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***PROTECT THE ECOLOGICAL
ENVIRONMENT AND BUILD
A BEAUTIFUL CHINA***

Protect the ecological environment and build a Beautiful China



China Unicom resolutely carried out the national “Dual Carbon” work deployment, implementing the action plan for carbon peaking and carbon neutrality. The Company actively responded to climate change, and helped the whole society to form green production modes and lifestyle with digitisation, promoting the modern development pattern of harmonious coexistence between human and nature.



Measures adopted in 2023

- The Company actively responded to climate change, deeply implemented China Unicom’s “3+5+1+1” action plan for carbon peaking and carbon neutrality, integrating green and low-carbon strategies into its whole process of production and operation.
- The Company cooperated with China Telecom to jointly deploy a total of more than 1.21 million 5G shared base stations, reducing carbon emissions by approximately 11.5 million tonnes per year.
- The Company created a green data centre model, strictly implemented the regulations of national and local industry authorities on environmental protection, promoting the application of efficient energy-saving technologies.
- Focusing on industrial Internet, river and lake governance, ecological and environmental protection and other fields, the Company provided green development solutions to facilitate the low-carbon transformation of production and lifestyle.



Actions to be taken in 2024

- The Company will focus on green development goals, continuously improve climate risk management capabilities and climate risk response processes. It would further promote climate change actions through sustainable development governance mechanisms.
- The Company will continue to deepen the connotation and extension of co-build co-share, carry out practical innovation of co-build co-share, continuously improving the green level of communication network infrastructure.
- The Company will continue to improve the green management of the whole life cycle of products, promoting the construction of green supply chains, and driving the innovation of green and low-carbon technologies across the upstream and downstream supply chains.
- The Company will continue to give full play to digital intelligence, focus on energy consumption management, smart water conservancy, biodiversity protection and other fields, supporting the green and low-carbon development of the whole society.

Coping with global climate change

China Unicom accelerated the green transformation of its development modes, adopting proactive strategies to cope with climate change, strictly complying with the Environmental Protection Law of the People's Republic of China, the Energy Conservation Law of the People's Republic of China and other laws and regulations related to environmental protection. The Company regularly assessed the risks and opportunities related to climate change, and formulated environmental management goals and strategies. In 2023, there were no violations of laws and regulations in the environmental field.

Improving the green development governance system

China Unicom integrated the management of issues related to green development and climate change into its corporate governance structure. As a decision-making body, the board of directors comprehensively guided the formulation of relevant green development strategies, made decisions on major issues, and ensured effective governance. The Chairman was responsible for guiding and establishing a sound management system for energy conservation, carbon reduction and climate change, and deciding on major work matters related to green development and climate issues. The Company incorporated the major issues of sustainable development into its remuneration policy. The remuneration of the management was linked to the sustainable development goals, and multi-dimensional trainings were carried out to promote the implementation of goals and tasks.

China Unicom's Green Development Governance Structure and Supervision Responsibility

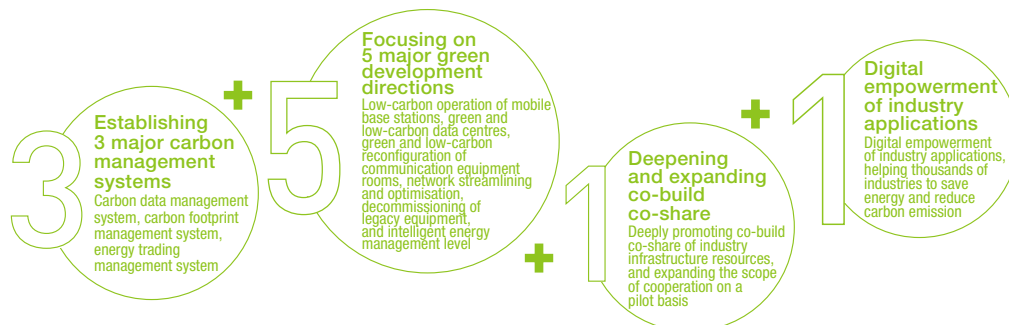
Governance Level	Responsible Organisation	Major Responsibilities
Top decision-making body	Board of Directors	<ul style="list-style-type: none"> Review and supervise major issues related to environmental management such as long-term development strategies, climate risks and opportunities, major investment decisions and various action plans. Monitor the implementation and development of energy conservation and carbon reduction
Management organisation	Audit Committee	<ul style="list-style-type: none"> Oversee the soundness and effectiveness of the Company's risk management and internal control management systems according to climate issues
Implementation and execution	Responsible departments and relevant business departments for energy conservation and carbon reduction at headquarters/subsidiaries	<ul style="list-style-type: none"> Focus on areas such as network facilities carbon reduction, public service carbon reduction and industry empowerment business, implement various environmental management measures to ensure legal and compliant daily operations
	Network Department	<ul style="list-style-type: none"> Take the lead in promoting the construction of the carbon peaking and carbon neutrality capacity system, establish and improve relevant management systems, organise the R&D, testing and promotion of carbon reduction, low-carbon and zero-carbon technologies, as well as coordinate training, publicity, exchange and other daily specific work Take the lead in the implementation of network energy conservation work

Implementing green and low-carbon strategy deployment

China Unicom adhered to the concept of green development and actively responded to climate change by integrating green and low-carbon concepts into the whole process of the Company's production and operation. In June 2021, China Unicom took the lead in issuing the "China Unicom 14th Five-Year Action Plan for Carbon Peaking and Carbon Neutrality", and thoroughly implemented the "3+5+1+1" action, to improve the greenness of communication network infrastructure.

• **Overall target:** By 2025, the comprehensive energy consumption per unit of information flow will decrease by 20% as compared with the end of the "13th Five-Year Plan" period, and the total comprehensive energy consumption per unit of telecommunications business will decrease by 15% as compared with the end of the "13th Five-Year Plan" period.

• **Overall progress:** The comprehensive energy consumption per unit of information flow decreased to 2.3 kg of standard coal/TB, representing a decrease of 17.9% as compared with the end of the "13th Five-Year Plan" period.

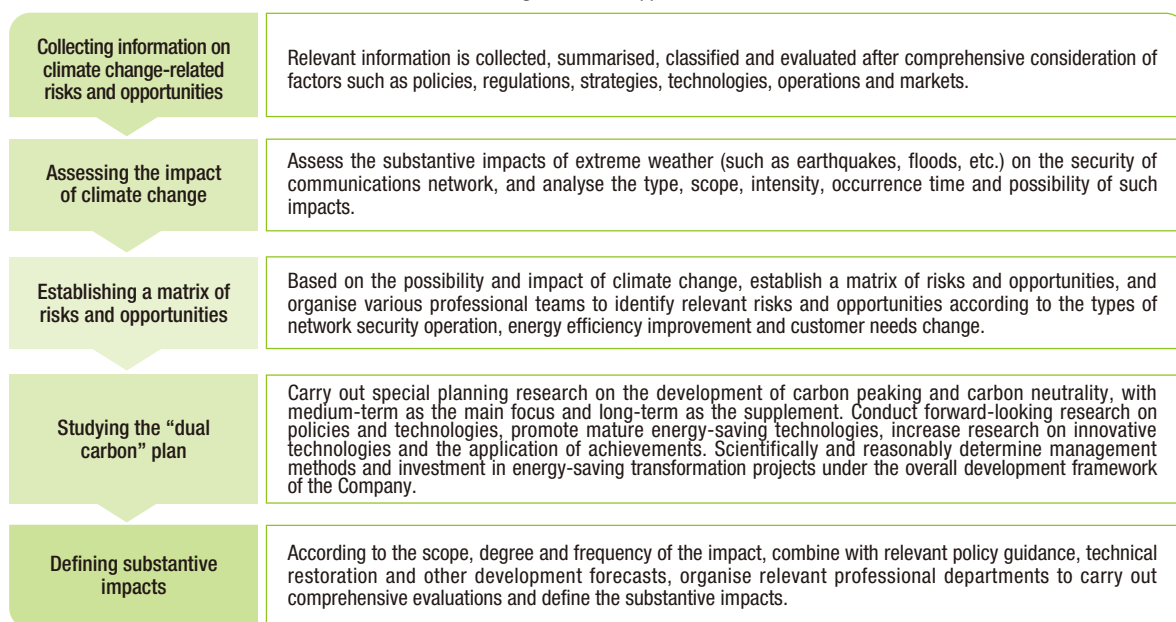


China Unicom's "3+5+1+1" action plan for carbon peaking and carbon neutrality

Improving climate risk management capabilities

In response to the intensifying global climate change, the Company continuously strengthened the analysis, evaluation and management of climate change-related risks and opportunities, conducted special risk identification and evaluation from time to time, and organised annual climate change risk identification and evaluation. As the main sources of the Company's greenhouse gas emissions are direct and indirect carbon dioxide emissions from the operation of communication networks, the Company mainly used indicators such as greenhouse gas emissions and comprehensive energy consumption per unit information flow to measure and manage climate-related risks and opportunities. Among them, the sources of carbon dioxide emissions mainly include indirect carbon dioxide emissions from the consumption of electricity and purchased heat, and direct carbon dioxide emissions from the consumption of gasoline, diesel, natural gas and coal.

China Unicom's Climate Change Risks and Opportunities Identification Process



In response to major climate risks and opportunities, the Company deeply evaluated the intensity, scope and timing of possible impacts caused by various climate risks, as well as the potential financial impacts on the business. This assessment results in the formation of a list of risks and opportunities, enabling more effective management and response measures.

List of Climate Change Risks and Opportunities

Risk categories	Sub-categories	Risks and opportunities	Risk level	Occurrence Location	Time horizon	Key financial impacts	Key business and strategic impacts	Countermeasures
Transition risk	Legal and policy risks	In order to achieve the goals of carbon peaking and carbon neutrality, the control measures for greenhouse gas emissions are stricter.	Medium	Organisation itself, supply chain	Short- to medium-term	Increase in direct costs	Business operation adjustment	Actively follow up policy research and regularly optimise the key work of dual carbon.
	Technology risks	With the development of emerging high-performance-computing services such as smart network, there is an urgent need to break through with highly efficient carbon reduction and zero-carbon innovative technologies.	Medium and high	Organisation itself, supply chain	Short- to medium-term	Increase in direct costs	R&D and procurement	Research and develop new low-carbon technologies, improve independent innovation capabilities, and promote the construction of green supply chains.
	Market and reputation risks	The changes in consumer preferences tend to choose low-carbon products, which may lead to higher market entry barriers.	Medium	Downstream and end users	Medium- to long-term	Increase in indirect costs	Products and Services	Pay attention to market changes, develop green and low-carbon products, timely disclose the Company's ESG work progress, and establish a responsible brand image.

Risk categories	Sub-categories	Risks and opportunities	Risk level	Occurrence Location	Time horizon	Key financial impacts	Key business and strategic impacts	Countermeasures
Physical risks	Acute risks	Extreme weather conditions such as floods, blizzards and earthquakes can cause different degrees of damage to the secure operation of communication network.	Medium and high	Organisation itself	Short- to medium-term	Increase in indirect costs and capital expenditure	Infrastructure maintenance, products and services	Continuously improve risk prevention and control measures and emergency plans, and enhance drills.
	Chronic risks	Chronic climate changes such as rising sea levels pose risks to the secure operation of communication networks in coastal areas.	Medium	Organisation itself	Long-term	Increase in capital expenditure	Infrastructure construction and maintenance	Continuously follow up on information collection, and update the necessary risk prevention and control and emergency plans in relevant regions.
Low-carbon opportunities	Resource efficiency	Use low-carbon technologies to improve the efficiency of energy consumption.	Medium	Organisation itself	Short- to long-term	Decrease in operating costs	Improve operational efficiency	Vigorously promote low-carbon technologies and increase the use of clean energy.
	Products and Services	Customers' demand for green transformation of development methods has increased.	Medium	End-users	Short- to long-term	Increase in operating income	Products and Services	Research and develop digital solutions such as ecological environmental protection and energy consumption management to contribute to the green development of the whole society.

Note: Short-term: 0-1 year, medium-term: 1-3 years, and long-term: 3-5 years.

In order to understand the impact of climate change risks on business and strategies, the Company conducted scenario analysis on technological risks based on its actual production. Technological risks mainly arise from the possible outbreak of computing power demand, which may involve everywhere in the country. For example, the government authorities have increased their efforts to control energy consumption and carbon emissions, which led to higher requirements for energy efficiency and other indicators of local branches. Therefore, breakthrough ground-breaking and efficient carbon reduction and zero-carbon innovative technologies are urgently needed to effectively control carbon emissions. At the same time, the energy consumption and energy efficiency of equipment provided by upstream suppliers also have a certain impact on the Company's energy consumption changes.

Practising green and low-carbon operations

Building a green and low-carbon network

China Unicom continued to deepen co-build co-share, optimised the development layout of green data centres, and invested more than RMB300 million in special funds for energy conservation and carbon reduction renovations, forming a leading network capability and promoting the high-quality, healthy and green development of digital information infrastructure.

Continuously deepening co-build co-share

China Unicom joined hands with China Telecom to comprehensively deepen the co-build co-share of 5G, 4G and basic network resources. Through collaboration with industry partners, significant breakthroughs were achieved in shared technology, networking, operation and management, providing a good example for global 5G scale construction and low-carbon emission reduction.

- Both parties have built a total of more than 1.21 million 5G mid-band shared base stations, realising continuous mid-band coverage in towns and above and effective coverage in rural hotspot areas, and achieving the effect of doubling of scale, coverage and speed.

- In terms of green construction, with the application of 5G base station AI smart energy-saving platform, centralised deployment of large-capacity BBU, liquid cooling energy-saving cabinet and other energy-saving means, it was approved by the National Development and Reform Commission as the only 5G energy-saving and emission reduction demonstration project in the industry.

- Relying on the good cooperation with a unified 5G network, both parties vigorously promoted a unified 4G mid-band network, promoting the "quantity reduction, quality improvement and efficiency enhancement" of the network. Both parties overcame difficulties such as high load in some regions and equipment interference from different manufacturers, and achieved comprehensive sharing of 4G mid-band networks. In 2023, 966,000 new 4G mid-band shared base stations were added, with a scale exceeding the sum of the previous two years; the cumulative number of 4G shared base stations built by China Unicom and China Telecom has exceeded 2 million, basically achieving full-scale mid-band sharing.



The "2020 China Telecom & China Unicom 5G Co-build Co-share SA Construction Project" won the National Quality Engineering Gold Award for the years 2022–2023

Saved more than RMB

340 billion of cumulative investment for the country through co-build co-share

Reduced operating costs by more than RMB

39 billion per year

Saved approximately

20 billion kWh of electricity per year

Carbon emissions reduced by about

11.5 million per year

Building green data centres

China Unicom has consistently carried out the national “Eastern Data and Western Computing” project deployment, continuously optimised the development layout of green data centres, practised the dual-carbon strategy. The Company strictly implemented the national regulations on Data Centre energy consumption, and created new type of data centres with advanced technology, green and low-carbon, security and reliability. A total of 21 data centres were selected as national green data centres jointly assessed by the Ministry of Industry and Information Technology and other ministries and commissions.

- **Promoting the precise site selection of data centres.** Closely following the planning requirements of local cities or towns, the Company guided the transfer of the construction of non-real-time data centres to western regions.

- **Carrying out special actions for energy-saving transformation.** The Company conducted point-to-point analysis on data centres above a designated size, and formulated energy-saving transformation plans from four levels, including optimising operation and maintenance, partial transformation, system upgrades, shutdown and transfer, to promote the green and low-carbon upgrading of existing IDC facilities.

- **Leveraging the role of building energy saving.** The Company controlled reasonable body coefficients, made full use of natural light and sunlight, adopted thermal insulation roofs, reasonably controlled the heat transfer coefficient of the maintenance structure to improve the thermal performance of the enclosure structure.

- **Creating green data centre models.** China Unicom Xinjiang “Belt and Road” Data Centre is the first indirect evaporative cooling air-conditioner project in China. Ningxia Zhongwei Data Centre is the first new air free cooling project among communication operators in China. Zhejiang Deqing Data Centre is the first distributed energy project in China for an operator to adopt the gas-fired combined cooling, heating and power technology.



China Unicom Northwest Intelligent Cloud Data Centre

China Unicom Heilongjiang Branch combined digital twinning with smart operations to create a green data centre. The “digital twinning” technology enables 3D visualisation and penetration of infrastructure resources, forming accurate mapping between physical entities and digital twins to achieve consistency in parameters and adjustments. Engineers can identify on-site problems, adjust equipment status, and optimise system energy efficiency by simply dragging a mouse. The power utilisation efficiency has been reduced from 1.5 to 1.4. The gradual construction of the digital twinning system made possible building a digital intelligent life body and completing production and operation in the digital space in the future.

Strengthening smart and green operation

China Unicom integrated the concept of green development into its production, operation and decision-making process. It actively promoted the R&D and application of green and low-carbon technologies, improved the comprehensive energy utilisation efficiency, promoted the green management of the product life cycle. The Company strictly controlled the source of equipment procurement, advocated the concept of green consumption and green life, and effectively improved the digitalisation, intelligence and green level of enterprise operation.

Promoting green operation of network facilities

China Unicom focused on key areas and key links in the green and low-carbon development of communication network infrastructure. Elements such as regulatory objectives, technology applications and capital arrangements are scientifically planned to promote green and low-carbon development in an all-round and systematic manner.

- **Self-developed intelligent energy-saving robots.** The energy consumption of 4G/5G base station equipment was intelligently adjusted. On the premise of ensuring network performance and subscriber experience, the energy efficiency of wireless network was greatly improved. In recent 3 years, it has been applied in more than 300 cities on a large scale, and has won many industry awards. In 2023, it saved more than 200 million kWh of electricity and reduced carbon emissions by more than 110,000 tonnes.

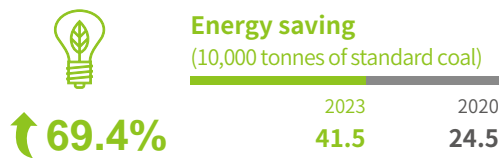
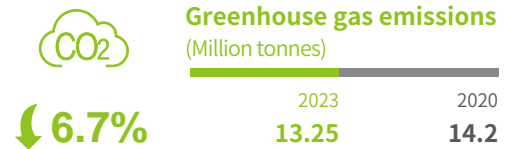
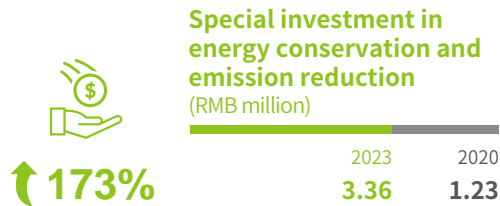
- **Precise implementation of network streamlining.** The Company steadily promoted the streamlining of 4G networks and the refarming of frequency resources to 5G, gradually realising the smooth refarming and upgrading of 5/4G network resources. On the basis of business migration, the reduction of 3G frequencies was also being promoted.

- **Promoting the evolution of green and low-carbon data centres.** The Company deeply promoted the DC reconstruction of communication facilities, explored the potential energy-saving of existing small stations, and considered the business needs of cloud resource pools, IDC, 5G edge DC, etc., comprehensively promoting the evolution of traditional data centres to green and low-carbon facilities that support high-density and high-efficiency equipment.

- **Strengthening water usage management.** The Company’s water is mainly used for water-cooling air-conditioning systems and office operations, and does not involve industrial wastewater discharge. The Company continuously improved the scope of use of water-saving facilities, used fully automatic variable frequency pressurised water supply equipment in new data centres, recycled water used in cooling water systems, and used rainwater collection and reuse systems for non-domestic purposes such as greening landscape, and set up water spill alarm devices in multiple places to create a good atmosphere where everyone is responsible for water conservation. The Company’s daily office and production and operation water mainly came from the unified water supply of the municipal government, and there was no risk of water pollution.

- **Standardising the statistical supervision of energy conservation and emission reduction.** The Company implemented various management requirements, strictly carried out the statistical system of energy conservation and emission reduction, improved the assessment reward and punishment system, and incorporated energy efficiency improvement, environmental protection and other indicators into the assessment scope of branches/subsidiaries. The Company ensured that the electromagnetic radiation of base stations met the requirements of national standards, conducted electromagnetic radiation monitoring of base stations after construction and made the results publicly available.

- The “Three-in-one green, low-carbon and digital smart management system” for building a strategic upgrade, multi-dimensional traction and ecological win-win” management innovation achievements won the first prize of the 20th (2023) Enterprise Management Modernization Innovation Achievements in the information and communication industry. The “Accelerating the Promotion of Green New Infrastructure and Cultivating New Energy for Green Development” was awarded the “2023 Excellent ESG Case of Chinese Enterprises” by the China Enterprise Reform and Development Research Association.



China Unicom Liaoning Branch innovatively adopted the “one solution for one facility” model, and conducted targeted analysis of energy consumption shortcomings in the data centres. The Company comprehensively used a variety of technologies, such as data centre integration, equipment renovation, removal and consolidation, optimised the air flow organisation of the old communication facilities and adopted energy-saving technologies such as intelligent dual-cycle air conditioners to realise the synchronous potential exploration of data centres, power supply and cooling infrastructure resources.

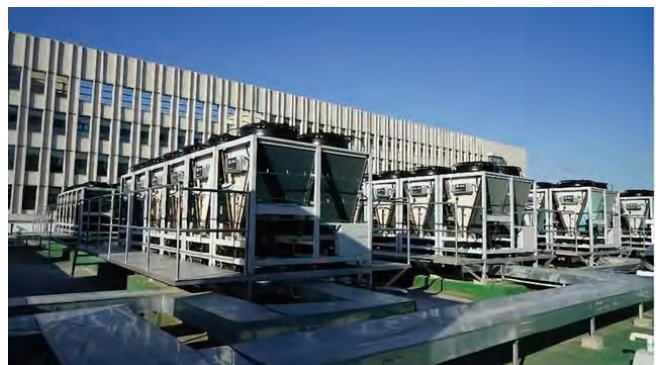
China Unicom Henan Branch used the digital computing controller for the automatic control of 10kV power distribution technology, integrated the available capacity of generators to form a resource pool, and formed a micro-grid with several sets of independent power supply systems to uniformly allocate power supply resources, so as to maximise the utilisation of resources. The utilisation rate of generator resources in the park increased from 30% to more than 85%, saving investment of approximately RMB60 million.

Innovating green and low-carbon technologies

China Unicom continued to promote the innovation and application of new technologies such as power supply and air conditioning, actively responded to the development plan of renewable energy. It promoted the research and application of solar energy and other technologies in a planned and step-by-step manner to help achieve the dual-carbon goal.

- **Conducting technological innovation of power supply systems.** With the directions of increasing power supply voltage, reducing power supply links, simplifying maintenance work, and improving digital capabilities, the Company promoted the evolution of independent decentralised equipment to pre-installed integration, such as integrated power supply. It also promoted the evolution of low-voltage power supply to high-voltage power supply, such as high-voltage direct current system. The Company prioritised the consideration of other mature new equipment and new solutions in newly built and renovated systems, such as outdoor double-layer generator, outdoor integrated cabinet, outdoor micro-DC, smart small busbar, BBU centralised cabinet, etc.

- **Carrying out technological innovation of air conditioning system.** Based on the principle of maximising the use of natural cooling sources, the Company gradually moved towards a diversified cooling method that combines electric cooling with various forms of natural cooling sources. The Company vigorously promoted frequency conversion technology, and gave priority to intelligent dual-cycle multi-linked modular air conditioners (VRM), small-scale indirect evaporative cooling air conditioners (MHU).



China Unicom Tianjin Airport Data Centre
High Energy Efficiency Air-conditioning System

Promoting the use of clean energy

China Unicom actively responded to the development plan of renewable energy, carried out research and pilot projects on various energy comprehensive utilisation technologies, actively participated in green power market trading, deployed carbon trading in advance. It gradually increased the proportion of renewable energy use.

- **Innovating energy comprehensive utilisation technology.** The Company carried out research and pilot projects on comprehensive energy utilisation technologies such as intelligent photovoltaics, waste heat recovery and energy storage. It adopted waste heat recovery technologies based on the heat load of data centres and the surrounding heat load demand, as well as the consideration of the stability and trends of heat load supply and demand. The Company paid close attention to the construction requirements of renewable energy in various regions, and promoted the technical research and construction of photovoltaic energy in batches and by scenario.
- **Active participation in green power market trading.** Beijing, Liaoning, Qinghai and other branches participated in green power trading, and Inner Mongolia Branch subscribed for green power certificates.
- **Deployment of carbon trading in advance.** China Unicom Beijing Branch and China Unicom Shenzhen Branch participated in the pilot project of local carbon trading, carried out local carbon quota and CCER trading, and met its obligations on time.

According to the operation scenarios of communication base stations and data centres, China Information Technology Designing & Consulting Institute (CITC) proposed distributed photovoltaic integrated power supply solutions, which were suitable for industry scenarios, namely the off-grid DC-DC supplementary power supply plan (48V and 240V). In order to realise the implementation ranging from technology to equipment, CITC tracked and studied applicable photovoltaic controllers and conducted pilot construction to fill the gap in the industry. After 4 years of R&D, with precise energy dispatch and control strategy, the photovoltaic energy consumption rate was nearly 100%, which outperformed the average level in photovoltaic industry.

Tibet is known as “the nearest place to the sun” and has abundant solar energy resources. China Unicom Tibet Branch actively promoted the application of solar energy in power supply to communication facilities, and built 91 photovoltaic relay stations. The proportion of solar power supply sites reached 55%, and the installed capacity of solar energy reached approximately 928,000 peak watts, creating a foundation for green development.

Promoting green office practices

China Unicom continued to strengthen green office and green business management, accelerated the digital transformation of business outlets. It implemented low-carbon measures such as paperless office, online meetings, and energy-saving renovation of office buildings, advocated the concept of green consumption and green life, creating a green and healthy office environment, while reducing resource consumption in office activities.

- **The Company improved online service level.** China Unicom APP handled 2.69 billion online business transactions throughout the year, covering 420 business scenarios. It optimised the online service sign-up processes, and newly launched business scenarios such as ultra-fast cashiers, cloud business groups, and family group accounts payment, so as to improve the service experience with green and low-carbon operation.
- **The Company deeply promoted the green operation of business outlets,** advocated paperless service sign-up, promoted electronic invoices and subscriber agreements, and carried out energy-saving transformation of business outlets. It increased the use of energy-saving equipment, and formed a good habit of saving water and electricity. The Company advocated green consumption, vigorously promoted the trade-in of mobile phones, facilitating the recycling of resources and reuse. Nearly a thousand business outlets provided recycling services.
- **The Company promoted paperless office.** It realised electronic work documents and used cloud document system to enhance office efficiency. The Company continued to explore and promote the single-set filing and management of various electronic files. By the end of 2023, the headquarters' digital archives system had filed 2,524 work documents, of which 88% were single-set electronic files, greatly reducing paper consumption.
- **The Company vigorously promoted video conferences,** upgraded and constructed the 4K ultra-high definition dedicated line video conference system and the cloud video conference system of “China Unicom Smart Conference” with a four-level architecture of “Group-Province-City-County”. The headquarters hosted 484 internal and external dedicated line video conferences and 446 cloud video conferences throughout the year, achieving low-carbon meetings.
- **The Company conducted energy-saving renovation in China Unicom Buildings,** carried out green lighting activities, and transformed water supply equipment such as non-negative pressure and reclaimed water to achieve energy-saving of 2%-9%. It improved the level of data access and intelligent control of water, electricity and environment, optimised the intelligent control algorithm of cooling sources in the smart energy management system, refined the energy-saving management of air conditioners, and increased water recycling tools to improve the recycling rate of water resources; The annual fresh water consumption was approximately 402,800 tonnes, the recycled water consumption was approximately 31,000 tonnes, the total water consumption was approximately 434,000 tonnes. The recycled water consumption accounted for approximately 7.1%, and the domestic wastewater discharge was approximately 299,000 tonnes.
- **The Company spread the concept of green development,** and carried out the 2023 National Energy Conservation Publicity Week and National Low Carbon Day activities with the theme of “energy conservation and carbon reduction with ICT empowerment by you and me”. Green new infrastructure news was reported by a number of media such as Xinhua News Agency and People's Post and Telecommunications News. Green and low-carbon public messages were sent to the public in many places to help the whole society promote energy conservation.

CUG was honored with the “2022 Hong Kong Environmental Excellence Award” by the Hong Kong Environmental Campaign Committee, the Environmental Protection Department, the Environmental Advisory Committee and other organisations, which is one of the most representative environmental awards in Hong Kong.

Building a green supply chain

China Unicom promoted green management throughout the entire product life cycle and built a green supply chain. It created a transparent and efficient supply chain management system, and promoted the innovation of green and low-carbon technologies across the supply chain.

- **Strengthening material management measures.** The Company standardised the management of material storage, usage, transportation and processing, with the proportion of electronic procurement reaching 97.5%. It promoted the green management of the whole product life cycle, and strictly punished the products with unqualified energy consumption.

- **Improving green procurement standards.** The Company strictly controlled the source of equipment procurement, strengthened the requirements in terms of energy efficiency, green manufacturing process and service life of network equipment, IT equipment, power equipment and air conditioners in procurement. It set up standalone low-carbon evaluations such as energy consumption and dormant efficiency, and the weighting of energy consumption evaluation increased to 35%, guiding equipment supply enterprises to increase the R&D and supply of green technology products.

- **Advocating green logistics.** The Company strengthened the requirements for environmental management system certification, required that the products provided by suppliers should meet the requirements of green packaging. The Company standardised the requirements for suppliers to use green materials and green manufacturing processes, and gave priority to the suppliers who use green materials or green manufacturing processes under the same qualifications otherwise, so as to guide supply chain enterprises to improve their awareness and capabilities of environmental management.

- **Promoting material recycling.** The Company increased the internal revitalisation of idle materials, and the cumulative revitalisation and allocation of materials amounted to RMB480 million.

- **Standardising waste disposal processes.** Relying on the social material disposal platform, the Company implemented centralised material disposal, realised the reduction, resource utilisation, harmlessness and reuse of waste. It continuously optimised the risk assessment and prevention and control responsibility system for scrapped disposal to ensure the implementation process strictly complies with relevant laws and regulations. As the amount of waste in network operation is directly related to the rapid development of the network and the constant update and iteration of equipment, and the generation and disposal of hazardous waste is not an important aspect of the Group's operation, the waste reduction target involved in A1.6 cannot be disclosed for the time being. We mainly reported on measures such as building a green supply chain and strengthening recycling.

Recycled amount upon
scrappage and disposal

RMB **655** million

China Unicom Chongqing Branch established a green procurement management system for data centres to realise green and low-carbon operation of data centres. This drove the green transformation of upstream and downstream of the industrial chain. Through the analysis of the whole life cycle of products and services in various processes, green standards were established from the aspects of procurement demand management, review standard establishment, acceptance review, etc.. The low-carbon and energy-saving aspects throughout the product life cycle were comprehensively evaluated by digital technology, resulting in remarkable energy-saving effects.

Empowering green transformation and development

Digital promotion of green transformation

China Unicom has always been committed to promoting the coexistence of science and technology with nature and jointly building a green and intelligent world. Adhering to the implementation path of promoting green and low-carbon transformation of thousands of industries with digital empowerment, China Unicom focused on industrial Internet, river and lake governance, ecological and environmental protection and other fields, provided green development solutions, and actively empowered industrial transformation and upgrading and structural optimisation.

China Unicom Smart Iron and Steel Taskforce, together with Qinhuangdao Baigong Steel Co., Ltd., explored the innovative application of energy and carbon management in the steel industry, and deeply explored the energy consumption in multiple production processes and the integration of multiple energy sources. Through the construction of a steel carbon cloud platform that ran through the whole production process of steel enterprises, real-time collection and abnormal alarm of energy production, storage and consumption data can be achieved, and flattened energy failure monitoring, root cause analysis and strategy recommendation can be achieved. Through the advanced energy prediction and scheduling model, the real-time prediction and balanced scheduling of auxiliary energy media such as coal gas, steam, electricity, compressed air and water were realized. This transformation shifted from post-treatment to pre-intervention, so as to improve the overall energy utilisation efficiency, reduce energy costs, and promote the energy conservation, carbon reduction and green development of the steel industry.



The construction of a steel carbon cloud platform empowers the steel industry in improving energy efficiency

China Unicom joined hands with TPV Technology to deeply explore new paradigms of 5G green factories. By integrating with 5G, artificial intelligence, big data, Internet of Things and other technologies, China Unicom conducted comprehensive monitoring, analysis and evaluation of its energy conditions. It established a digital platform for intelligent integrated energy and dual carbon, and realised the information-based, visualised and controllable management of the energy consumption process. According to its energy consumption, the Company optimised its energy usage strategy and effectively improved its energy efficiency management level. The intelligent integrated energy dual-carbon digital platform has been successfully applied to light industries such as food processing, printing and dyeing and textiles.

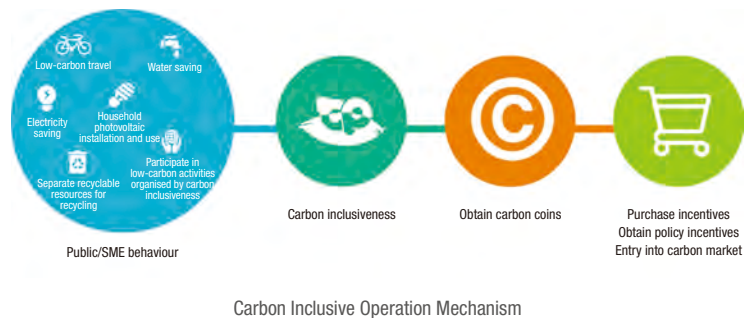
China Unicom Shandong Branch continued to do a good job in the “booster” of green transformation, and helped the Department of Ecology and Environment of Shandong Province to build a “comprehensive environmental monitoring management platform”. Through the management of all monitoring stations of greenhouse gases, fine particles, etc. in the province, it achieved the aggregation of a vast amount of environmental assessment data and enabled air quality assessments in multiple cities and counties. This effort contributed to a significant increase in the proportion of excellent days in the province.

Inclusive carbon services for a low-carbon life

China Unicom took the lead in launching the carbon inclusive application “Unicom Carbon Life” in the telecommunications industry, and the carbon emission reduction calculation model passed the authoritative certification from national green trading institutions. The Company strengthened the exploration of diversified carbon inclusive incentive models, and worked with multiple forces to jointly build a green communication inclusive ecology, so as to help the public transition to green and low-carbon lifestyle.

- “Unicom Carbon Life” can record and quantify subscribers’ green and low-carbon behaviours and provide corresponding incentives. It covers more than ten green and low-carbon behaviours in three major scenarios, namely communication, finance and life, realising the whole-process closed-loop of carbon behaviour recognition, carbon footprint tracking, carbon emission reduction accounting and carbon rights exchange for subscribers.

- “Unicom Carbon Life” made its debut at the 31st China International Information and Communications Exhibition, and was selected as the “2023 Best ESG Practice Case of Listed Companies” by the China Association for Public Companies. It won the third prize of the “Science and Technology Innovation China” Financial Technology Innovation Competition (2023), jointly sponsored by the China Association for Science and Technology and the China Communications Society. It also won the “Green Finance Annual Case Award” in the 6th Financial Industry Annual Brand Case Competition sponsored by the China Financial Magazine. Additionally, the Company was shortlisted for the “Best Mobile Innovation Award for Climate Action” at the MWC (Mobile World Congress) 2024 Global Mobility Awards.



Safeguarding biodiversity with technologies

China Unicom promoted the construction of ecological civilisation, respected nature, conformed to nature and protected nature. It actively promoted the combination of digital technology with river and lake governance, national park intelligent supervision and wildlife protection, and conducted biodiversity protection with practical actions.

China Unicom actively promoted the deep integration of river chief system business with information technology. Focusing on the six tasks* of river chief system, it empowered Guangdong to create an “Ecological Belt” with digital technology, identified the “four chaos” of rivers through 5G+drones, and improved the inspection efficiency by 12 times. The Company used Mobile Edge Computing (MEC) and AI and other digital means to support the analysis and supervision of river and lake health and the performance of rivers chiefs. It intelligently identified eight types of illegal behaviors, with more than 75% accuracy, so as to help realise the intelligent management and control of river and lake conditions in the province.

Note*: The “six tasks” of the river chief system: 1. Strengthening the protection of water resources; 2. Strengthening the management and protection of river and lake shorelines; 3. Strengthening water pollution prevention and control; 4. Strengthening water environment governance; 5. Strengthening water ecological restoration; 6. Strengthening law enforcement and supervision.

China Unicom actively participated in the construction of the national park, improved the monitoring capability of the Northeast Tiger and Leopard National Park with digital technology. It built a unified information database for the Northeast Tiger and Leopard, so as to timely grasp the information of their activities. By collecting and analysing surveillance data such as infrared automatic triggering cameras, surveillance cameras, remote sensing technology and drones located in the park, the Company realised comprehensive monitoring of the Northeast Tiger and the Northeast Leopard species. This provided timely and effective information support for the protection and management of the Northeast Tiger and Leopard populations and their habitats.