., Ltd.*), a subsidiary of the Company
"CP Guorui"	中電國瑞供應鏈管理有限公司 (China Power Guorui Supply Chain Management Co., Ltd.*), a subsidiary of the Company
"CP Hua Chuang"	中電華創電力技術研究有限公司 (China Power Hua Chuang Electric Power Technology Research Company Limited*), a subsidiary of the Company
"CP Huayuan"	中電華元核電工程技術有限公司 (CP Huayuan Nuclear Power Engineering Technical Co., Ltd.*), a subsidiary of the Company
"CP Nongchuang"	中電投新農創科技有限公司 (China Power Investment Xinnongchuang Technology Co., Ltd.*), an associate of the Company
"CP Yantai"	中電（煙台）能源投資有限公司 (China Power (Yantai) Energy Investment Co., Ltd.*), a subsidiary of the Company
"CPI Holding"	China Power International Holding Limited (中國電力國際有限公司), the intermediate holding company of the Company and a subsidiary of SPIC
"CPINE"	中電國際新能源控股有限公司 (China Power International New Energy Holding Limited*), a subsidiary of CPNE and an associate of SPIC
"CPNE"	China Power (New Energy) Holdings Limited, a subsidiary of CPI Holding and an associate of SPIC
"Dabieshan Power Plant"	黃岡大別山發電有限責任公司 (Huanggang Dabieshan Power Company Limited*), an associate of the Company
"Guangxi Company"	國家電投集團廣西電力有限公司 (SPIC Guangxi Power Company Limited*), a subsidiary of the Company

Abbreviation of Companies	
"Guangxi Overseas"	廣西國電投海外能源投資有限公司 (Guangxi SPIC Overseas Energy Investment Co., Ltd.*), a joint venture of the Company
"Fuxi Power Plant"	四川中電福溪電力開發有限公司 (Sichuan CPI Fuxi Power Company Limited*), a subsidiary of the Company
"Pingwei Power Plant"	安徽淮南平圩發電有限責任公司 (Anhui Huainan Pingwei Electric Power Company Limited), a subsidiary of the Company
"Pu'an Power Plant"	中電（普安）發電有限責任公司 (China Power (Pu'an) Power Generating Company Limited*), a subsidiary of the Company
"Qiyuanxin Power"	上海啟源芯動力科技有限公司 (Shanghai Qiyuanxin Power Technology Co., Ltd.*), an associate of the Company
"Shandong Company"	國家電投集團山東能源發展有限公司 (SPIC Shandong Energy Development Co., Ltd.*), a subsidiary of the Company
"Shanghai Power"	上海電力股份有限公司 (Shanghai Electric Power Co., Ltd.*), a company listed on the Shanghai Stock Exchange which the Company holds certain of its A shares for investment purpose
"Sichuan Energy Investment"	四川能投發展股份有限公司 (Sichuan Energy Investment Development Co., Ltd.*), an associate of the Company
"SPIC"	國家電力投資集團有限公司 (State Power Investment Corporation Limited*), the ultimate holding company of the Company
"Wu Ling Power"	五凌電力有限公司 (Wu Ling Power Corporation*), a subsidiary of the Company
"Wuhu Power Plant"	蕪湖發電有限責任公司 (Wuhu Electric Power Generating Company Limited*), a subsidiary of the Company
"Xinyuan Green Power"	新源綠能電力（北京）有限公司 (Xinyuan Green Power (Beijing) Co., Ltd.*), a subsidiary of the Company
"Xinyuan Jinwu"	新源勁吾（北京）科技有限公司 (Xinyuan Jinwu (Beijing) Technology Co., Ltd.*), a subsidiary of the Company
"Xinyuan Ronghe"	新源融合（北京）電力有限公司 (Xinyuan Ronghe (Beijing) Power Co., Ltd.*), an associate of the Company
"Xinyuan Smart Storage"	新源智儲能源發展（北京）有限公司 (Xinyuan Smart Storage Energy Development (Beijing) Co., Ltd.*), a subsidiary of the Company
"Yaomeng Power Plant"	Pingdingshan Yaomeng Power Company Limited, an associate of the Company

Feedback Form

Dear readers,

Thank you for reading this report. We would like to listen to and adopt your opinions and suggestions on this report so that we can continue to improve in compiling the report in the future.

Should you have any opinions and suggestions, please complete the following questionnaire and fax it to us at:

852-28023922;

Or e-mail it to us at:

ir@chinapower.hk

Please mark √ in the appropriate box

	Yes	Average	No
Are the economic, social, and environmental work of, and significant impacts on, the Company highlighted in this report?	☐	☐	☐
Are the information and indicators disclosed in this report clear, accurate and complete?	☐	☐	☐
Are the content layout and design of this report reader-friendly?	☐	☐	☐

Open-ended questions:

Which part of this report interests you the most?

In your opinion, what information needs to be disclosed but is not reflected in this report?

Are there any suggestions on issuing our sustainability report in the future?

低碳赋能
Lower Carbon
Empower Better Life 美好生活

CHINA POWER INTERNATIONAL DEVELOPMENT LIMITED
中國電力國際發展有限公司

Hong Kong Office:

Suite 6301, 63/F, Central Plaza
18 Harbour Road
Wanchai, Hong Kong
Tel.: (852) 2802 3861
Fax: (852) 2802 3922

Beijing Office:

East Building, Hui Huang Shi Dai Plaza
56 North West Fourth Ring Road, Haidian District
Beijing, China
Tel.: (86-10) 6260 1888
Fax: (86-10) 6260 1777

China Power
Mobile Website

China Power
Official Wechat