

2023

SUSTAINABILITY
REPORT



中国联通
China unicom

CHINA UNICOM (HONG KONG) LIMITED

HKEx: 762

Embarking on a New Journey and Committed to a New Mission

Leveraging Digital Technology Integration and Innovation to Promote Sustainable Development



FORWARD-LOOKING STATEMENTS

Certain statements contained in this report may be viewed as “forward-looking statements”. Such forward-looking statements are subject to known and unknown risks, uncertainties and other factors, which may cause the actual performance, financial condition or results of operations of the Company to be materially different from any future performance, financial condition or results of operations implied by such forward looking statements. In addition, we do not intend to update these forward-looking statements. Neither the Company nor the directors, employees or agents of the Company assume any liabilities in the event that any of the forward-looking statements does not materialise or turns out to be incorrect.

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Note: Please refer to the 2023 annual report for the details of Corporate Governance Report.

Message from Chairman



2023 was a critical year for the Company to implement the 14th Five-Year Plan. China Unicom has established itself through the “Internet”, grown through “Connectivity”, and become stronger through “Convergence”. We bravely undertook the mission and tasks of the new journey of the new era, took the initiative to serve the Cyber Superpower and Digital China strategies, shouldered the responsibility in scientific and technological innovation and in-depth reform, actively took actions in building development advantages and making up for the shortcomings of capabilities, and better performed functions such as strategic security, industrial leadership, national economy and people’s well-being, and public services, contributing to the enhancement of the ability to create comprehensive value for the economy, society and environment.

Bearing the responsibility and supporting the construction of a modern industrial system. China Unicom continued to build high-quality networks, vigorously promoted new industrialization, deepened the integration and innovation of digitalization and reality, and accelerated the building of the backbone to empower the digital, intelligent and green transformation and upgrading of the economy and society. We served the construction of digital economy, accelerated the promotion of 5G, gigabit and integration, and optimised the product experience such as Unicom Home Surveillance, Unicom Assistant, Unicom Ultra HD, and 5G new communication to meet the needs of the people for a better digital and intelligent life. The Company strengthened Unicom Cloud and continued to polish the No. 1 brand of “5G+Industrial Internet”. The Gewu Unilink platform was selected as a national dual platform, with a total of 30,000 5G industry application projects. We served the construction of digital government, upgraded the “Zizhi” administrative big data platform, and served the construction and operation of the digital economic operation platform in 16 provinces. We served the national cultural digitalization strategy, upgraded the digital cultural chain of China, served the construction of the Chinese cultural database, and created digital display platforms such as the National Nature Museum and Shaoshan Memorial Hall of Comrade Mao Zedong. The Company built an inclusive and convenient digital society, upgraded the “Urban Digital Intelligence Brain”, constructed digitalized colleges and universities, and built a full-scenario digital medical capability system. The digital village platform covered 255,000 administrative villages, comprehensively supporting rural revitalization. We actively worked towards the “dual carbon” goal. The 4G/5G co-build and co-share leads to annual power saving of about 20 billion kWh, and the carbon emissions are reduced by approximately 11.5 million tonnes per year. We created digital solutions such as smart water conservancy, environmental monitoring and energy consumption management to help build a beautiful China.

Concentrating our efforts to promote high-level technological self-reliance and self-improvement. China Unicom deeply implemented the strategy of strengthening enterprises with technology, accelerated the transformation to a world-class technology service enterprise with global competitiveness, and strived to become an important part of the national strategic scientific and technological strength. The Company promoted industrial innovation with scientific and technological innovation, implemented the action plans of industrial renewal for central state-owned enterprises and inauguration of future industries, and accelerated planning in three strategic emerging industries, namely next-generation mobile communication, artificial intelligence and new energy vehicles, as well as two future industries, namely future network and future information, accelerating the development of new quality productivity. The efficiency of scientific and technological innovation continued to improve, and the investment intensity of R&D funds exceeded 4%. The Company accelerated the development of

original technologies and developed core technologies in key areas such as IPv6 evolution and security, network security, intelligent vehicle-road collaboration, and time-frequency synchronous chip. The Company established 62 international standards, applied for 4398 patents, attained 1 China Patent Silver Award, 2 World Internet Leading Scientific and Technological Achievements Awards, and won the National Quality Engineering Gold Award for “5G Co-build and Co-shared SA Construction Project”. We deepened industry-university-research cooperation with Zhongguancun Laboratory, Zijinshan Laboratory and Pengcheng Laboratory to promote the transformation of scientific and technological achievements from “laboratories” to “production lines”. The digital transformation was expanded in depth, with continuous enhancement of intelligent brain capabilities and a strengthened intelligent operation system to provide data and tool empowerment for the front line. The proportion of intelligent services increased to 85%, and the operational efficiency and customer experience were significantly improved. The Company’s data management capability ranked among the first tier in the country, and its data governance has passed the DCMM5 certification. The Company has been awarded the title of “Top Ten Famous Enterprise in Data Management”, and ranked first among central stated-owned enterprises in the special action of digital intelligence improvement of state-owned assets supervision, setting a benchmark for the digital transformation of central stated-owned enterprises.

Taking the lead in serving the new landscape of national strategic security. China Unicom coordinated high-quality development and high-level security, accelerated the construction of intelligent comprehensive digital information infrastructure, comprehensively improved intrinsic security capabilities, and built a solid national cybersecurity barrier. The number of 5G mid-band base stations exceeded 1.21 million, the number of 900M base stations reached 680,000, mobile network covered 98% of administrative villages, broadband network covered 540 million residential units, helping to narrow the digital divide. The Company accelerated the “5+4+31+X” computing power centre deployment, promoted the construction of the first batch of AI computing nodes, and provided integrated computing network services, bolstering the information channel for economic and social development. The Company served the construction of the “Belt and Road”, as the capacity of international submarine and terrestrial cables resources reached 88T. The “Intelligent Cloud Data Centre” and Unicom Cloud International Station were launched, helping to build a new development landscape. The Company leveraged the pivotal and conducive nature of its role as the chain leader of the modern cybersecurity industry chain, self-developed the “Mogong” security operation platform, realised the physical operation of security operation centre, strengthened the protection of critical infrastructure, and effectively improved its comprehensive cybersecurity defence capability. The Company carried out the joint chain action, operated the cybersecurity intellectual property operation centre, cooperated with scientific research institutes to build national innovation carriers such as security attack and defence laboratories and information technology innovation laboratories, and worked with industrial chain partners to create the “Security Hub” cloud market, empowering the development of small and medium-sized enterprises. The Company established

the China Unicom Anti-Fraud Centre to crack down on network and telecommunication frauds and safeguarded the safety of people’s lives and properties. We successfully completed key communications support tasks such as the National People’s Congress and the Chinese People’s Political Consultative Conference, the Belt and Road Summit Forum, and the Hangzhou Asian Games, and demonstrated our responsibility in flood and earthquake emergency rescue and disaster relief. We continued to consolidate the brand image of “Chief Security Officer”.

Overcoming difficulties and stimulating the vitality and momentum of high-quality development. China Unicom has always adhered to the two “consistent principles”, made good use of reform to further promote the modernization of corporate governance system and governance capabilities. The Company fully implemented the reform deepening and improvement action plan, and strengthened the system integration, coordination and efficiency of reform, innovation and development. We carried out in-depth quality and efficiency improvement, and the level of refined management was significantly improved. We continuously improved the quality as a listed company and actively responded to investors’ concerns. The Company gave full play to the operational advantages of “One Unicom”, accelerated the formation of specialised, refined, unique and innovative capabilities. Two professional subsidiaries were selected as world-class professional leading demonstration enterprises by the State-owned Assets Supervision and Administration Commission of the State Council, and three professional subsidiaries were selected as national-level specialised, refined, differentiated and innovative “little giant” enterprises. We continued to improve the organisational system of operation services, further promoted the “Strong Counties (Districts) Project”, and further stimulated the vitality of frontline units. The Company improved the market operation mechanism, built a multi-dimensional promotion incentive system covering all employees, and significantly enhanced the happiness and sense of achievement of employees.

The year 2024 marks the 75th anniversary of the founding of new China and is also an important year for the Company to continue to strive for a new start. We will insist on “Strengthen and Solidify, Preserve and Innovate, Integrate and Open”, fully leverage the Company’s unique advantages, deeply implement the strategy of strengthening the enterprise, and solidly promote key action plans. With a pragmatic and pioneering approach, we will work hard to make new contributions to the construction of Chinese modernization with the tangible results of high-quality development.

China Unicom (Hong Kong) Limited

Chairman and CEO



March 2024

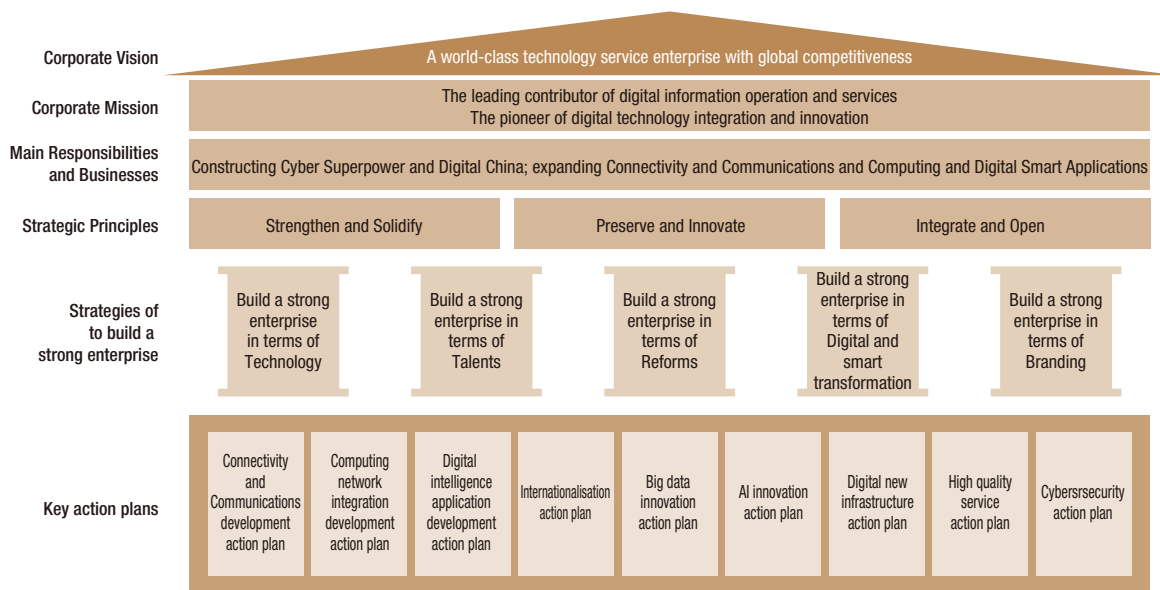
About China Unicom

Company Profile

China Unicom (Hong Kong) Limited (“China Unicom” or the “Company”) was incorporated in Hong Kong on 8 February 2000 and listed on the New York Stock Exchange* and The Stock Exchange of Hong Kong Limited on 21 June 2000 and 22 June 2000 respectively. The Company was included as a constituent stock of the Hang Seng Index on 1 June 2001 and merged with China Netcom Group Corporation (Hong Kong) Limited on 15 October 2008. China Unicom establishes branches in 31 provinces in China (including autonomous regions and municipalities) and multiple countries and regions overseas. The Company’s telecommunication network and global customer service system covers China and connects to the world. The Company was voted as “Asia’s Most Honored Telecom Company” in 2023 for the eighth consecutive year by Institutional Investor.

Corporate Strategy

We insist on strengthen and solidify, preserve and innovate, and integrate and open. We fully leverage the Company’s unique advantages, deeply implement the five strategies to build a strong enterprise, i.e. via technology, talent, reform, digital and smart transformation, and brand, in order to accelerate becoming a world-class technology service enterprise with global competitiveness.



China Unicom Strategic Planning System

Corporate Culture

China Unicom plays the role of the leading contributor of digital information operation and services and the pioneer of digital technology integration and innovation. It nurtures an excellent corporate culture and consistently promotes the core values of “Customer-oriented, Employee-friendly, Attentive to quality service, Inherently innovative, Proud of endeavours, Adhering to integrity”. It also adheres to the corporate style of “Rigorous, Pragmatic, Skillful, Meticulous, Efficient”. It unites development efforts to shape a positive corporate culture.

* The Company’s ADSs were delisted from the New York Stock Exchange on 18 May 2021. For details, please refer to the announcement of the Company dated 23 July 2021.



New Opportunities

High-Level Connectivity along the
“Belt and Road” New Corridor

2023 marks the 10th anniversary of China's proposal of the "Belt and Road" initiative. China Unicom takes "Hard Connectivity" of infrastructure as an important direction, "Soft Connectivity" of rules and standards as an important support, and "Heart Connectivity" of the nation and people as an important foundation. It strives to build the digital Silk Road and the secure Silk Road to provide solid support for the shared development of the digital economy along the "Belt and Road" region.

Promoting the accelerated development of global network capabilities with the "Hard Connectivity" of infrastructure

China Unicom relies on China Unicom Global (CUG) to actively contribute Chinese solutions, Chinese wisdom and Chinese experience to the economic development and people's well-being of countries and regions worldwide.

Expanding the scope of international services

China Unicom continued to promote interconnected network facilities, continuously expanded the scope of its operation services. It established more than 30 branches around the world, including 19 in the "Belt and Road" region. Its operation services fully cover and support the northern, central and southern countries and regions along the "Belt and Road".

- The number of international business access points reached 124, and the number of product business nodes reached 363, covering 44 countries and 76 cities. The international internet bandwidth of China169 for inbound traffic achieved 5.59 T. Its mobile business covered 264 countries/regions. Among them, there were 37 nodes in the "Belt and Road" region, with submarine cable capacity reaching 46.4 T and cross-border land cable capacity reaching 31.3 T.

- The Company coordinated to integrate international computing power in the Guangdong-Hong Kong-Macao Greater Bay Area to promote the China Unicom International Network (Hong Kong) Hub Project.

- The Company provided more than 300 outbound business circuits for various domestic industries targeting the ASEAN region, established more than 120 international inbound business circuits for ASEAN countries. There were more than 240 cooperative projects, empowering ASEAN countries' digital economy development.

5G international roaming covered

72 countries and regions

4G international roaming covered

221 countries and regions



CUG has made ten service commitments in its various stores in Hong Kong, striving to provide higher quality services to Hong Kong customers and establish a good brand image.



CUG was awarded the Silver Award of the "Best International Network Operator" at the CAHK STAR Awards 2023. Its outstanding status and innovation capabilities in the field of digital infrastructure, cloud and data centre have been widely recognised and commended by the industry.



CUG won the Hong Kong Business Technology Excellence Awards for "Best Connectivity in the Telecommunications Industry". This award was sponsored by Hong Kong Business, and aimed to recognise enterprises in various industries that are highly innovative, leading industry technology, and digital transformation while making positive contributions to the economic development of Hong Kong China.

Enriching international product offerings

China Unicom actively expanded its Connectivity and Communication (CC) and Computing and Digital Smart Applications (CDSA) businesses, supporting the high-quality development of the “Belt and Road” initiative, and providing global operators and enterprise customers with comprehensive information solutions such as global connectivity, cloud computing, data centres, ICT and Internet of Things (IoT).

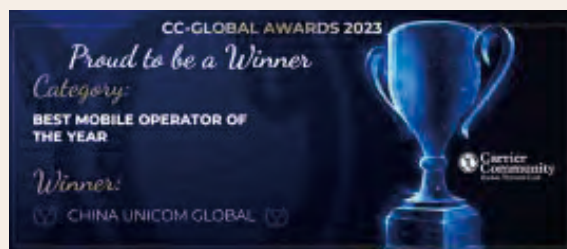
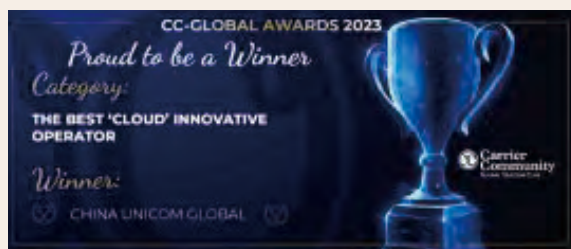
- The Company provided one-stop products and solutions for global customers. It rolled out 200 premium express lines connecting 16 domestic cities to 16 overseas hotspot countries/regions, achieving ultra-fast response and quick delivery. The Company provided global intelligent networking solutions with CloudBond SD-WAN as the core.

- The Company launched the “computing power centre + DC Internet +application” data centre solution and global Unicom Cloud services, providing solutions for eight major industries, including digital new media, finance, manufacturing, energy, transportation and logistics, government affairs, e-commerce retail and construction. The Company also provided cybersecurity services such as phishing email drills and vulnerability scanning, serving the high-quality development of overseas enterprises and empowering thousands of industries around the world to release their digital potential.



CUG launched new products such as the UK and five European countries SIM cards, mainland China and Macau SIM cards, and UAE SIM cards, fully meeting the diverse travel needs of business travelers, students and various other individuals.

In Thailand, the Company carried out digital information transformation for Great Wall Motor, including the renovation of industrial and office network systems, the construction and replacement of monitoring systems, the construction of new and old unified communications systems, and the coverage of wireless networks in the industrial parks, etc., supporting Chinese automobile enterprises' high-quality overseas development.

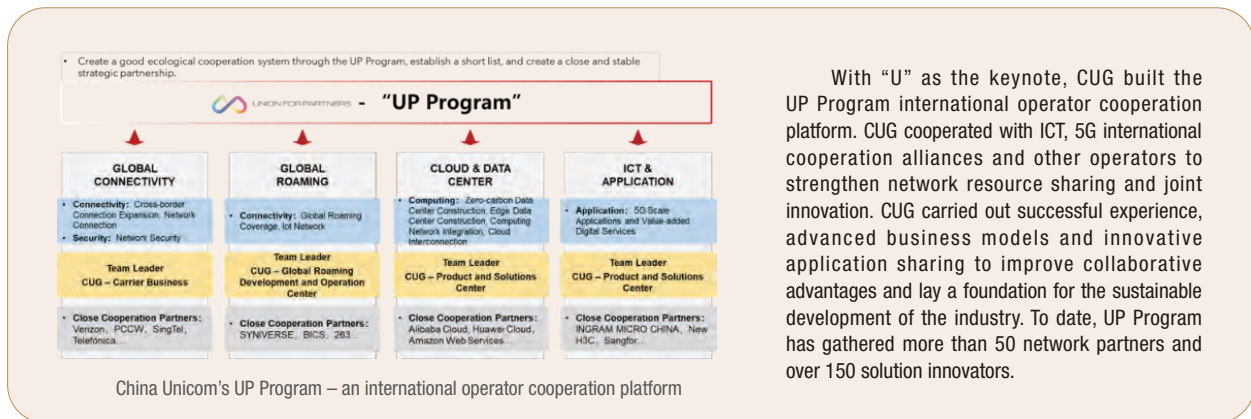


In the CC-Global Awards selection, CUG won two of the most competitive international awards, namely The Best Cloud Innovative Operator and Best Mobile Operator of the Year. These awards were attributed to the Company's rich product offerings and innovative solutions advantages.

🏠 Creating a high-standard industrial cooperation ecosystem with the “Soft Connectivity” of rules and standards

Building an international market ecosystem together

China Unicom continued to strengthen cooperation with overseas partners and implemented measures such as key ecological cooperation with operators and API projects, UP Program initiatives, and cross-industry privilege partnership, creating a complementary and friction-free business and economic environment.



Continuously carrying out compliant operations

China Unicom strictly abided by the laws and regulations of the countries where it operates, carrying out overseas compliant operations and implementing localised procurement to promote local employment.

- The Company deepened the construction of overseas compliance management system, continuously updated the compliance manuals for overseas operating companies based on their actual situations. It carried out compliance training, risk identification and investigation to ensure compliant operations.
- The Company improved and perfected the systems and processes of procurement, material management, supply chain operations, and supplier and quality management. The Company optimised the “China Unicom Global Limited Scenario-based Implementation Plan for Procurement”. Local procurement rate exceeded 70%, including circuit resources, ICT services, and consulting services, etc.
- The Company strengthened the requirements for green and low-carbon procurement of materials and promoted the strategic coordination of technology leadership and supply chain management to guide supply chain enterprises to improve their environmental management awareness and capabilities.
- In strict accordance with the local labor laws, the Company safeguarded the legitimate rights and interests of local employees, helping solve local employment issues. The total number of overseas employees of CUG amounted to 1,003, including 365 overseas employees. In 2023, there were no incidents involving the infringement of indigenous rights, and the Company has been certified as a “Good MPF Employer” by the Hong Kong Mandatory Provident Fund Schemes Authority for three consecutive years.

Spreading the spirit of pleasant livelihood services with the “Heart Connectivity” of the nation and people

China Unicom has always been committed to achieving the harmony and unity of commercial value and social value. It adheres to promoting exchange and mutual learning, creating a new situation of humanistic exchange, cultural integration, and people connectivity.

Vigorously promoting cultural exchange

China Unicom takes advantage of its own resources, platform channels, and influence to support international youth cultural exchange programs, and promote international cultural exchange and cooperation, striving to be an integrator of Chinese and foreign cultural exchanges and the promotion of Chinese culture.

In Hong Kong

- In active response to the HKSAR government’s plan of “building an East-meets-West centre for international cultural exchange”, the Company built internal and external cultural exchange platforms to promote the harmonious development of cultural exchange ecology.
- Adhering to the tenet of “bridging through arts, connecting internationally, promoting exchange and mutual learning, and contributing to Hong Kong”, China Unicom promoted Chinese culture and strengthened its communication and collaboration with the five major chambers of commerce in Hong Kong.
- The Company organised its business leaders and outstanding young volunteers (local permanent residents) to participate in activities such as “I SEE I KNOW”, allowing them to personally experience the great changes in the development of the motherland and enhance their sense of national pride and belonging.
- The Company innovated ways to fulfill its social responsibilities overseas, strengthened communication and exchange among industries, and held the thematic activity of “Pursuing Excellence” with ICBC (Asia) Ltd. to provide more social opportunities for young employees.

In Singapore

- The Company hosted the activity of “Singapore High School Students Visit Chinese Enterprises”, inviting high school teachers and students in Singapore to visit ST Telemedia Hub, a local global data centre, where senior staff gave professional explanations on related knowledge, enabling the students to have a firsthand experience of the current global trend in big data and big connectivity.

In Thailand

- The Company hosted the thematic activity of “Belt and Road – Thailand Exploration”, inviting Mainland-Hong Kong cross-border youth and children (from cross-border families or with both parents who are not residing in Hong Kong) to visit local Chinese institutions, Chinese organisations and Chinese universities, allowing them to learn about the opportunities and challenges under the “Belt and Road” policy.



Organised a visit to a data centre for Singapore high school students to promote telecommunications knowledge



Cultural exchange with Thai youth

In-depth participation in overseas public charity

The Company carried out community engagement activities by Chinese enterprises, delivering the genuine care and concern from state-owned enterprises to local residents. Through practical actions, the Company assisted in resolving citizens' livelihood difficulties and improving their life quality. These efforts have been reported by mainstream media in Hong Kong, such as *Bauhinia*, and have received positive social feedback locally.

On the occasion of the 74th anniversary of the establishment of the People's Republic of China, CUG went to the Yau Tong community in Kwun Tong, Hong Kong, to carry out the activity of "Celebrating the National Day and Mid-Autumn Festival – China Unicom's Love and Care in the Community". CUGers visited and expressed their regards to community residents, and presented well-prepared gift bags for the Mid-Autumn Festival to grassroots citizens, elderly living alone, and doubly-elderly families, so as to spread the fullness of the love and care of China Unicom, creating an atmosphere of joy and celebration in the welcome of the National Day and the Mid-Autumn Festival. CUGers celebrated the birthday of the Motherland with Hong Kong citizens.

CUG, together with the Hong Kong Tertiary Youth Association, Kowloon Youths Joint Conference and the Youth Kwun Tong, jointly held the "National Day and Mid-Autumn Festival Celebration – China Unicom's Love and Care in the Community: Telephone Fraud Prevention Seminar". The seminar explained "Understanding Cyber Frauds" and "Enhancing Fraud Prevention Awareness", and conducted on-site interaction. Through easy-to-understand language and immersive experiences, the seminar allowed general public to learn about the common telephone fraud methods and preventive skills.



China Unicom Global held anti-fraud public welfare activities

CUG actively participated in the Hong Kong Government's Strive and Rise Program to help disadvantaged junior secondary school students. CUG provided support for their life, education and personal development, aiming to broaden their horizons, establish a positive outlook for life and life goals, and make reasonable plans for future development. In the past two years, 14 CUG's employees have become "mentors". In 2023, four mentors completed one-on-one assistance to Hong Kong students from financially disadvantaged families.



***FOCUS ON “PRESERVE AND
INNOVATE” TO NAVIGATE
THE DIGITAL FUTURE***

Focus on “Preserve and Innovate” to navigate the digital future



China Unicom resolutely shoulders the mission and responsibility of building a Cyber Superpower and Digital China, consolidates its network foundation and corporate advantages, promotes innovation in technology, products, models and systems with greater efforts, accelerates the transformation to a world-class technology service enterprise with global competitiveness, empowers the digital transformation of thousands of industries, and promotes the modernization of China with digital, network-based and intelligent transformation.



Measures adopted in 2023

- The Company accelerated the deployment of gigabit network, supported the creation of local gigabit cities, and continuously improved the coverage rate of gigabit business, in order to meet the needs of urban and rural gigabit business development.
- The Company continued to increase investment in R&D of core technologies, and focused on core technologies in the fields of next-generation Internet, industrial Internet, cloud computing, big data, artificial intelligence and network security.
- The Company vigorously promoted the digital and intelligent transformation, used digital tools to improve operational efficiency, shared its smart digital and intelligent capabilities and relied on Unicom Cloud to drive industry transformation.
- The Company continuously forged its core capabilities in network security, built basic network security platforms, supported major diplomatic, sports and cultural activities, and innovated on technologies to ensure the security of user data privacy.



Actions to be taken in 2024

- The Company will continue to improve network coverage, optimise network quality, focus on the implementation of data centres in core areas of computing power, strengthen the unified scheduling and dispatch of computing network resources, and provide computing network integration services.
- The Company will accelerate the monetisation of scientific and technological achievements, manage all achievements using information platform, strengthen the guidance of the monetisation and classification of achievements, and improve the overall efficiency of scientific and technological innovation.
- The Company will continue to develop digital and intelligent operation capabilities such as APP and digital middle platform, improve the platform capabilities of “cloud, Big Data, IoT, artificial intelligence, blockchain, security”.
- The Company will improve the core capabilities of network security, fully guarantee the communication security of major activities and emergencies, and ensure the multi-level and all-round security of data and privacy.

Consolidating the foundation of a Cyber Superpower

China Unicom implemented the strategic deployment of building a Cyber Superpower and Digital China, continuously strengthened the construction of digital information infrastructure, consolidated the foundation of the digital economy, and contributed our strength to the prosperity and development of the digital economy.

Construction of digital information infrastructure

China Unicom accelerated the construction of premium mobile networks, premium broadband networks, and premium government and enterprise network, consolidated the foundation of Computing and Digital Smart Applications capabilities, focused on building high-speed ubiquitous access capabilities and intelligent computing network integration capabilities, consolidated the network basis for high-quality development of enterprises, and built the network foundation for the construction of Cyber Superpower and Digital China.

Accelerating the construction of premium mobile network

China Unicom continued to promote the construction of premium mobile networks with wider coverage, stronger capabilities, better quality and richer experience, and built the Internet of Things with the coordinated development of 5G/4G to improve the breadth and depth of network coverage.

Over **1.21** million of 5G mid-band base stations

680,000 900 MHz base stations

Over **2.9** million of usable 4G base stations

Total number of IoT terminal connections reached **490** million

China Unicom Diqing Branch in Yunnan completed the first 5G premium network dedicated to trains serving Tibetans. The Lixiang Railway connects Lijiang City in Yunnan Province with Shangri-La City in Diqing Tibetan Autonomous Prefecture. It is the only railway in Yunnan Province that passes through the snow mountain with the highest altitude. China Unicom Diqing Branch overcame many difficulties such as plateau reaction, high seismic intensity, high geological risk, traffic inconvenience, difficulty in organising construction materials, and multiple points and long lines, etc., and realised the dual 4/5G network coverage for the entire Lixiang railway section, and ensured that travelers can have a non-lagging, non-dropout network experience on the high-speed train.



Cracking network coverage difficulties with leading technologies

Accelerating the construction of premium broadband network

China Unicom continued to promote the construction of broadband premium networks with all-optical access, all-area Gigabit, full-house Wi-Fi, and all round service.

- The total number of broadband ports reached 266 million, representing a year-on-year increase of 6.4%, and 10 GPON ports accounted for more than 70%, with broadband covering 540 million residential units and 188,000 commercial buildings.

- The Company carried out cooperation and construction with China Broadnet and private capital enterprises, with 54.64 million broadband ports, accounting for 21% of the total.

Accelerating the construction of premium government and enterprise network

China Unicom continued to promote the construction of a smart experience premium government and enterprise network with ultra-wide coverage, ultra-wide bandwidth, ultra-low latency and ultra-high reliability, and led in the industry in terms of scale.

- There were more than 40,000 multi-service access points in the Company's government and enterprise premium network.

- We launched premium inter-provincial smart OTN products for government and enterprises, and completed the testing of smart OTN products in some provinces.

Consolidating the foundation of Computing and Digital Smart Applications (CDSA) capabilities

As an advocate and pioneer of computing power network, China Unicom accelerated CDSA deployment, and continued to enhance resource supply capabilities, supporting CDSA business development. It has accumulated rich experience and fruitful results in computing power delivery, computing power dispatch, computing power supply, computing power service, etc.

- The Company built differentiated competitive advantages, and constructed new IDCs with China Unicom characteristics featuring reasonable distribution, abundant supply, advanced technology, low-carbon emission, and intelligent centralization, promoting all-round upgrading and high-quality IDC business development. A CDSA base has basically been formed.

- The Company optimised the computing power carrier network, created a new DC-centric "IP + Optical" synergistic carrier network, built an integrated scheduling platform of network and computing power, and created an integrated computing network service capability.

- The Company built a new ecosystem of computing network integration focused on computing power, provided integrated computing network services of "connection + perception + computing + intelligence", and formed a multi-level computing power facility system of digital network collaboration, digital cloud collaboration, cloud-edge collaboration, and green intelligence.

China Unicom (Huailai) Big Data Innovation Industrial Park has become one of the two “Eastern Data and Western Computing” scheduling platforms in China, which can meet the diversified and customised needs of various enterprises in network, computing, storage and disaster recovery. The industrial park has planned a total of 85,000 standard cabinet capabilities, which can provide 2,200 PFlops (1 PFlops equals to 1,000 trillion floating point operations per second) computing power services, with advantages such as large area, high construction standard, large scale of racks, and complete power supply, environmental impact assessment and energy-saving procedures.



China Unicom (Huailai) Big Data Innovation Industrial Park

Continuously improving the quality of network services

China Unicom actively implemented the special action deployment of the Ministry of Industry and Information Technology for “signal upgrading”, promoted the compliance of ten key scenarios, and continued to improve the quality of network services.

- The Company continued to build a mobile network with strong coverage, good quality and excellent experience. The average access speed of 5G uplink maintained an industry advantage throughout the year, and the average access speed of downlink exceeded 330 Mbps; The uplink and downlink access speed of 4G network is comparable in the industry, of which the downlink average access rate is superior in the industry.
- The Company comprehensively built high-quality smart broadband networks, and the average network access speed increased by 15.8% year-on-year.
- Focusing on government affairs, finance, enterprises and the Internet and other market segments, the Company carried out industry cultivation and matched needs; With resource utilisation as the driving force, we carried out precise construction and achieved network business synergy.
- We strengthened the construction of China169 backbone network, completed the latency optimisation of 34 inter-provincial directions, and the average latency of the entire network has an advantage in the industry.



China Unicom became the first domestic operator whose broadband network digital application products passed the self-intelligent network intelligent grading certification

In order to better improve the quality of the network, China Unicom Hainan Branch focuses on network capacity, network coverage improvement, network problem mapping, market service guarantee, and optimisation capability enhancement, etc., to overcome network pain points and improve user perception. The complaint rate of the mobile network decreased by 26.5% year-on-year, the resolution rate of the mobile network complaints was 93.91%, an increase of 6.91 pp from the beginning of the year, with subscribers being more satisfied with their Internet experience.

Promoting coordinated development of the main business

China Unicom focused on the main responsibility of building Cyber Superpower and Digital China, expanded the CC and CDSA businesses, continuously improved the sense of achievement, happiness and security of the people, and helped the construction of a modern industrial system. The Company accelerated the promotion of 5G, gigabit and integration, and optimised the product experience such as Unicom Home Surveillance, Unicom Assistant, Unicom Ultra HD, and 5G new communication to meet the needs of the people for a better digital and intelligent life. Focusing on the key direction of industrial digitalization, the Company promoted the deep integration of digital technology and the real economy with innovative practises in 5G+industrial Internet, digital government, smart city, smart cultural tourism, smart education, smart medical care, ecological and environmental protection and other fields.

Optimising CC and providing smart living experience

China Unicom promoted the acceleration of 5G and gigabit upgrades for all subscribers, comprehensively improved user perception and service satisfaction, and strived to connect people for a better smart life. The Company followed the principles of fair competition, integrity and transparency, and deeply integrated the concept of compliance into daily operations. We regulated market competition behaviour, strived to maintain a healthy and orderly market environment, and led the industry to accelerate the construction of a new landscape of high-quality development.

Upgrade the China Unicom Smart Home Experience

China Unicom upgraded and released the FTTR (Fibre to The Room) whole-house optical broadband product “China Unicom Smart Home”, which provided high-quality services of “leading gigabit optical fibre, leading delivery services and leading speed experience”, promoted the high-quality development of FTTR and guided the new life of digital home.

FTTR's subscriber base exceeded

6 million households

Unicom Home Surveillance: In order to meet the needs of security monitoring, smart cameras are connected remotely with subscribers' mobile phones, computers, televisions and other terminals to achieve rapid storage and low-latency playback, and AI functions such as area alert, facial recognition and regular screen inspection are provided.

Unicom Assistant: We provide Internet-based communication enhancement services before, during and after calls, including functions such as intelligent call answering, AI secretary and anti-fraud business cards, so as to bring subscribers a whole-family, all-business and full-dimension intelligent protection.

Unicom Ultra HD: Based on high-quality broadband, the Company launched the TV business, providing specialized vertical content such as a dedicated section for seniors and on-demand content for children.



Unicom Assistant Security Manager to Protect Communication Security



In 2023, China Unicom Smart Home won more than ten important international and domestic awards, including the Smart Home Best Practise Award in the Mobile World Congress (MWC), and the Outstanding Digital Home Operator Award of the Year in the Broadband World Forum (BBWF), the HDR Vivid (High Dynamic Range Video Standard) and the Audio Vivid (Audio Coding and Decoding Standard based on AI Technology) Ecological Construction Contribution Unit by the UHD World Association.

Enjoying a better digital and intelligent life

Focusing on meeting user needs, solving application pain points, enriching product functions, and improving experience perception, China Unicom actively explored the fields of digital and intelligent life products and services, and continued to innovate to better meet people's needs for high-quality digital and intelligent life.

5G new communication: Adhering to the integrated innovation of digital technologies with "platform + cloud network + application", the Company continued to conduct R&D on the core technology of 5G new communication, and achieved breakthroughs in terminal native communication technology, communication video hybrid technology and other fields; We integrated AI, digital avatar, AR/VR and other metaverse innovative capabilities to bring subscribers a brand new experience of voice and video integration, real and virtual interaction, communication and metaverse fusion.

- Video ringtones: Innovative features such as high-definition ringtones, new live ringtones, AI/XR+DIY were launched to create an integrated, intelligent and interactive call experience for all scenarios.
- "New Communication + Metaverse": The Company self-developed a full-stack XR engine and digital avatar engine, built the China Unicom Metaverse platform, and pioneered the 2C Metaverse product in the industry, where digital avatars generated in seconds were applied to digital avatar ringtones, digital avatar business cards and digital avatar calls, leading the innovation of consumption metaverse applications. The Company also released the China Unicom Metaverse Technology Innovation and Industrial Application White Paper.



uniVerse China Unicom Metaverse Platform

Unicom Cloud Drive: The Company optimised the transmission path of Unicom Cloud Drive to achieve nearby access of incremental data, improved the experience of uploading and downloading, added the functions of intelligent photo album precise classification, photo text recognition and screening room, carried out the development of portal ecology, and built up a transfer scenario of external products such as mobile phone album, WeChat, QQ and other 11 social media, office tools, information content, vertical industry applications, etc.



Unicom Cloud Drive leading a new digital life



China Unicom's "Cloud Acceleration" product helps accelerate the all-round scenarios

China Unicom "Cloud Acceleration": Through innovative AI+algorithm intelligent identification of acceleration scenarios, it can realise the best acceleration strategy on different network slices, meet the acceleration needs of games, education, conferences, e-commerce and other all-round scenarios, and solve the pain points of users around network acceleration in one stop.

Strengthening CDSA to help the construction of Digital China

China Unicom accelerated the implementation of the Overall Deployment Plan for the Construction of Digital China, focused on the key direction of industrial digitalization, and comprehensively promoted the deep integration of next-generation digital technologies such as 5G, cloud computing, big data, Internet of Things and artificial intelligence with the construction of economic, cultural, social and ecological civilization, so as to comprehensively empower economic and social development and accelerate the construction of Digital China.



Strengthening, optimising and expanding the digital economy

Building the No. 1 brand of "5G+Industrial Internet"

China Unicom fully implemented the spirit of the National Conference on the Promotion of New Industrialisation, and took the high-quality promotion of the 5G+Industrial Internet group-level strategic project as the key to vigorously promote the expansion of industrial Internet integrated innovation applications, creating more than 10,000 industrial Internet projects.

China Unicom continued to go deeper into the core production safety field of mines, and has built an integrated mine digital brain platform, personnel positioning and vital signs monitoring system, intelligent production safety risk monitoring system for coal mining enterprises, mine intelligent integrated management and control platform, 5G intelligent mine platform, mine digital factory platform, mine industrial Internet platform, "Fangtong" mine safety monitoring platform, and mine video Internet platform, etc. These products have been applied by Shanxi Coking Coal Group, Jinnen Holding Group, Shandong Energy Group, China Gold Group, Shandong Gold Group, China Steel Group (Shandong) and other customers, realising production assistance and intelligent control of the whole process of "people, machines, environment and management" in mining areas. For open-pit mining operation scenes, the Company cooperated with China University of Mining and other units to successfully complete the country's first verification of integrated sensing and communication for mining scenario in Erdos Tengyuan Coal Mine based on integrated sensing and communication technology, Beidou and 5G, realising the effective integration of intelligent monitoring, safety control and emergency communication.

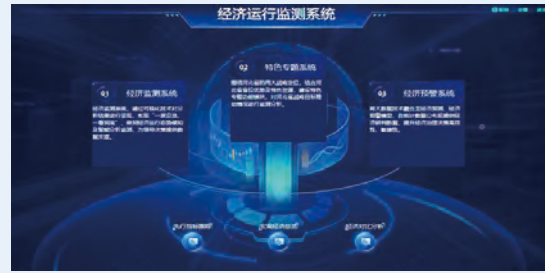


Development of efficient and collaborative digital government affairs

Digital government

China Unicom thoroughly implemented the Guiding Opinions on Strengthening the Construction of Digital Governments, the Guidelines for the Construction of National Integrated Administrative Big Data System, the Opinions on Building Basic Data Framework to Make Better Use of Data Elements and other requirements, actively participated in and served the digital transformation and development of governments at all levels, created core self-developed products such as “Zizhi” administrative big data Platform, Economic Brain 4.0, etc., upgraded 151 products, and provided more than 500 multi-scenario and intelligent comprehensive solutions. “Sichuan provincial government cloud and remote disaster recovery service project” and “Ningxia government cloud platform construction project based on dual engine base” won the “Excellent Case of Government Cloud Innovative Practice” in 2023.

The Company built an economic operation monitoring system for the Hebei Provincial Development and Reform Commission. In accordance with the characteristics of Hebei Province, the national strategy of Beijing-Tianjin-Hebei coordination integration, and the planning and deployment of the coastal economy of the province, the Company built three major business systems, namely macro-economy monitoring, economic alerts and special topics, and nine core sections based on more than 1,000 major indicator systems, which met the needs to monitor the economic leading effect of local development on key industries and major strategies, helping improve the digital level of government economic adjustment.



Economic operation monitoring system

Smart city

China Unicom continued to optimise and deepen smart cities, upgraded the unique capabilities of the “Urban Digital Intelligence Brain” base such as universal perception and time-space twinning, and helped the construction of urban data resource system, and formed 45 self-developed products and 20 solutions covering digital infrastructure, urban operation “unified management with one network”, social refined governance, intelligent parks, smart communities and other fields, providing services for nearly 700 projects across the country.

China Unicom Sichuan Branch and Yunjin Smart Technology Company worked together to create the “112N” Smart Xinjin Architecture for Xinjin District in Chengdu City, empowering urban public safety, public management, public services and digital economic development. By giving full play to the ability of China Unicom’s “Urban Digital Intelligence Brain” to collect, treat and dispatch urban operation data and the event processing and scheduling of the city event hub, the data can be automatically captured, the data collection process can be simplified, and the 10-hour reporting time in the community can be reduced every week



The Smart Xinjin case was selected as an excellent case of government data sharing by the E-government Office of the General Office of the State Council

China Unicom used the base of the “County Smart City Public Service Platform” to build four capabilities of “monitoring, command, coordination and handling”, and realised the “one-screen unified overview and one-screen scheduling” of the Emergency Command Centre of Danjiangkou City and the Water Quality Safety Assurance Command Centre of Danjiangkou Reservoir Area, so as to improve the efficiency of urban governance such as the overall urban emergency management of Danjiangkou City and the water quality safety guarantee of the reservoir area.



Intelligent Danjiangkou Comprehensive Command Centre

Transportation

China Unicom adhered to the strategy of “Transportation Strengthening the Nation” as a guideline. Relying on its own entrepreneurial expertise, China Unicom integrated the innovative CDSA capabilities such as vehicle-road coordination, traffic big data and intelligent analysis of traffic AI, and focused on the sub-division of highways, civil aviation, ports, logistics and other areas, so as to empower the construction of intelligent transportation through technology.

China Unicom empowered the Department of Transportation of Jilin Province to build a traffic and transportation big data centre and an “Internet+Transportation” command centre. The big data centre was based on aggregated and processed traffic data resources, and built a shared and open management platform to achieve effective data sharing and openness, while the command centre coordinated the monitoring of highway and waterway operations and emergency response, strengthened “intelligent monitoring, systematic investigation, and digital judgement”, and realised “intelligent monitoring, accurate supervision, scientific judgement, and efficient coordination”.

Building a confident and prosperous digital culture

Culture and tourism

China Unicom thoroughly implemented the policy requirements of “Internet+Tourism” and the cultural digitalization strategy. The “Innovation Centre for Tourist Behaviour Monitoring and Decision-making Services” led by the Company was awarded the Technology Innovation Centre of the Ministry of Culture and Tourism, and four solutions were selected as the first batch of national top ten and excellent solutions for “cloudification, digital empowerment and intelligence” for smart tourism by the Ministry of Culture and Tourism, and eight projects were selected as “5G+smart tourism” application pilot projects by the Ministry of Culture and Tourism and the Ministry of Industry and Information Technology.

China Unicom Digital Technology Company has built the Welcome Pine Mobile Command and Dispatch System for Huangshan scenic area, including the basic cloud platform and the mobile command centre APP. We realised the unified access and integration of 35 system data, and the level of data governance was greatly improved. For the first time, we adopted modelling methods such as big data monitoring-forecasting, and through the establishment of a data prediction model for blockages, we achieved accurate prediction of the status of each congestion point in the scenic spot one hour in advance, which improved the level of tourism supervision and information public services, and promoted the high-quality development of Huangshan scenic area.



Welcome Pine Mobile Command and Dispatch System

Smart education

China Unicom actively participated in the national education digitalization strategy and built a digital intelligence education capability system with the core of “computing network integration, digital intelligence empowerment, panoramic application, security and credibility, and operation services”. Leveraging the “cloud, Big Data, IoT, artificial intelligence, security and blockchain” and 5G technology capabilities, China Unicom has created more than 700 benchmark projects for digital applications such as 5G smart teaching and education big data, serving education departments in 31 provinces across the country, more than 2,000 higher vocational schools, 100,000 primary and secondary schools, and more than 30 million teachers and students, empowering the high-quality development of national education.

Based on 5G+cloud+digital twinning technology, China Unicom Hunan Branch has created a new training model of “Cloud-operation + Real-action” under the 5G environment for Hunan Automobile Engineering Vocational College, and built an interactive intelligent learning space integrating “virtual scenes” and “physical scenes”, which effectively solved the practical training problems such as the high procurement cost of the digital production line of intelligent manufacturing at the school and the low frequency and number of teaching students.



5G smart teaching platform of Hunan Automobile Vocational College

China Unicom Zhejiang Branch and Jinhua Education Bureau worked together to build the “Double Reduction” platform. Focusing on the problems of overburdened primary and secondary school work, insufficient supervision of after-school training institutions, and common anxiety of social families, the school effectively solved them through cloud, big data, IoT and other digital technologies, and strengthened the main role of schools in education. All 1,124 for-profit academic training institutions in the city underwent “two shifts and one stop”. After-school study hours decreased by 69%, and academic training expenses decreased by 91%, greatly reducing the burden on students and parents.



The “Double Reduction” platform project was selected as the digital transformation case of the World Digital Education Conference and the annual best application of the digital social system in Zhejiang Province, ranking first in the “Best Application” list of digital reform in Jinhua City.

Building an inclusive and convenient digital society

Smart healthcare

China Unicom gave full play to the advantages of digital health integration and innovation, provided universal health big data solutions for the medical and government fields, and assisted in the sharing of high-quality medical resources and the improvement of primary-level diagnosis and treatment service capabilities; For hospitals at all levels, we provided integrated smart hospital solutions to facilitate medical business collaboration and scenario-based application innovation.

China Unicom built a health big data platform with an integrated structure in the Third Hospital of Sun Yat-sen University, which gathered 77 business system data of the hospital, established a unified data standard, and created a digital and intelligent application service system for the hospital that is manageable, accessible to doctors and visible to patients, so as to realise the homogeneous and coordinated development of multiple hospital branches. It has created a national leading benchmark demonstration that uses big data technology to serve smart diagnosis and treatment, smart management and smart services of the hospital, and the project was selected as an excellent typical case of smart hospitals by the National Health Commission.



Sun Yat-sen University Third Hospital Health Big Data Platform

China Unicom joined hands with Shanghai Ruijin Hospital to jointly build the first key medical project of the national 5G new infrastructure, and constructed a national 5G emergency rescue demonstration system of “one private 5G network + one emergency rescue platform + multiple terminal collaboration”, realising the unified command and dispatch of first-aid resources.



5G helped Ruijin Hospital to build an ultra-large emergency rescue demonstration system

Building a green and smart digital ecology

Ecology and environmental protection

China Unicom focused on water conservancy, environmental protection and other sub-sectors, supported the construction of a beautiful China with the integration and innovation of digital technology, and empowered the construction of digital ecological civilization with technology relying on its own enterprise endowment and innovation capability.

China Unicom Zhejiang Branch strengthened the top-level design of the digital reform of the ecological environment, constructed the “ecological environment brain” project in Zhejiang Province, built a “Beautiful Zhejiang” ecological management platform, covering core elements of ecological environment management such as water, air, soil and solid waste, and realised the collection and sharing of more than 16.4 billion ecological environment data from 52 units, 118 systems, which effectively improved the modern capability of ecological environment governance in Zhejiang and promoted the construction of beautiful Zhejiang.



“Beautiful Zhejiang” ecological management platform

Stimulating the vitality of technological innovation

China Unicom implemented the deployment of strengthening the country with science and technology, and pioneered in the integration and innovation of digital technologies to improve the comprehensive strength of scientific and technological innovation on all fronts.

Developing strategic emerging industries

China Unicom accelerated the deployment of 3 strategic emerging industries, including next-generation mobile communication, artificial intelligence and new energy vehicles, and cultivated 2 future industries, including future networks and future information. Focusing on next-generation Internet, next-generation mobile communication, smart broadband and leased line networks, cloud computing and computing networks, artificial intelligence, big data, Internet of Vehicles, Digital Smart Applications, network security and other directions, China Unicom carried out R&D on critical core technologies, actively built a sound industrial ecology, and accelerated the formation of new quality productivity.

Focusing on national strategies and developing emerging industries

Based on the urgent needs and long-term requirements of the state, China Unicom actively deployed strategic emerging industries.

- **Next-generation mobile communication:** The Company promoted the technological innovation and application of 5G under complex and extreme conditions. We completed the fifth-generation mobile communication technology innovation and application project under the complex and extreme conditions of the Winter Olympics, achieving breakthroughs in key technologies such as rapid perception and precise modelling of electromagnetic transmission environment, high-reliability and large-capacity transmission, and multi-dimensional coverage network under complex scenarios, and won the “Major Technological Progress in China’s Information and Communication Field” award.

- **Cloud computing and computing network:** The Company comprehensively upgraded “Unicom Cloud” to security digital intelligence cloud, and launched a total of 106 products, with its comprehensive capabilities basically reaching the mainstream level of the industry, and was selected as the “2023 Digital Government Industry Map” by the CAICT. In terms of key technologies for computing network integration, China Unicom built the first domestic intelligent computing platform.

- **AI:** We launched the construction of the AI endogenous security tool chain, management system and ecosystem, self-developed and completed the value alignment of language models, and reached the mainstream level in the industry in the TruthfulQA data set evaluation.

- **Big data:** We continued to strengthen the real-time trillion-level data processing capacity, with 17 base capability components, fully covering the entire life cycle of data, and our data management capability passed the DCMM5 certification with the highest score in history.

- **Blockchain:** The Company promoted the integration of blockchain and homologous encryption and other technologies to realise cross-domain networking. We realised block data consolidation and compression technology, reducing storage by 30%, and underlying platform performance exceeding 20,000 TPS. Unicom Chain ranked 4th in IDC’s “China’s Government Industry Blockchain Software Market Share 2022”.

- **Internet of Vehicles:** The Company built the core capabilities of new digital infrastructure for Internet of Vehicles, provided new Internet of Vehicles products and services featuring integrated sensing and communication for autonomous driving, and covered the full-chain and full-scenario services of “terminal-management-service-cloud” of the Internet of Vehicles, so as to help the high-quality development of automobile enterprises. We won more than 60 awards, including the “First Prize of the China Institute of Communications”, the “First Prize of the China Communications and Transportation Association”, and the “International Green Design Award of the World Green Design Organisation (WGO)”. Many cases were selected as typical cases of IoT and Internet of Vehicles by the Ministry of Industry and Information Technology.



Won the first prize in the solution category of the 3rd China Blockchain Security Competition of CAICT in 2023

Unicom Cloud’s product technology capabilities continued to improve and won many industry awards.

- Unicom Cloud entered the fourth place in the IDC private cloud industry, won two awards at the 2023 Cloud Edge Collaboration Summit and passed two trusted cloud certifications.

- Unicom Cloud’s PaaS platform passed the advanced evaluation of “Cloud Native Middleware Management Capability” of the ICT China 2023 High Level Forum, becoming the first operator to pass this certification.

- Unicom Information Innovation Cloud Platform for Government Affairs passed the “Government Cloud Ecological Compatibility Assessment” at the 2023 Digital Government High-Quality Development Forum.

- Unicom Private Cloud Platform for Government Affairs passed the “evaluation of private cloud model for government cloud services”.



Focusing on future technology and cultivating future industry

China Unicom actively deployed in the fields of cutting-edge technologies such as next-generation Internet, quantum communication and 6G to accelerate the cultivation of new momentum and new advantages for development.

- Next-generation Internet: The Company proposed a technical protocol and a new service structure for IPv6 evolution of carrier network under the scenarios of computing network collaboration, and worked with Huawei to develop a series of IPv6 evolution equipment and management and control systems that are independent and controllable in key technologies. The Company won the first prize of the 2023 China Institute of Communications Science and Technology Award, which strongly promoted the progress of China's next-generation Internet technology and industry.
- Quantum information technology research: The Company continued to carry out the standardisation of quantum information at home and abroad, and actively participated in the quantum communication industry alliance. We constantly promoted the application research in industrial Internet, Internet of Things and traditional core networks, and initially carried out the application research of quantum computing in artificial intelligence, big data and network optimisation, so as to promote the development of quantum information technology industry.
- 6G: Keeping up with the pace of 6G promotion in China, the Company set up a joint research team for 6G key technologies, and secured more than 100 6G patents. We released white papers such as 6G business, integrated infrastructure for sensory computing and green network, and applied the network characteristics such as "intelligence, integration, elasticity, green and credibility" proposed in the *China Unicom 6G White Paper V1.0* to the vision architecture of ITU-R (ITU Radiocommunication Sector). We applied the research results of credible sharing solutions and 6G indicators to the ITU technical report, and some contents have become industry consensus. We undertook the key project of 6G international cooperation of the Ministry of Science and Technology, and completed the *Research on Application Scenario of THz Communications* and the *Research, Analysis and Suggestions on Frequency of 26GHz/40 GHz*, which won the "Excellent Research Achievement Award" of the 2023 CCSA.

Focusing on key areas and breaking through core technologies

China Unicom developed a number of core technologies in key areas, led and supported the high-quality development of key industries, and helped achieve high-level technological self-reliance and self-improvement.

- 5G+Beidou field: The Company has developed a spatial-time functional module, a time-frequency chip, a synchronised network management and control platform, a channel-guided integrated base station and a high-precision positioning terminal, promoting the application of "5G+Beidou" to empower various industries, and improving the support capability of high-precision time positioning business.
- AI computing power service field: The Company carried out key technical research on independent and controllable AI computing power service, developed an AI computing power service system based on Feiteng, promoted the service of AI computing power, and effectively reduced supply chain risks.
- Key technical field of space-air services: The Company carried out research on 5G+inertial integration of indoor integration positioning technology and 5G positioning error correction method based on deep conversion of self-codec, upgraded the 5G positioning business service platform, and improved the positioning effect in industrial Internet scenarios. The Company won the second prize of the national finals of the 6th "Blooming Cup" 5G Application Competition, the second prize of the Science and Technology Progress Award of the Communications Association in 2023, and the Gold Award of Satellite Innovative Application of the China Satellite Navigation and Positioning Association.
- 5G RedCap field: The Company carried out systematic technology research on RedCap terminal network business collaboration for real scenarios, and pioneered in RedCap standard system linking the international, industry and enterprises, achieving leading technical standards.

Improving the scientific and technological innovation system

China Unicom continued to promote the construction of technological innovation mechanism, enhanced technological innovation capabilities and stimulated the innovation vitality of talents.

Improving system and mechanism guarantee

Focusing on the management of R&D projects, the application of scientific and technological achievements, the management of R&D expenses, the management of data security laboratories, and the protection of intellectual property rights, the Company issued a number of rules and regulations such as the *Guiding Opinions of China Unicom on Scientific and Technological Innovation* and the *Guiding Opinions of China Unicom on Compliance Management of R&D Projects* to activate the scientific and technological innovation mechanism and promote the application of achievements.

- The Company held the founding meeting and the first meeting of the China Unicom Science and Technology Association, and signed a comprehensive strategic cooperation agreement with the China Association for Science and Technology. The Company improved the organisational structure of the China Unicom Science and Technology Association, established 5 working committees and 32 secondary unit branches, established vertical science and technology association organisations of branches, and formed a joint mechanism of science and technology cooperation between the upper and lower levels.
- 16 academicians were appointed as distinguished experts of the Science and Technology Committee, and the China Unicom's standard expert was elected as the vice chairman of the 3GPP SA1 core network for the first time. The number of CCSA positions in China reached the highest level in history, and the technological innovation power was stronger.

Increasing investment in R&D

- The Company continued to increase investment in R&D to RMB15.12 billion, of which core technology research focused on the next-generation Internet, industrial Internet, cloud computing, big data, artificial intelligence, network security and other fields.
- The Company greatly improved the reward for scientific and technological innovation, and awarded certificates and bonuses to outstanding organisations for core technology research and projects winning special and first-prize awards in scientific and technological progress on the open day of state-owned enterprises, creating a good atmosphere for encouraging innovation and stimulating the innovation vitality of enterprises.

Responsibility performance indicators	2021	2022	2023
Number of patents applied (item)	2,224	2,672	4,398
Number of patents granted (item)	1,128	1,666	2,287

Promoting the application of research results

- The Company improved the institutional norms, revised the systems related to the application of scientific and technological achievements, launched the China Unicom scientific and technological innovation achievements application management platform, and established a management closed loop from project initiation, planning, execution, closure to application of results. The Company completed the overall management of all scientific and technological achievements, subdivided the achievements in different stages such as initial application, replication and promotion, and introduced different guidance and application policies.
- The Company promoted the exchange and implementation of independent scientific and technological R&D achievements across the country, held seven sessions of “Wotu • Achievements Exchange Conference”, and set up seven sessions of “Wotu • Achievements Classroom”.
- The Company established the China Unicom’s independent scientific and technological achievements promotion catalogue and supporting policies, and strengthened the application and classification of achievements. For customer-oriented products and platform-based technological achievements, we promoted more application in self-developed products by government and enterprises and market departments; For products and platform-based technical achievements oriented to network construction, enterprise operation and services, the Company improved the internal application and sharing mechanism, and enhanced operational and service efficiency. We actively fostered major scientific and technological achievements, applied for and participated in various activities organised by the government and industry associations, and promoted the publicity and application of achievements on a larger platform.
- A number of iconic achievements have been made, and technological innovation has become more brilliant. We promoted the value-driven output of R&D achievements from the National Engineering Research Center for Next-generation Internet Broadband Business Applications. The “Big Data Analytics for Management-Business Correlation Methods and Systems” won the Silver Award of the twenty-fourth China Patent Award. Two self-developed products were included in the Recommended Catalogue of Scientific and Technological Innovation Achievements of Central State-owned Enterprises. A project led by the Company obtained a first prize of scientific and technological progress from the China Institute of Electronics and 2 first prizes of scientific and technological progress from the China Institute of Communications. The Company won 2 World Internet Leading Scientific and Technological Achievement Awards. 133 projects were selected as “ICT China (2023) cases”, 2 projects were selected as “Top Ten Scientific and Technological Progress in the Information and Communications Field in 2022”, and 13 projects were shortlisted in the “4th Bright Star Competition Innovative Projects”.

Consolidating the advantages of digital intelligence transformation

Strengthening the internal Digital Smart Applications

China Unicom implemented the strategy of strengthening enterprises with digital intelligence, maintained the leading position among central state-owned enterprises in terms of digital capabilities, and the smart operation system, through the integration of individual components into a comprehensive framework, consolidated the core advantages of “One China Unicom with integrated capabilities and operating services”. It established a benchmark for digital transformation among central state-owned enterprises, and ranked first among central state-owned enterprises in terms of special actions for the improvement of digital intelligence of state-owned assets supervision. Its data management capabilities entered the first echelon of the state. It has passed the DCMM Level 5 Certification with the highest score in history, won the “Top Ten Famous Data Management Enterprises”, and was awarded 2 TMF (TeleManagement Forum) Excellence Awards and 3 Catalyst Awards. It was fully affirmed by superior ministries and commissions, international organisations and industry alliances.



Won “Top Ten Famous Data Management Enterprises”



Passed the DCMM Level 5 Certification



2 TMF Excellence Awards and 3 Catalyst Awards

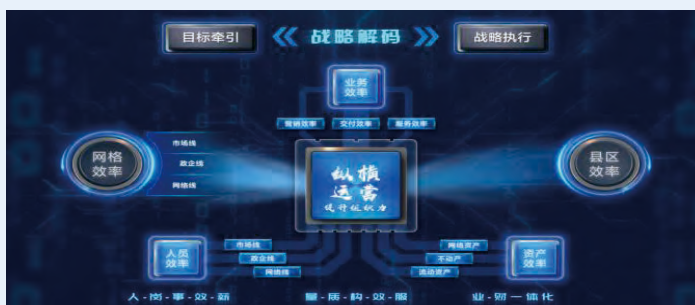
Smart Brain continued to maintain the leading position among central state-owned enterprises

- Bringing up perceptions through five major APPs.** China Unicom APP 11.0 version was newly launched, with a successful business sign-up rate of over 97%. For Unicom Public APP, the Company built smart home engineer, channel manager and other working platforms, realizing data centralization for more than 50,000 smart home engineers. For Unicom Government-enterprise APP, it built a small CEO working platform, which realised the full view of four-tier list of customers and revenue data. Unicom Network APP completed centralization of more than 140 applications, and 220+ KPIs can be viewed through a single portal. Unicom Office App was equipped with commercial encryption and other capabilities.
- Controlling risks and improving efficacy through five major operation platforms.** The public operation platform integrated products, orders and 170+ other multi-functional domain systems. Digital sand table achieved visualisation of key indicators of communities and double-optimal townships. The number of grid orders exceeded 16 million, and the number of contacts exceeded 4.3 million, representing a year-on-year increase of 285%. The government-enterprise operation platform had more than a thousand centralised processes for contracts, acceptance, accounts and comprehensive affairs.
- Strengthening innovation and improving efficiency through five middle platforms.** CBSS1.0 was upgraded to 2.0 full cloud-based architecture, enabling continuous deployment without service interruption. The network middle platform aggregated more than 2,800 open capabilities. The rate of real names of valid work numbers in the user center of the management platform reached 100%. The data warehouse platform's integrated multi-engine fusion technology architecture was improved, a BMO unified data asset catalogue was established, and more than 30,000 data assets were available. The cloudification rate of internal applications on the Unicom Cloud reached 68%, the scale of computing power increased by 13%, and the CPU utilisation rate exceeded 37.5%.

Smart operation penetrating production scenarios

- Intelligent production operation.** Digital technologies were embedded in various production processes with more centralised operation of new and existing customers. The centralization ratio of 12 digital scenarios exceeded 78%, and the broadband order conversion rate improved by more than 19 pp; The precision marketing of government-enterprise customers was more agile, the targeted coverage rate of commercial enterprises exceeded 86%, and the targeted coverage rate of key customers increased by 15 pp.
- Integrated operation and management.** The Company smoothed the digital connectivity with employees, millions of channels, tens of millions of network elements, and hundreds of millions of customers, strengthened combat capabilities of elite troops, achieving a 74% increase in the equivalent development volume of the marketing "iron army" with a budget of RMB100 per month, enhancing digitalization of risk prevention and control capabilities, and significantly improving employee satisfaction.
- Agile service.** All-service online marketing became more convenient, and the Unicom APP integrated 420 online services with monthly active users of more than 100 million; Intelligent customer service became smarter, and the intelligent customer service ratio exceeded 84% with leading hotline intelligent service level among operators.

China Unicom Hebei Branch has built a vertical and horizontal operation system, focusing on improving personnel efficiency, material efficiency, salary efficiency and work efficiency, horizontally connecting various specialties, vertically penetrating into multiple levels, and forming integrated empowerment capabilities, with the production capacity of the front-line team increasing by 43% on average.



China Unicom Hebei Branch has built a vertical and horizontal operation system

China Unicom Inner Mongolia Branch focused on the whole process of broadband integration orders, and reconstructed 9 points of change, so as to improve front-line satisfaction and customer service perception.

Based on the Group's "1555N" unified capability system, China Unicom Guangdong Branch created digital employees in multiple scenarios such as Q&A, order recording and scheduling, accepted more than 700,000 work orders in total, saved 597 person-months, and created digital products with the characteristics of China Unicom.



China Unicom Guangdong Branch AI-RPA Digital Employee Production System

Accelerating external digital intelligence services

China Unicom is committed to creating open and sharing digital capabilities for the whole industry, providing industry-leading platform capabilities such as Internet of Things, big data and network security, and creating an open platform for capabilities such as Gewu, Mogong and Zizhi, so as to empower innovation with openness and jointly build a prosperous digital ecology.

Gewu Platform to help IoT ecosystem prosperity

Relying on the dual driving forces of Yanfei-zhilian Connection Management Platform and Yanfei-gewu Device Management Platform, China Unicom has built the integrated 5G+AIoT core capabilities of network softwareization, software hardwareization and hardware intelligence, forming a centralised dual-engine IoT platform based on “cloud network” and centred on “things”, and realising end-to-end solutions from equipment cloudification, data collection, data processing and intelligent application.

- Gewu Connection Management Platform (CMP) undertakes the core digital capability base of China Unicom’s IoT. Based on the industry-leading technical architecture, it is committed to providing enterprise customers with safe, convenient, intelligent and efficient IoT connectivity management services. The platform has built core advantages such as centralised 5G operation, international services and consumer operation, with the carrying connection scale exceeding 350 million.

- Gewu Device Management Platform (DMP) is designed for the smart connection of all things, connecting and managing devices of thousands of industries, and providing standard APIs and development tools for IoT application development to support the rapid launch and operation of industry applications. The platform has successfully built industry benchmark projects such as Delightful Home Textile, Fujian Nanping Sponge City, and Xiamen Free Trade Zone.

Mogong Platform to promote security capability sharing

The “Mogong” means that the security system is both offensive and defensive. China Unicom independently developed a “Mogong” security operation platform, sharing China Unicom’s security capabilities and data resources, and providing innovative operation service models such as end-to-end risk assessment and real-time monitoring and early warning. The platform managed a total of approximately 180 security products, which are permanently collected by the National Museum.



Mogong security operation service platform

Zizhi Platform to serve the construction of administrative big data

China Unicom’s full-stack self-developed “Zizhi” administrative big data platform focuses on the pain points of administrative big data applications, accumulates more than 100 scenario-based applications, and provides low-code visualisation tools for out-of-the-box use. The platform achieves 100% localization and has the ability to analyze trillions of data in real time, as well as the key capability of multi-source, heterogeneous and domain-wide data resource integration.



“Zizhi” administrative big data platform

Fortifying cybersecurity barrier

China Unicom adheres to the overall national security concept, bravely assumes the responsibility of the chain leader of the modern cybersecurity industry chain, serves the national strategy, leads the development of the cybersecurity industry chain, and fulfils the responsibility of a state-owned central enterprise with practical actions.

Forging core security capabilities

China Unicom strengthened its responsibility as the chain leader of the modern cybersecurity industry chain, focused on the main support of hard strength, the driving force of scientific and technological innovation, and the driving force of integration, comprehensively improved the core capabilities of cybersecurity, and empowered the development of the industry chain.

Strengthening the protection of critical information infrastructure

We continued to build a solid cybersecurity foundation, further promoted the construction of an active defence system for the protection of critical information infrastructure, formed a security protection mechanism for critical information infrastructure, and built DDoS defence, APT monitoring, attack traceability and other capabilities to ensure the secure and stable operation of information infrastructure.

Jointly building a modern cybersecurity industry chain

Focusing on the difficulties in the modern industrial chain of cybersecurity, we deeply promoted core technology research, built a security product capability system, actively explored the industrial integration development model, comprehensively built a shared community for industrial chain development, and jointly built a new landscape of industrial integration and development.

Shaping cybersecurity technology innovation capabilities

- The Company built basic cybersecurity platforms, including asset mapping, threat monitoring, threat early warning, threat disposal, threat intelligence, attack traceability, and joint prevention and control platforms, to empower system protection in all aspects.
- The Company shaped a national-level innovation carrier, continued to build a national-level innovation carrier in collaboration with scientific research institutes, established cybersecurity intellectual property operation centres, and built a series of national key security laboratories such as security attack and defence laboratories (5G security lab) and information technology application innovation laboratories.
- The Company delivered high-quality scientific and technological innovation achievements, promoted the formulation of cybersecurity standards, actively undertook 12 national key projects around major national strategies, and took the lead in researching 27 international standards.
- The Company improved the comprehensive defence level of cybersecurity, carried out SOC1.0 compliance certification, and realised the transformation of SOC virtualization operation to physical operation.

Building a secure product capability system

- The Company deeply cultivated the construction of cybersecurity system to create a security product capability system with industry-leading technology, both attack and defence, and rich scenes, and formed the China Unicom Security Product Map, covering seven major product fields and 84 products, as well as the mainstream security products of industry security manufacturers.
- The Company built a “Security Hub” cloud market integrating online and offline operations, introduced 22 partners in the upstream and downstream of the industrial chain, launched 100 security products, and deeply integrated with industrial chain enterprises to co-create products, so as to empower the development of small and medium-sized enterprises and strive to be a leader in the security product ecology.
- The Company supported the construction of the ultra-large city digital security operation centre, gave full play to the advantages of “Mogong security operation service platform” and “Security Hub” security cloud market capabilities, and successfully built more than 50 integrated security operation service demonstration cases in the fields of digital government and central state-owned enterprises in the country, accelerating the large-scale development process of “China Unicom Model” for security operation services.



Modern Cybersecurity Industry Chain Action Plan and Strategic Emerging Co-innovation Launching Ceremony

Exploring industrial integration development model

The Company gave full play to its role as a chain leader in promoting integration, innovated the integration driving model, and held the high-quality joint chain action conference. The Company cooperated with a total of 28 units of government agencies, universities and colleges, and cooperative enterprises to sign the joint chain ecological contract, and announced six major actions such as the “Security Hub” linkage bridge co-creation action, the Mogong ecology co-construction action, and the achievement application win-win action, forming a new industrial chain landscape orderly driven by central state-owned enterprises with the integration and development of large, medium and small enterprises.

Safeguarding major security activities

- We successfully completed the communication support tasks for 160 major national events, including the 2023 “Belt and Road” Summit Forum, the Hangzhou Asian Games and the Asian Paralympic Games, the Chengdu Universiade, the China-Central Asia Summit, the Boao Forum for Asia, the Davos Forum, the Shanghai International Import Expo, the World Internet Conference, and the launch and return of Shenzhou-series rockets.
- The Company successfully completed 27 “cloud diplomacy” communications support missions for central leaders such as the Chief Council of the member countries of the Shanghai Cooperation Organisation and the BRICS Summit on Special Issues.
- The Company successfully completed the communications support tasks for emergency and disaster relief such as Typhoon Dусurui, Northeastern China heavy rainfall, Northeast China heavy snow disaster, and Gansu Linxia Jishishan 6.2 earthquake, which were highly praised by the provincial and municipal governments of Beijing, Tianjin, Hebei and Heilongjiang.

Communication support tasks for
160 major events
242,000 emergency communication support personnel



Provided communications support services for the 3rd “Belt and Road” International Cooperation Summit Forum



China Unicom Gansu Branch opened communications “lifeline” for earthquake relief



China Unicom Henan Branch set up a rescue team to help schools in flood relief

Creating a clean cyberspace

Combating telecommunication fraud

China Unicom cooperated with various industries to crack down on telecommunication network fraud and promoted the high-quality development of business.

- The Company established the China Unicom Anti-Fraud Centre to strengthen technology R&D and improve the precise governance capability with big data.
- The Company deepened police cooperation and assisted public security authorities in breaking 7,015 criminal spots, representing a year-on-year increase of 209%.

China Unicom’s anti-fraud centre has realised the one-point aggregation, one-point processing and one-point analysis of national anti-fraud basic data, and has built more than 64 new fraud identification models, among which many self-developed innovation projects have been selected as pilot fraud governance innovation projects by the Ministry of Industry and Information Technology; We carried out special governance of harassing calls and spam messages, intercepted more than 900 million point-to-point and port spam messages. The anti-fraud centre gave full play to the advantages of operators and big data, assisted the public security to crack down on 7,015 fraud spots, seize 14,001 suspects of crimes, and confiscate 14,346 fraud-related devices.

In close coordination with the public security authorities, China Unicom Guangxi Branch launched an operation to combat telecom network fraud in the border areas. Utilising technical means such as local network kick restrictions, data model detection and shutdown, public network security threat monitoring and disposal capacity building, and optimization of international roaming anti-fraud models, we assisted the public security authorities in detecting a number of fraudulent dens using overseas roaming numbers and cards, and built a strong anti-fraud firewall.

Protecting user data security

China Unicom innovatively created a data security operation mechanism with operator characteristics, and issued management measures and enterprise standards such as the Data Security Classification Management Measures, the Data Security Management Measures of China Unicom, and the Personal Information Protection Management Measures of China Unicom, covering data security protection policies, the handling mechanism for major information security incidents, and measures to monitor information security risks and threats, so as to continuously improve the level of data security governance.

Effective prevention of harassing calls

China Unicom further strengthened the R&D of full-scenario security products based on calls, text messages, Internet, etc., to assist subscribers in effectively identifying sources of calls and curbing the spread of spam information. On the basis of Unicom Assistant, mobile phone housekeeper, anti-fraud business card and other products, the Company launched Unicom Security Housekeeper products to provide subscribers with services such as call denial, intelligent answering, anti-fraud business cards, mobile phone internet protection, and home internet guard, so as to create a good communication network environment and protect the legitimate rights and interests of subscribers. The number of subscribers of security products for individual subscribers exceeded 90 million.

Spreading cybersecurity knowledge

Focusing on areas such as cybersecurity, data security, cloud security, 5G+industrial Internet security, personal information security, and prevention and governance of telecommunication network fraud, China Unicom carried out customised publicity and education activities, demonstrating the responsibility of China Unicom as the leader of the cybersecurity industry chain to serve the national cybersecurity and drive industrial development.

- 6 billion cybersecurity text messages were sent to subscribers, advocating the public to pay attention to cybersecurity and improving subscribers' awareness of fraud prevention.
- We carried out anti-fraud publicity and education for all and raised the awareness of online fraud prevention. With activities such as the "National Cybersecurity Publicity Week", "National Security Education Day" and "Anti-fraud Publicity Month", more than 500 activities with the theme of "entering communities, villages, campuses, enterprises and families" were carried out. 90 anti-fraud public welfare publicity videos and 26 live broadcasts were produced, and anti-fraud special columns such as the *CU Anti-fraud Theater*, *Cyber Security in Action* and *Unpredictable Defense* were launched, with more than 100 million views. Many video clips were reposted by the People's Daily, the SASAC, the People's Post and Telecommunications News, the Criminal Investigation Bureau of the Ministry of Public Security, the National Anti-fraud Centre and other media.
- At the cybersecurity expo held in Fuzhou, China Unicom exhibited innovative applications such as the cyberspace security situational awareness platform, the telecommunication Internet fraud governance platform, the 5G Internet of Things National Encryption Unified Identity Certification System, and local applications in Fujian. The vivid cases and real data entered the public and drew coverage by more than 1,600 media.



China Unicom Anti-Fraud Publicity



Free "anti-fraud business card" for subscribers over 60 years old



2

***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.

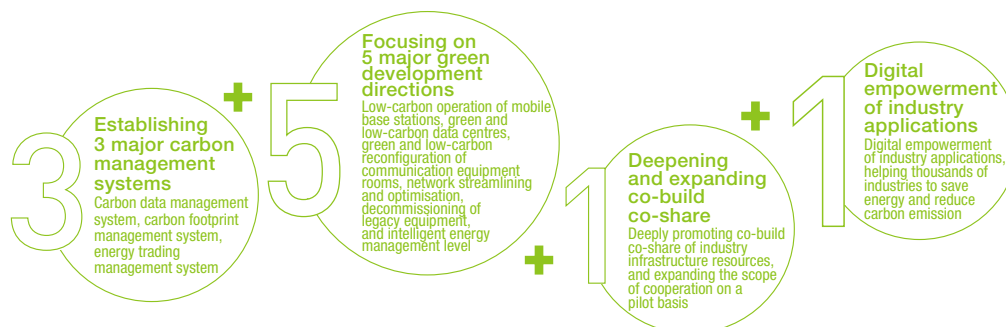
China Unicom's Green Development Governance Structure and Supervision Responsibility

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.

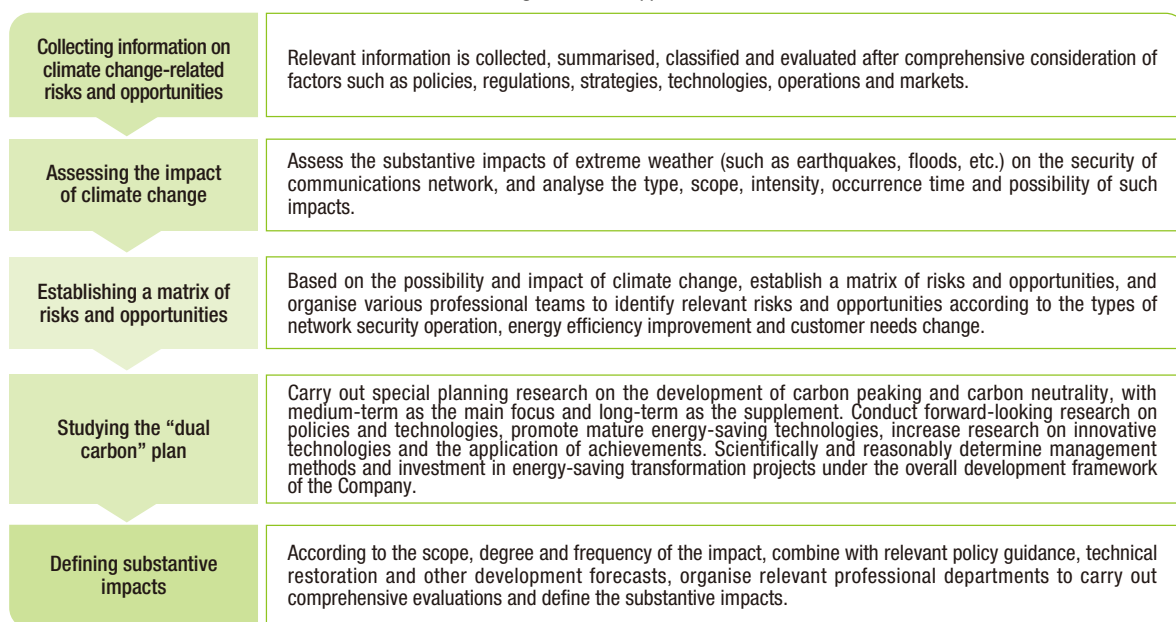


China Unicom's "3+5+1+1" action plan for carbon peaking and carbon neutrality

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.

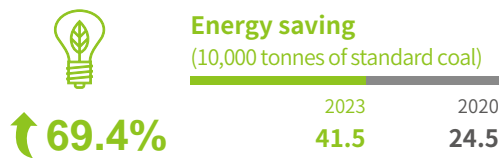
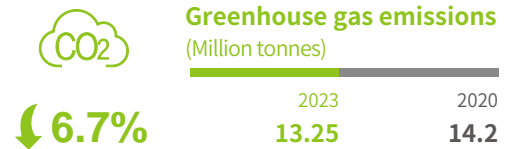
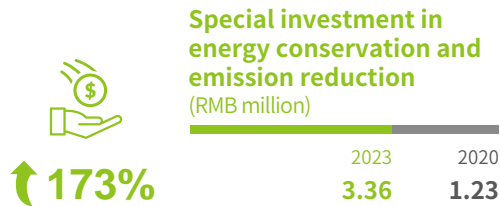
- **Precise implementation of network streamlining.** The Company steadily promoted the streamlining of 4G networks and the refarming of frequency resources to 5G, gradually realising the smooth refarming and upgrading of 5/4G network resources. On the basis of business migration, the reduction of 3G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

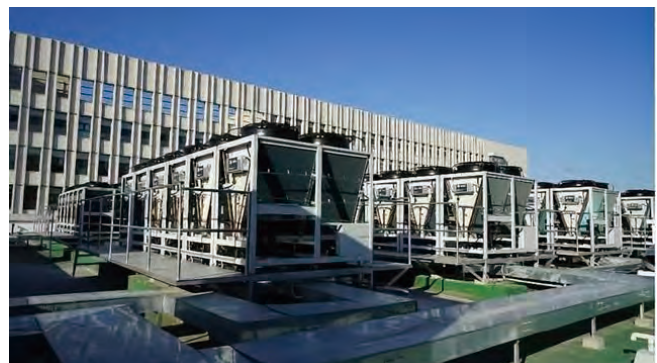
China Unicom Henan Branch used the digital computing controller for the automatic control of 10kV power distribution technology, integrated the available capacity of generators to form a resource pool, and formed a micro-grid with several sets of independent power supply systems to uniformly allocate 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.

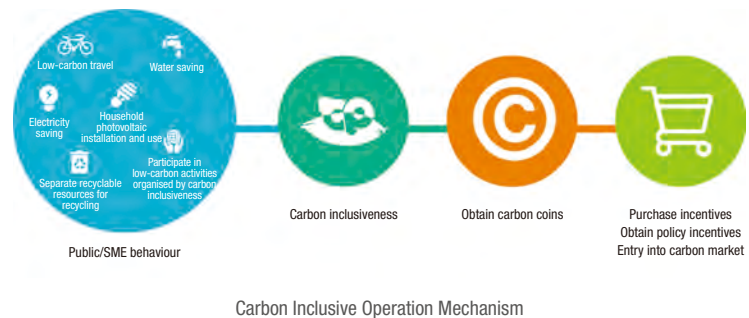
China Unicom Shandong Branch continued to do a good job in the “booster” of green transformation, and helped the Department of Ecology and Environment of Shandong Province to build a “comprehensive environmental monitoring management platform”. Through the management of all monitoring stations of greenhouse 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.



3

***PROMOTE SOCIAL
INCLUSION AND SERVE
PEOPLE'S LIVELIHOOD***

Promote social inclusion and serve people's livelihood



China Unicom takes serving the national economy and people's livelihood as its mission, continues to assist in rural revitalization, provides high-quality services for the coordinated regional development, helps special groups to overcome the digital divide, actively carries out charity activities, builds a harmonious and collaborative labour relationship, and shares the achievements of social development with the people.



Measures adopted in 2023

- With the “Five New Projects” as the focus, we promoted the construction of digital villages, and the “Unicom Digital Village” platform covered 255,000 villages and served 26.394 million households.
- The Company actively participated in charity undertakings, with 685 volunteer groups and 95,734 registered volunteers.
- The Company innovatively carried out the commitment activity of “China Unicom Good Services for Customers”, and won the “Craftsmanship Service Award” of the People's Daily Online in 2023.
- The Company upgraded and launched the “Charity to Spread Love” service, and set up 7,687 smart service experience centres for the elderly and 8,859 smart service stations in business outlets.
- Throughout the year, the Company carried out more than 600 “General Manager Online” activities, and the on-site problem-solving rate reached more than 85%.



Actions to be taken in 2024

- The Company will promote the construction of digital villages with greater efforts and contribute China Unicom's strength to promote rural revitalization.
- The Company will continue to deepen special services for the elderly, conduct elderly service training for staff, optimise the China Unicom APP care version, upgrade the family guard function, and actively fulfill the responsibility as a central stated-owned enterprise.
- The Company will continue to implement the promotion incentive system, upgrade and optimise the talent management system, and create broader development space for employees.
- The Company will strengthen the basic assistance for employees in need, build an assistance system combining inclusive services and targeted assistance, and promote the effective connection between solving difficulties and improving the quality of life of employees.

Solidly promoting shared development

China Unicom adhered to the system concept, comprehensively promoted the coordinated development of urban and rural areas, guaranteed and improved people's livelihood in development, so that the achievements of digital development can benefit all the people more fairly, and the people can enjoy a higher level of happiness, a better life and a richer connotation.

Implementing rural revitalization strategy

China Unicom focused on targeted assistance and rural revitalization, identified its positioning, gave full play to its advantages, focused its efforts on tackling difficulties, earnestly promoted the implementation of responsibilities, policies and work, and made positive contributions to consolidating and expanding the achievements of the poverty alleviation in the aided areas, and promoting the comprehensive revitalization of the villages. The Company actively promoted targeted assistance and counterpart support, promoted key tasks such as fund assistance, industrial assistance, employment assistance and consumption assistance, and continuously made new progress and achievements in helping to promote the comprehensive revitalization of villages in the aided areas.

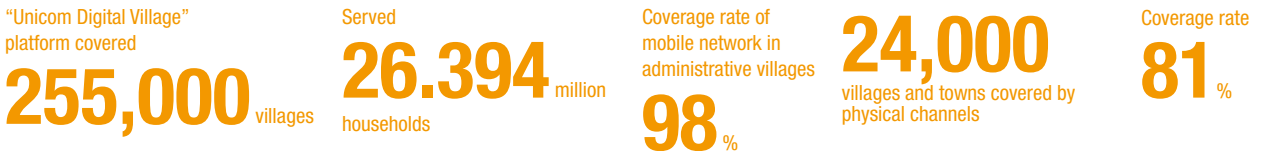


Renewal of the “Five New Projects”

China Unicom took the “Five New Projects” as the focus to promote the construction of digital villages, deepened targeted assistance and counterpart support, and strengthened capabilities and organisational construction, achieving a series of landmark achievements.

New project for digital infrastructure construction

The Company accelerated the construction of digital information infrastructure in rural areas to build a solid digital foundation for comprehensive rural revitalization. The Company made every effort to create the “Unicom Digital Village” solution of “one cloud and three platforms”. Unicom Cloud provided the integrated computing network service of “connection + perception + computing + intelligence”, and the construction of digital village empowerment integrating connection, data and application was provided by the Sannong IoT platform + Sannong big data platform + digital village service cloud platform.



Digital governance and intelligent new project

The Company has fully utilized the role of informatisation as a driving force to iteratively upgrade its digital village platform. The “Unicom Digital Village” platform has created more than 150 applications around rural digital governance, rural digital economy, information services for people, rural network culture, and smart green villages, empowering rural governance to realise the conveyance of public demands with “one click” and “one-stop” handheld services. At present, all front-line scenarios of digital villages have been covered. We actively served and integrated into local economic and social development. We innovatively carried out collective economic cooperation with 21,000 administrative villages, established communication cooperatives, and created a new model of joint construction, sharing and win-win cooperation and development of digital villages.

China Unicom Chongqing Branch cooperated with the village collectives in Guoliang Town Street Village, Dazu District, Chongqing to build a standardised digital village platform, and planned to build and upgrade 170 network ports. After the completion of the project, the street village government held a meeting for the establishment of a communication cooperative for the villagers, which realised the upgrading of communication services for approximately 130 households, helped to reduce the average annual household consumption by RMB700, and increased the family network by 200 Mbps. The village collectives realised cost recovery in the current year, which is expected to increase the income of the village's collective economy by nearly RMB250,000 within 5 years.

Digital industry innovation project

We vigorously promoted the research and development of agriculture-related applications, and deeply empowered the construction of modern agricultural applications in rural areas. China Unicom has built an integrated digital agriculture and rural solution system of management, service and application by comprehensively utilising the capabilities of “connection, computing, data, application and security”, helping the agricultural industry chain to achieve “good production, good sales, good management and good services”. A total of more than 2500 projects have been implemented, including digital services such as agricultural big data platform construction, smart planting, smart breeding and rural governance, providing more than 20 fishery government supervision and risk prevention services for 6 coastal provinces.

China Unicom’s agricultural team and Yuan Longping team worked together to create the “Yuan Meng” 5G smart agricultural platform in Xing’an League, Inner Mongolia, providing full-chain digital service support such as seedling cultivation, planting, operation, circulation, command and dispatch. Through the improvement of saline-alkali land and information management, the average yield per mu exceeded 1,000 catties for three consecutive years, helping farmers increase their income by more than RMB5,000 per capita.

In the Yushu Tibetan Autonomous Prefecture of Qinghai Province with an altitude of more than 4,000 metres, China Unicom Qinghai Branch built the “pasture on the cloud”. We overcame the challenges of extreme cold weather, realised the management of yak information, and conducted real-time monitoring of the breeding process, so as to make a new way of life for herdsmen. The herdsmen expressed that in the past, they used to follow the cattle and sheep as they roamed the mountains, which was very tiring every day. Now, they can simply open their mobile phones to watch the situation of the cattle feeding and rubbish cleaning, which has made their lives much easier.



Network coverage in pastoral areas

New project for digital talent cultivation

China Unicom expanded the boundary of Sannong information and communication services, and extensively carried out mobile phone training activities for farmers nationwide, empowering 2.3 million people to improve digital skills. With the goal of “cultivating a digital village officer in one village”, we organised special training for nearly 3 million people, and trained more than 21,000 digital village officers in total. With the goal of “cultivating a Sannong host in one village”, more than 40,000 Sannong hosts have been trained in two years, driving the sales of live streaming farmers to exceed RMB180 million.

New project for safeguarding digital security

Relying on the network security advantages, the Company built a rural Cybersecurity service supply ecology, built a security protection system with complete functions and leading capabilities, and its village platforms were filed at level 3 in the Filing Certificate for Classified Protection of Information System Security issued by the Ministry of Public Security. The Company provided full-scenario services for rural Cybersecurity, launched more than 100 products on the security cloud market, and served more than 9,000 customers.

Supporting special industries

We took the initiative to do a good job in the “local specialties” and supported the industries with special advantages to grow bigger and stronger. Focusing on the resource endowment and industrial development needs of the assisted areas, China Unicom implemented industrial assistance projects according to local conditions to promote the high-quality and efficient development of characteristic and advantageous industries. We invested more than RMB95 million in industrial assistance funds, implemented 16 industrial assistance projects, helped the development of special industries in targeted assistance counties, replenished the industrial development chain, supported 13 leading enterprises and 7 rural cooperatives, and helped establish 11 assistance workshops. The Company gave full play to its advantages to help build the “digital industry”, empowered the industry with digitalization, and stimulated the endogenous development momentum of industrial revitalization.

China Unicom Shantou Branch in Guangdong cooperated with the Longdu Town Government to collect industrial data such as the total output value of the agriculture, forestry, breeding and fishery industry in Longdu Town, the information on the output value and volume of three harvests vegetable and fruits, as well as the dynamic market price data of agricultural products, forming a supporting platform for agricultural data aggregation in Longdu Town, which not only provided data support for industry management and assistance in decision-making, but also realised the monitoring of the crop growth process through the information gathered and collected by the modern remote monitoring equipment deployed in the field, providing guidance for farmers to refine planting, promoting the improvement of crop output and quality, and realising cost reduction and efficiency improvement.



Revitalization of agriculture in Longdu village

Promoting coordinated regional development

China Unicom deeply integrated into the national coordinated regional development strategy, actively promoted the regional economic and social development construction, including Beijing-Tianjin-Hebei, Yangtze River Economic Belt, Guangdong-Hong Kong-Macao Greater Bay Area, Yangtze River Delta, Yellow River Basin, Hainan Free Trade Port and Northeast China's revitalization, established a two-level coordination and linkage mechanism comprising coordination by the headquarters and implementation by provincial branches, transcending administrative divisions, serving the coordinated development of regions.

Beijing-Tianjin-Hebei Region

China Unicom promoted the coordinated development of the Beijing-Tianjin-Hebei region, supported the construction of “four centres” in Beijing assisted the construction of “three regions and one base” in Tianjin, and supported the construction of Xiong’an New Area with high quality services.

- The Company consolidated the construction of network infrastructure. The scale of 5G base stations in the Beijing-Tianjin-Hebei region reached 67,400 (increased by 15,700), the coverage rate of commercial and enterprise buildings reached 94.38%, and the number of gigabit broadband ports reached 34.9 million. The Company basically completed the deployment of optical fibre cables among key cities.
- In the field of government affairs and logistics, the Company set up a digital government taskforce and a smart warehousing and logistics taskforce in the Beijing-Tianjin-Hebei region, and established China Unicom (Tianjin) Industrial Internet Co., Ltd. and China Unicom (Tianjin) Industrial Internet Research Institute to actively integrate into the construction of local digital economy.
- We supported the relocation of non-capital functions of central state-owned enterprises in Beijing, organised the Beijing-Xiong’an Integration Service and Support Working Group to provide services to relocated enterprises intending to land in the new zone, adopted separate policy for each customer and liaised directly.
- To facilitate the digital construction of Xiong’an New Area, we developed Xiong’an New Area into a core national data node, and provided services such as digital government services, digital society, digital civilization and digital village.

Guangdong-Hong Kong-Macao Greater Bay Area

In accordance with the deployment of the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, we focused on strengthening the construction of innovative basic capabilities, cultivating and expanding strategic emerging industries, enhancing the core competitiveness of the manufacturing industry, strengthening infrastructure construction, and optimising the energy supply structure, so as to actively help the Bay Area build a first-class bay area and a world-class city cluster with vitality and international competitiveness.

- Strengthening network coverage, adding 24,000 new 5G base stations and 15,700 new gigabit communities in the nine cities in the Greater Bay Area, with the coverage rate of urban residential properties reaching more than 90%; The Company took the lead in building a cross-border cloud-network/computing network, and realised the interconnection and grid connection of heterogeneous computing power in the Bay Area (seven nodes: Unicom supercomputing, Unicom smart computing, Guangzhou supercomputing, Pengcheng cloud brain, Shenzhen supercomputing and Guangzhou Huiyun).
- For government affairs, ocean, security, health and other industries, the Company set up a digital government affairs taskforce and a smart ocean taskforce in Guangdong, and incorporated China Unicom (Guangdong) Network Information Security Technology Co., Ltd. and China Unicom Digital Intelligence Medical Technology Co., Ltd. to serve the development of the Greater Bay Area.
- The Company has built China Unicom Guangzhou Digital Security Operation Centre, equipped with security service capabilities of “cloud, network, edge, terminal and use” and security operation, and created a centralised and three-dimensional security technology system to realise all-day, all-round perception and effective protection of network security. The Company built a 5G trial production plant for the industrial Internet public technology service platform in Guangdong-Hong Kong-Macao Greater Bay Area, built trial production lines, testing platforms and experience centres, and provided three major services of trial production, testing and experience for enterprises.

Practising social charity undertakings

China Unicom actively participates in public charity undertakings and contributes to the construction of a better and more harmonious society.

Sparing no effort to build Tibet

China Unicom focuses on the eight aspects proposed in the Notice on Further Improving the Work of Supporting Tibet in the New Era, China Unicom carried out in-depth industrial assistance to Tibet, employment assistance to Tibet and talent assistance to Tibet, and made positive contributions to the economic development, social stability and national unity of Tibet.

External donations in 2023

RMB **1.436** million

Donation Project	Donation amount (RMB thousand)
Targeted Poverty Alleviation Donation	52
Investment in Tibet and Xinjiang	9
Other donations (culture, sports, education, medical care, public charity, environmental protection, etc.)	1,375
Total	1,436

- **Supporting Tibet with industrial development.** The Company gave full play to its advantages in technology, brand and channel, introduced 15 special products such as Tibetan plateau water, highland barley rice, and highland barley congee to China Unicom’s “Agriculture Aid Mall” platform and held special activities for consumption assistance to help broaden sales channels.

- **Supporting Tibet with employment.** We provided more than 100 job positions in Tibet every year, opened up a new recruitment zone in Tibet on China Unicom’s unified recruitment platform, implemented the policy of priority admission for college graduates from Tibet on campus recruitment under the same conditions, increased the targeted publicity among Tibetan students, and held seminars and meetings at colleges and universities where Tibetan students were concentrated. In 2023, 32 Tibetan graduates were recruited, including 24 Tibetan minority college graduates.

- **Supporting Tibet with talents.** The Company insisted on grasping and consolidating talents to support Tibet, completed the rotation of the third batch of internal cadres and talents to support Tibet, and selected 17 young cadres from the provincial branches in mainland China to take temporary posts in Tibet Branch for exchanges; China Unicom Tibet Branch selected and dispatched 24 first secretaries of the village and members of the work team in the village to provide long-term help to the village, playing an active role in promoting local economic and social development.

- **Promoting the exchange and integration of various ethnic groups.** The Company added three new exchange and communication projects for promoting national exchanges, and organised local residents to participate in training and visits in mainland China. We helped Geji County to improve medical and health conditions, upgrade the level of compulsory education, and ensure housing and drinking water safety. The Company set up the education incentive fund of China Unicom in Geji County, and increased the support for both the mindset and wisdom. The Company organised 36 cadres and people from Geji County to study and exchange in Hangzhou, Zhejiang Province and Xianyang, Shaanxi Province, and organised more than 30 technical personnel to go to Linzhi, Tibet for training. We strengthened talent training, and trained more than 300 grass-roots cadres in Geji County based on China Unicom’s “online training special zone for targeted assistance and counterpart support to Tibet”.

16
new projects in support of Tibet

Volunteers from CITC went to the primary and secondary schools in Geji County, and carried out science education volunteer service activities on behalf of the China Unicom Science and Technology Association. It was also the “Hand-in-hand with Children Science Education Report Activity” with the highest altitude so far, spreading scientific knowledge of information communication for local children, creating a good atmosphere of love for science and advocating science, and igniting the children’s scientific and technological dreams!



Carried out “Hand-in-hand with Children Science Education Report Activity” in primary and secondary schools in Geji County

Solving people’s livelihood needs

China Unicom focused on people’s livelihood concerns, devoted itself to public charity, promoted economic and social development, and made positive contributions to meeting people’s needs for a better life.

685
volunteer organisations

95,734
registered volunteers



Volunteers participated in environmental governance volunteer services to create a civilised and orderly living environment

In order to better help candidates and parents to complete the college preference form in a scientific manner, China Unicom Shandong Branch held a public lecture on “China Unicom supports students in achieving their dreams of attending college: Shandong Unicom’s public charity lecture on filling out college preferences” at the business outlet of the Jinan Sports Centre, and hundreds of thousands of netizens watched and listened to the live broadcasts online.



China Unicom Shandong Branch held a public charity lecture

China Unicom Fujian Branch and the Fujian Disabled Persons’ Federation jointly carried out more than 100 volunteer service activities such as “Assisting the Disabled with Technology and Connecting Each Other”, and provided volunteer services for more than 20,000 disabled people and families in need; We jointly held large-scale activities such as the “2023 Fujian Provincial First Speech Contest for the Hearing Impaired”, “2023 Darts Competition for the Hearing Disabled” and “32nd International Day for the Disabled’s Science and Technology Education into Campus”, and regularly carried out more than a thousand themed public charity activities in various forms on public charity festivals so as to create a civilized atmosphere in the community for helping the disabled and their self-reliance.



China Unicom Fujian Branch launched public charity activities to help the disabled

The labour union of the Group, together with the labour union of China Unicom Chongqing Branch, launched the pilot project of “Warm Libraries for Left-behind Children” in Wanzhou District, Chongqing to provide services for rural children in mountainous areas and contribute to rural revitalization. Up to now, 59 “Warm Libraries for Left-behind Children” have been built, and 2,950 books, 134 sets of stationery and 38 sets of sports goods have been donated.

China Unicom Hunan Changde Branch actively participated in the volunteer service activity of “Protecting Children and Making Dreams Come True” jointly organised by the Civilization Office of Changde City, Hunan Province and the Municipal Social Assistance Affairs Centre, and collected 100 micro-wishes from left-behind children and children in distress in rural areas. China Unicom volunteers and partners jointly helped children realise their aspirations.



Enthusiastically helping left-behind children and children in distress in rural areas

Providing considerate and high-quality services

China Unicom adheres to the concept of “customer-centric, promoting development with services”, strengthens service awareness, builds first-class brands, safeguards customer rights and interests, pays attention to the needs of special groups, improves customer experience, and comprehensively builds a trustworthy reputation image.

Promoting service quality improvement

Adhering to the heart of the service

China Unicom takes “always adhering to the people’s position and taking the people’s support or not, approval or not, pleasure or not, response or not” as the starting and ending point of its customer service work, and focuses its efforts on understanding customer needs, solving customer problems and improving customer perception.

- **Practising the concept of big service with cross-professional collaboration and integrated collaboration.** We improved the big service system covering the CDSA business, strengthened the active hierarchical service, optimised and upgraded the service system and specifications around key aspects such as service standards, service operation, service supervision and intelligent customer service, and made every effort to improve the customer service experience.

- **Protecting customers’ right to know about consumption and services.** We improved the pre-launch service review mechanism, formulated product experience standards, included the standards involving customers’ right to know into the scope of verification, strengthened the implementation of “one-vote veto” for product verification, and strictly controlled the quality of products launched.

- **Protecting customer information security.** We further improved the system construction involving customer information security, established a list management system of high-risk system authorisations, strengthened cybersecurity management involving customer information, and regularly carried out security inspections in the field of cybersecurity to prevent the occurrence of security incidents to the greatest extent.

- **Carrying out education and dissemination of communication knowledge.** The Company gave full play to its leading channel advantages, took its new media matrix as the means, and launched education and dissemination of knowledge in the field of pan-communication for over 30 million fan users across the country. A total of 1,177 live broadcasts were carried out, 138 video knowledge were produced, covering 33.75 million people.

China Unicom innovatively carried out the window commitment activity of “China Unicom Good Services for Customers”. Nearly 200,000 front-line personnel from the five service windows of China Unicom’s business outlets, smart home engineers, government and enterprise customer managers, 10010 hotline and China Unicom APP participated. Through cross-departmental and cross-regional collaborative efforts, problems are discovered and resolved, resulting in a 12.8 pp increase in the compliance rate of service standards. The event invites customers to engage in interactive experiences and transparent supervision through various channels and involved the China Association for Quality Promotion for third-party oversight and evaluation. A total of 625,000 publicity content were published, with a publicity volume of 9.67 billion times. The Company won the “Craftsmanship Service Award” of 2023 issued by the People’s Daily Online, improving word-of-mouth reputation among customers through service experience.



Launching the “China Unicom Good Services for Customers” window commitment activity



Winning the “Craftsmanship Service Award” of the People’s Daily Online in 2023

Strengthening agile services

Making full use of the advantages of centralised operation of the 10010 hotline and promoting the integrated operation of the hotline in depth

- The Company continued to iterate and form the basic management, on-site operation, digital and intelligent services and other systems, processes and rules suitable for integrated operation.
- The Company comprehensively improved the digital support capability, promoted cross-region answering of calls and cross-region service sign-up in the country, and upgraded the one-click diagnosis capability, empowering the front line to simplify sign-up, and continuous breakthroughs in the digital capability of customer service hotlines.
- The Company held the “2023 China Unicom Hotline Service and Customer Complaint Handling Skills Competition” to stimulate the enthusiasm of the hotline service team, improve the professional quality and service skills of hotline service personnel, and significantly improve the single-session issue resolution rate at the front-office and the window service compliance rate.

Establishing an intelligent service operation system to improve problem-solving capabilities

- We fully ensured smooth manual transfer, and the manual transfer rate experience in dialing test was industry-leading.
- A closed-loop rectification negative list mechanism has been formed, with 100% self-service hang-up evaluation and 100% real-time accurate counselling after evaluation; Issues on the negative list will be generalised and investigated and rectified across the country.
- The Company improved the understanding and interactive perception capabilities of smart customer service, and launched new convenient services across the country.

Improving service quality

China Unicom improved the integrated operation system of service standards, adhered to the principle of “releasing a batch of standards and monitoring the implementation effect of a batch of standards in real time”, monitored various service standards, specifications and indicators, actively identified problems, and promoted the timely resolution of problems.

- The Company has established a perception and evaluation system of “the customer decides” based on the customer experience in the whole life cycle, and set up “evaluation after use” in multiple touch points, so that customers can leave experience evaluation data right away to serve as an important support for customer experience analysis.
- The Company took multiple measures to improve the ability to deal with customer problems, and realised the full management and evaluation of customer problems; We restarted customer dissatisfaction handling until they are satisfied, focused on the chain and duration of customer problem solving, and improved the efficiency of customer problem solving; We established hotline service and complaint handling standards, formulated solutions within a specified time for customers’ reasonable demands, and informed customers of direct compensation.
- The Company collected product opinions and suggestions, and sorted out 276 product optimisation points; The Company collected product-related opinions from customers every month, sorted out 129 product optimisation points, and guided product optimisation and iteration according to the suggestions, so as to continuously improve product experience.

In December 2023, a magnitude 6.2 earthquake hit Gansu. After the earthquake, the 10010 hotline immediately activated the emergency service response plan for major disasters, and established the “Gansu Earthquake Expert Contact”. The 10010 hotline calls of users in the disaster-stricken area was directly handled by manual workers, and users’ demands were dealt with unconditionally and quickly, letting users in the disaster-stricken area to report to their families for safety and providing family member search services and emergency sign-up services. The 10010 customer service hotline ensured 100% of users in the disaster-stricken areas could get through, and service requests such as inquiries, complaints and outage reporting were properly and quickly resolved.

China Unicom implemented the initiative of “benefiting people’s livelihood and warming people’s hearts”, and continued to carry out the special action of “full attentiveness and satisfaction” for the people. Focusing on people’s network needs, the Company upgraded and promoted the free speed measurement service of “Light Up Thousands of Families with Gigabit” and the free testing service of “Network Guardian for 100 Industries”, with a total of 36.9 million speed measurement services nationwide; Focusing on the use of smart terminals, the Company promoted the “convenient door-to-door replacement” service, with a total of 54,091 replacement services.

China Unicom took the lead in the industry to launch the video vlog check-in activity of “China Unicom Good Network – China Tour”, which entered the daily high-frequency network use scenarios of the people, focused on network self-improvement and differentiated advantages, and extensively collected customer opinions and suggestions to help improve the reputation of the network. The event covered 70 cities in 28 provinces, produced 154 works, with a total of 92.49 million views and 1.117 million times of shares or comments, of which 14 were broadcast more than million times, with a maximum of 5.24 million views, and 4 publicity works were shared by the SASAC of the State Council.



Carried out the video vlog check-in activity of “China Unicom Good Network – China Tour”, and extensively collected customer opinions and suggestions

Carefully cultivating first-class brands

Polishing the Unicom brand

The Company gave full play to the brand advantages of China Unicom, improved brand awareness, reputation and loyalty, and promoted the pragmatic implementation of a strong brand enterprise. We guided internal resources, social trends and customer mindshare with our brands, made trust a general consensus of China Unicom's brands, made innovation a distinctive feature of China Unicom's brands, made security a key association of China Unicom's brands, and accelerated the creation of an outstanding brand of a world-class technology service enterprise with global competitiveness with scientific management, outstanding contributions and leading value.

- The brand of China Unicom Smart Home is committed to creating comprehensive smart home information solutions, bringing a smart, safe, healthy and comfortable home living environment for family subscribers, so that people can enjoy a digital and intelligent life, and continue to convey the brand connotation of "Happy Home".

- As a customer brand launched for young people, China Unicom Wopai is in line with the characteristics of target groups and the direction of market development, bringing young people a four-in-one network product experience of fashion, personality, technology and social interaction, and an innovative service experience of "technology, convenience and care". The Company continued to deepen the brand image of main theme and positive energy, and the brand case was selected as a typical case of brand building of state-owned central enterprises issued by the SASAC.

- The Unicom Cloud business brand focused on 2B people in the government and enterprise market, deeply cultivated key industries such as government affairs, medical care, large enterprises, education, finance, industry and transportation, consolidated the brand connotation of "Unicom Cloud Security and Digital Intelligence Cloud", and continued to build the brand positioning of "Cloud Computing National Team, Digital Transformation Computing Power Engine" which won five industry awards, including 2023 Excellent Digital Solutions.

- Through in-depth cooperation with authoritative media such as the "Brand Strengthening Project" and key news columns, the Company comprehensively communicated its technological innovation capability and strength, demonstrated the responsibility and mission as a central state-owned enterprise, and reached 26.3 billion people across the country.

- High-quality benchmark cases such as digital village construction and industrial applications were publicised by many authoritative media, and their influence continued to expand.

- In terms of top internet media and social media, the Company kept abreast of current events, paid close attention to traffic IP, and made use of hot events to expand sound volume, strengthen good feelings, deepen cognition, and continued to enhance the reputation and influence of our brand and business.



China Unicom debuted at the 2023 China Brand Day event

The brand of China Unicom ranked **No. 4** in the brand building capacity benchmarking of central state-owned enterprises and **No. 1** in the communication industry

Unicom Wopai brand case and video clips were selected as a **typical case** and **excellent brand story** of brand construction of central state-owned enterprises

Protection of consumers' rights and interests

China Unicom strictly abides by the Law of the People's Republic of China on the Protection of Consumer Rights and Interests, protects customers' right to know about consumption services, provides products and services in accordance with laws and regulations, and standardises tariff management. At the same time, it further strengthens publicity compliance management, standardises publicity language, strictly prohibits false publicity and exaggerated publicity, and maintains a good corporate image.

- We completed the standardised operation of the electronic identification card and real-name registration process of online marketing channels, and standardised the cooperation of online marketing channels to ensure a more transparent, easy-to-understand and reassuring user experience.

- The Company continued to iterate and optimise the tariff zone of China Unicom APP and online store, and provided subscribers with public information on product tariff and marketing activities in a timely manner. A total of 1,657 product tariff and 273 marketing activities were publicised.

- Focusing on major operational risks, the Company carried out real-time monitoring of marketing health risks. There were 75 real-time big data audit models, realising from "generation of front-line orders" to "discovering risks and sending rectification work orders to front-line personnel for verification and rectification" within 10 minutes.

- We strictly abided by the Advertising Law, the Anti-Unfair Competition Law and other requirements, and prohibited the use of advertising slogans explicitly stipulated by laws; Combined with the communication attributes and business characteristics, we standardised the publicity language, and clarified the rights and interests of users and the promotion content, and ensured that there were no violations involving advertising and marketing; We continued to carry out publicity activities to prevent online fraud and promote positive publicity.

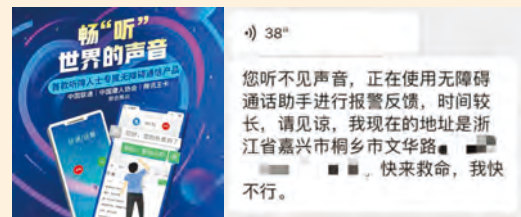
Carrying out activities to help the elderly and the disabled

China Unicom earnestly implemented the requirements of “staying in the stance of the people and grasping the wishes of the people”, improved product supply for the elderly, people with disabilities and minors, optimised service experience, deepened special services for the elderly and the disabled, actively fulfilled the responsibilities of central state-owned enterprises, and provided more intelligent and convenient considerate services for special groups.

Creating heart-warming products

“Hearing King Card” products for hearing-impaired groups. The Hearing King Card integrated the strength of China Unicom and related barrier-free industrial chains, providing hearing-impaired users with various functions such as barrier-free calls, real-time subtitles for video calls, face-to-face speech recognition and dialect recognition, realising the connection between the communication network of traditional operators and the Internet, and truly realising the direct communication between hearing-impaired and healthy people. As the first product designed for hearing-impaired people in the industry, Hearing King Card provided barrier-free call services for 690,000 hearing-impaired people as of 2023.

People’s Daily WeChat public number published an article about the special experience of 110 police reporting platform at three o’clock in the morning to receive a message of help from the AI “robot”. Ms. Xu, a hearing-impaired person, suddenly felt unwell in the middle of the night, and the communication tool she used was Unicom’s Barrier-Free Assistant. China Unicom’s Barrier-Free Assistant has built a communication bridge for hearing-impaired people, making the voice “visible” and the words “audible”, which let the hearing-impaired people feel the convenience of telephone calls, and also solved the obstacles that were difficult to overcome in their learning, work and life.



China Unicom’s barrier-free call assistant helped hearing-impaired people get medical treatment smoothly at three o’clock in the morning

On the 32nd International Day for the Disabled, the Deaf Association of Fujian Province and China Unicom Fujian Branch jointly held an education activity on oral health-related science knowledge in the campus cum the 9th “Exhibition and Energy Festival” of Sanming Special Education School. In Sanming Special Education School, China Unicom Fujian Branch discussed the barrier-free call function of “Hearing King Card”, provided experience services for on-site teachers and students, and was recognised by the deaf society and teachers and students of the school.



Caring for hearing-impaired groups

The “Filial Piety Card” product for the elderly. Based on the capabilities of voice calls, base station positioning, harassment interception and other capabilities, the Company launched the innovative communication product, the “Filial Piety Card”, for the elderly. The product provides users with functions such as scheduled original voice call reminder, fraudulent call interception, and activity area query, so as to improve the life safety guarantee of the elderly and reassure the young children who work far away. As of the end of 2023, the “Filial Piety Card” intercepted more than 100 million harassing calls and served more than a million elderly people in total.

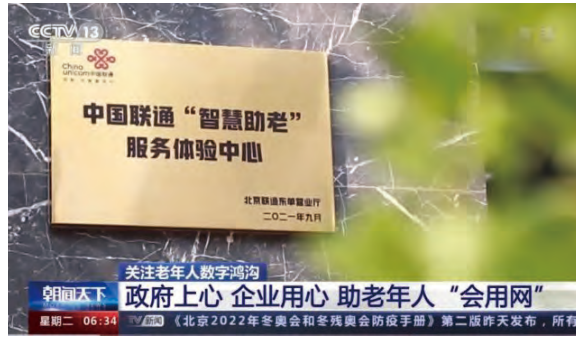
The “Parent-Child Card” product for minors. Based on differentiated network services and call time protection capabilities, the Company launched “Parent-Child Card” online guarding services for minors and parents. The “Parent-Child Card” provides parents with innovative functions such as Internet access speed limit, risk website alert, game management, and call management to help parents manage their children’s Internet access time and effectively prevent children from being addicted to the Internet. By the end of 2023, the speed limit function has been used for 31 million times, helping millions of teenagers to cultivate healthy and self-disciplined Internet access habits.

Providing considerate services

China Unicom upgraded and launched the “Public Charity to Spread Love” service for the elderly, the disabled and the vast outdoor workers. The 19,000 business outlets across the country have given priority to the elderly and the disabled. The business outlets have set up 7,687 smart service experience centres for the elderly and 8,859 smart caring stations. A total of 180,000 elderly public charity lectures and cultural and entertainment activities have been carried out, serving 3.2 million people.



Caring Station of Business Outlets



The Elderly Assistance Experience Centre on CCTV News

China Unicom actively carried out elderly-friendly transformation, continued to carry out the “Elderly Exclusive” service plan, and built a national education service system for the elderly.

- The Company cared for the life of elderly customers, systematically upgraded elderly assistance services, and launched 10 major service measures covering convenient services, warmth and companionship, and smart and fun life, so as to provide more high-quality, more comprehensive and intelligent communication services for the elderly customers.

- By the end of 2023, the 10010 hotline had accurately predicted that more than 30.21 million customers aged 65 or above who were directly connected to manual services; All self-owned business outlets have set up service channels for elderly, weak, disabled and pregnant customers, and prepared elderly equipment and facilities such as presbyopia glasses for elderly customers.

- The Elderly Public Charity Lecture Hall, together with the Association of Science and Technology and other government units and public charity organisations, educated the elderly customers about the use of smartphones, mobile payment, and the prevention of telecommunication fraud.



China Unicom’s “Special Action for Transcending Digital Divide of Silver Age” was selected as the Best Technology Volunteer Service Project in 2023 by China Association for Science and Technology

A total of more than **6.04** million disabled and elderly users were supported

Communication fees of more than **RMB 760** million were reduced and exempted



China Unicom Hubei Xianning Branch’s Elderly Anti-fraud Public Charity Lecture Hall

China Unicom APP is dedicated to creating a “Care Model” for the elderly and helping them to cross the “digital divide” addressing the pain points of the elderly such as “hard to see” and “not knowing how to use” when using Internet applications. Since its launch, the “Care Model” has served an average of approximately 59,000 people per day, which has been well received by elderly users. At the “2023 World Telecommunications Day Conference Digital Technology Elderly Care Forum” held by the China Academy of Information and Communications Technology, “China Unicom APP” and “China Unicom Online Store” won the title of “the first batch of outstanding cases of elderly-friendly and barrier-free transformation of Internet applications”.

The Huishui Road business outlet of China Unicom Suzhou Branch carried out the activity of “Public Charity to Spread Love”, inviting sanitation workers to enter the outlet. Under the hot weather, our staff prepared fruits and various drinks for sanitation workers in advance, and played anti-fraud knowledge promotional videos on site to improve the awareness of sanitation workers against frauds.



China Unicom Suzhou Branch’s “Public Charity to Spread Love” activity

Merchants Union Consumer Finance (MUCF) Company uses intelligent interaction, human-machine coordination, image recognition, rich client and other technologies to form a mature smart workplace solution integrating virtual workplaces and physical workplaces. It not only supports manual agents to work remotely from home, but also supports physical workplace operations. Since 2021, it has cooperated with the public charity organisation “Parallel World” to carry out public charity activities to care for people with disabilities. As of the end of 2023, a total of 435 people with disabilities have been provided with employment positions, reflecting the social responsibility of MUCF.



Smart workplace provides new channels for people with disabilities to work from home

Building harmonious labour relations

China Unicom actively implements the strategy of strengthening the enterprise with talents, and is committed to building a standardised, orderly, fair and reasonable, mutually beneficial, harmonious and stable labour relationship, and creating a cultural atmosphere where the enterprise cares for employees and employees love the enterprise.

Fertile soil for the growth of talents

Optimising talent mechanism

China Unicom has always regarded talents as the “first resource”. In the process of accelerating the construction of a world-class technology service enterprise, China Unicom has deeply implemented the strategy of strengthening the enterprise with talents, took the construction of national strategic talents as the top priority, continuously optimised the talent management system and key mechanisms such as introduction, training, use and incentive, gave full play to the resource and brand advantages of central state-owned enterprises, built an entrepreneurial and growth development platform for talents, and gathered talents from all over the world.

Strengthening talent introduction

China Unicom drove employment growth with technological innovation, and promoted the matching of talent introduction with the Company’s high-quality development needs.

- We always adhere to the principle of fairness, openness and justice in recruitment, continuously improve the construction of market-oriented talent recruitment mechanism, strictly standardise the recruitment procedures, and strengthen recruitment management and supervision.

- In 2023, more than 10,000 people were recruited through campus recruitment and social recruitment, and the total recruitment scale of graduates remained stable, helping college graduates to be employed in high quality and full, supplementing outstanding young talents for the Company. It was named one of the Top 100 Employers in China.

Age distribution	Unit	2022	2023	Composition	Unit	2022	2023
Percentage of employees aged below 30	%	14.4	16.89	Market staff	%	50.5	50.30
Percentage of employees aged between 30 and 50	%	67.9	64.74	Technical staff	%	29.7	29.60
Percentage of employees aged over 50	%	17.7	18.37	General staff	%	12.2	12.10
				Manager	%	7.7	8.00

Academic distribution	Unit	2022	2023
Postgraduate and above	%	9.3	10.00
Bachelor degree	%	65.5	67.70
College and below	%	25.2	22.30

	Total number of employees	Employees in Mainland China	Employees in Hong Kong	Employees overseas	Percentage of scientific and technological talents	Gender proportion (male/female)	Proportion of ethnic minority employees	Temporary staff in Mainland China (person)
2022	244,658	243,586	723	349	30%	1.63:1	6.76%	10,345
2023	242,891	241,735	791	365	40%	1.62:1	6.98%	9,882

Strengthening capability training

Establishing a regular talent education and training mechanism

China Unicom always cares for the growth of employees and has formulated the “2023 China Unicom Group Key Training Plan” covering management personnel and professional talents, including the Group’s leadership and professional skills. The Company invested RMB460 million in training costs for employees, providing a good learning and growth platform, with an average of 115 training hours per employee.

Continuously carrying out professional ability training for key groups

- For management personnel, the Company carried out 160 sessions of professional ability training.
- For outstanding young management talents, the Company organised and implemented four spring and autumn middle-aged and young management talent training courses and excellent management talent demonstration courses.
- For high-level talents, the Company implemented a school-enterprise joint training programme integrating industry and education. School-enterprise cooperation builds a talent training platform, and a total of 30 people were selected throughout the year to pursue master and doctoral degrees in university engineering.
- For professional talents, the Company carried out independent training. A training and certification system based on key business competencies was established, with the development or updating of 12 certification standards completed throughout the year, and more than 164,000 people passing the competency certification examinations.
- For front-line employees, job training certification is implemented. More than 82,000 training sessions for digital transformation were held. More than 70,000 training sessions were held for employees in sales, call service, installation and maintenance.

More than **1.01** million employees participated in group-level labour and skills competitions

286 technical experts selected

	2022	2023		2022	2023
No. of senior management receiving training (person-times)	9,274	8,537	Average training hours for general employees (hours)	116	112
No. of middle management receiving training (person-times)	214,526	328,463	Average training hours of male employees (hour/person)	118	115
No. of general employees receiving training (thousand person-times)	5,012	4,693	Average training hours of female employees (hour/person)	118	115
Training rate of male employees (%)	98.31%	98.5%	Training rate of senior management (%)	100%	100%
Training rate of female employees (%)	98.31%	98.5%	Training rate of middle management (%)	100%	100%
Average training hours of senior management (hours)	183	240	Training rate of general employees (%)	98.31%	98.35%
Average training hours for middle management (hours)	141	171			



Marketing Skills Competition for Government and Enterprise Solutions



"I am a Good Lecturer – Famous Lectures" Skills Competition



Big Data Risk Control Modelling Skills Competition



Comprehensively Deepening Co-construction and Sharing Labour Competition

Protecting the legitimate rights and interests of employees

China Unicom adheres to the people-oriented principle, and regards solving the most concerned, direct and realistic interests of employees as the fundamental starting point and ultimate goal of building a harmonious labour relationship, so as to achieve, maintain and develop the fundamental rights and interests of employees well.

Adhering to fair employment

China Unicom strictly implements the relevant provisions of the Labour Contract Law, focuses on gender equality, and signs labour contracts with 100% of employees. In the process of recruitment and promotion, we adopt strict inspection control procedures, prohibit discrimination policies on ethnicity, gender, age, etc., and ensure that all recruitment and selection of personnel are carried out in accordance with standardised procedures to attract more talents with diversified backgrounds. There were no cases of child labour, forced labour and abuse of employees, and the dismissal policy was implemented in accordance with relevant national requirements.

Improving remuneration incentives

China Unicom continued to improve the remuneration and welfare management mechanism, encouraged the growth and innovation of talents, and protected the rights and interests of employees.

- We optimise the allocation of labour cost resources, and the increase in labour cost is closely linked to the Company's operating results; We deepen the reform of internal remuneration distribution, optimise the relationship of internal distribution, improve the guarantee mechanism for various groups, and implement the policy of raising the salary of low-rank employees, covering 170,000 people of all kinds; flexibly carried out medium and long-term incentives, completed the share unlocking of all three unlocking periods of the first tranche of restricted shares of China United Network Communications Limited, and realised the benefit sharing and risk sharing between employees and the enterprise.

- We improved the incentive and restraint mechanism and strengthened the standardised management of welfare. We abide by relevant national and corporate policies and regulations, pay social insurance premiums, housing provident fund and enterprise annuity in full and on time for employees; We continued to improve the employee health management system and purchased urban inclusive health insurance for employees to relieve the burden of medical expenses for serious diseases.

- We implement national regulations on working hours management to protect employees' rights to rest and leave. We carry out a paid leave system, and ensure 100% retention of job opportunities for female employees after maternity leave to protect their legitimate rights and interests; We actively echoed and promoted the implementation of parental leave and one-child care leave, and strengthened humanistic care for employees.

Mediating labour disputes

China Unicom fulfilled its basic responsibility of safeguarding rights and interests, effectively safeguarded and served the labour and economic rights and spiritual and cultural rights and interests of the employees, and continued to promote the construction of harmonious labour relations.

- Adhering to the unity of safeguarding rights and maintaining stability, the Group has established 402 labour dispute mediation organisations and has 1,234 full-time and part-time mediators.
- We carried out employee rights protection training, invited experts to give lectures on how the labour union participated in the prevention and resolution of labour disputes, improved the ability of labour union cadres to perform their duties, and consolidated the foundation of front-line labour union work.
- The labour dispute mediation organisations covered all local branches, and we guided 31 branches and subsidiaries to regularly conduct collective negotiations and sign collective contracts on issues of concern to employees such as wages, labour safety and protection of female employees.

All branches and subsidiaries handled

36 disputes through labour dispute mediation

The labour union of the Group handled and properly resolved

10 letters, visits and public opinion matters in a timely manner

Caring for the physical and mental health of employees

Focusing on the physical and mental health needs of employees, China Unicom strengthens the care and humanistic care for employees, enhances the sense of achievement, happiness and security of employees, and creates an atmosphere of “healthy life and happy work” in compliance with relevant laws and regulations relating to providing a safe working environment and protecting employees from occupational hazards.

Safeguarding employees' health

China Unicom drove employment growth with technological innovation, deeply implemented the strategy of strengthening the enterprise with talents, and promoted the matching of talent recruitment with the implementation needs of the Company's strategy.

Paying attention to mental health

We adopted various methods to improve employees' mental health awareness and mental health level, and provided employees with mental health services from multiple perspectives.

- The fourth “Mental Health Month” activity was held to help employees improve their mental health and relieve psychological pressure through knowledge publicity, mental health assessment, one-on-one on-site consultation, health lectures and other activities, with more than 1.25 million participants.
- We continued to strengthen the construction of psychological care “service sites”. More than 180 “psychological counselling stations” have been built across the country. Trade unions at all levels actively carried out psychological sand table, psychological counselling and other activities with mental health huts to reduce pressure and empower employees.
- The Company continued to carry out training for mental health specialists, having trained more than 600 mental health specialists in total. It sets up psychological counselling hotlines and psychological crisis intervention hotlines, and provided mental health training, psychological counselling and other services for employees.

Caring for female groups

We pay attention to the protection of the rights and interests of female employees, care for the physical and mental health of female employees, and establish and improve the organisation of female employee committees at all levels to protect the rights of female employees. We provide exclusive physical and mental health guidance services for female employees, carry out “two-cancer” screening and health check-ups for female employees, ensure that female employees take rest and leave, continue to carry out daycare services for employees' children for many years, and entrust more than ten thousand employees' children every year. We actively implement the construction of rest and breastfeeding rooms for female employees to solve their worries.

Established

8 Women Innovation Studios

100 group-level “Women’s Civilization Post” and “Women’s Contribution Model” were selected and commended



Caring activities for female employees in various regions

Enriching cultural and entertainment activities

Trade unions at all levels organised online and offline cultural and recreational activities to help promote national fitness and enrich the cultural life of employees after work.



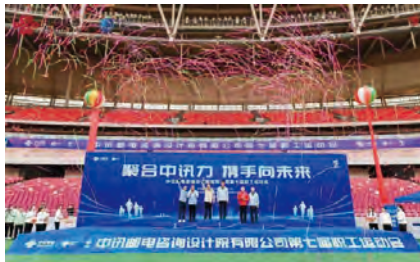
China Unicom 2nd Staff Basketball Competition



China Unicom 1st E-sports – Honour of Kings Competition



China Unicom Employee Cloud Spring Festival Gala



China Unicom provincial branches and subsidiaries held a variety of sports games



Fostering employee care

Improving working environment

The labour union of China Unicom set up special funds for the construction of “five small” projects, and carried out transformation and upgrading for 519 front-line projects of 28 branches and subsidiaries, including the provision of oxygen supply facilities for Gansu, Qinghai and other places, and helping the post-disaster recovery construction of front-line units in Hebei, Beijing, Fujian and other places. Each branch invested RMB58.38 million in order to improve the working and living environment of front-line employees.

Helping employees in need

In order to solve the practical difficulties faced by employees, the labour unions at all levels of China Unicom have established and dynamically managed the files of employees in need in accordance with the requirements of “bottom line, dense network and mechanism construction”, and created a “three-in-one” assistance system of critical illness insurance, mutual aid and supplementary medical care.

• We promoted mutual medical assistance for employees, generally established a mutual aid system, and further reduced the risk of employees returning to poverty due to illness. More than 1,500 people were assisted, and more than RMB16 million of relief funds were distributed.

• The Company continued to care for the children of employees, called for the solid implementation of the working brands such as the custody of employees’ children and golden autumn student aid, and subsidised more than 4,800 employees’ children throughout the year.

RMB

120 million spent on supporting employees in difficulties

Continuous promotion of democratic management

China Unicom promotes the consultation and co-construction of mechanisms between enterprises and employees, guides enterprises and employees to establish the awareness of common interests, and promotes the formation of a good situation where enterprises care for employees and employees contribute to the enterprise.

Promoting participation in management

China Unicom continued to deepen the open and democratic management system of corporate affairs in the basic form of the employee representative committee, which exercised the right to propose, approve, elect, review and supervise in accordance with laws and regulations.

- The Company organised and convened the 14th meeting of the second session of the employee representative committee, listened to and considered 8 items of various matters, and considered and approved 3 items.
- The Company organised the fourth selection of outstanding employee representative proposals, and selected a total of 29 outstanding proposals, with the quality of proposals improving year by year.
- The Company carried out the theme staff meeting activity of “Shared Understanding for All”, providing more channels and lower threshold for employees to participate in corporate governance. The Company held more than 5,000 theme staff meetings throughout the year, and promoted the establishment of a mechanism for joint construction, mutual consultation and management.

Improving demand channels

Members of China Unicom’s leadership at all levels and the main persons in charge of relevant professional lines regularly listened to employees’ opinions, and widely listened to employees’ suggestions through various channels such as “General Manager Online”.

Throughout the year, the Company carried out more than 600 “General Manager Online” activities, with a total of over 45,000 online participants. More than 5,000 questions of various types were raised, and the on-site problem-solving rate reached more than 85%.

572 labour unions were established throughout the Group

Participation rate of 100%



“General Manager Online” activity solves practical problems raised by employees, communicates and exchanges ideas with employees at zero distance





4

***IMPROVE CORPORATE
SYSTEM AND PROMOTE
STEADY DEVELOPMENT***

Improve corporate system and promote steady development



China Unicom fully implemented the SOE reform-deepening and improvement actions, strengthened the system integration, coordination and efficiency of reform, innovation and development, promoted the modernization of governance systems and governance capabilities, strengthened system construction, optimised governance efficiency, prevented and defused various risks, and promoted the high-quality corporate development.



Measures adopted in 2023

- The Company enhanced the modernization level of corporate governance, continuously improved the working mechanisms of corporate governance, information disclosure and investor relations management, and won high evaluation in the capital market.
- The Company attached importance to partnerships, strengthened the standardisation of strategic cooperation systems, and realised resource sharing, complementary advantages and common development.
- Aiming at being a “world-class” enterprise, the Company continued to promote the upgrading of the modern supply chain system.
- The Company has been promoting the principle of not daring to corrupt, not being able to corrupt, and not wanting to corrupt, and further consolidating and expanding the results of anti-corruption efforts.
- The Company has established a risk management system covering key areas such as network security, data security, financial business, safe production, and integrity.



Actions to be taken in 2024

- Guided by the new development concepts of innovation, coordination, green, openness and sharing, we will continue to build Cyber Superpower and Digital China.
- The Company will continue to expand the breadth and depth of cooperation with partners, and promote the implementation of strategic cooperation.
- The Company will implement the policy requirements of localisation, green and low-carbon, and improve the security and management level of the supply chain.
- The Company will continue to carry out anti-corruption endeavours and improve the integrity risk prevention and control system.
- The Company will continue to promote corporate governance in accordance with the law and strengthen risk management.

Enhancing the corporate governance framework

The Board of Directors of China Unicom is committed to maintaining high standards of corporate governance (including information disclosure) and recognises that good corporate governance is vital for the long-term success and sustainability of the Company's business. As a company incorporated in Hong Kong, the Company adopts the Companies Ordinance (Chapter 622 of the Laws of Hong Kong), the Securities and Futures Ordinance and other relevant laws and regulations as the basic guidelines for the Company's corporate governance. As a company listed in Hong Kong, its current Articles of Association fully complies with the regulatory requirements of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited. These rules serve as guidance for the Company to improve the foundation of its corporate governance, and strives to meet the relevant requirements of international and local corporate governance best practises. There were no instances of any violation of listing laws and regulations by China Unicom in 2023.

Responsibilities towards the Capital Markets

China Unicom strictly fulfils its information disclosure obligations, organises and completes various information disclosure work in accordance with laws and regulations to ensure the truthfulness, accuracy, completeness and timeliness of information disclosed to the public (including inside information). The Company's efforts in corporate governance (including information disclosure) were highly regarded by the capital market and received a number of awards.

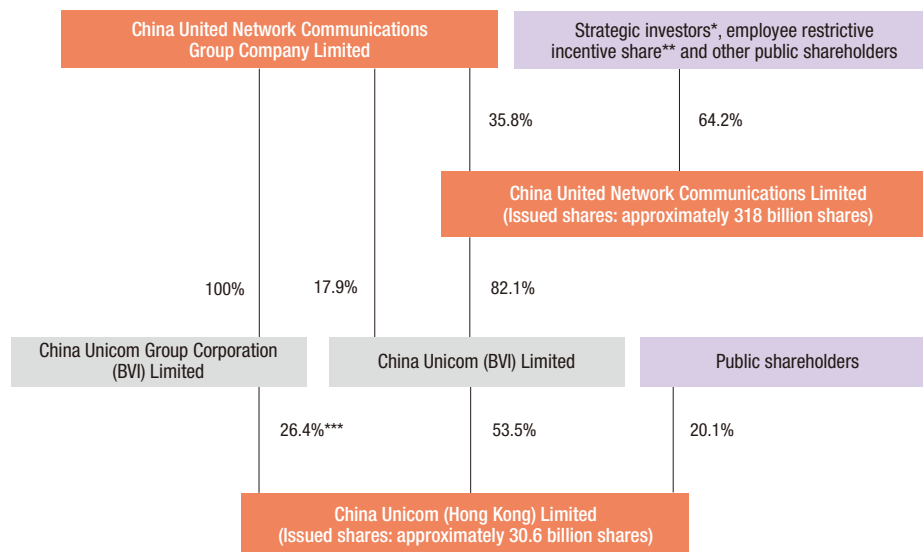
- The Company developed and refined the Information Disclosure Policy to ensure the convenience and security of information disclosure while ensuring the fulfilment of information disclosure obligations in compliance with laws and regulations.
- The Company established the Information Disclosure Committee chaired by the management to clarify the procedures for the compilation and reporting of financial and operational data and other information as well as the procedures for the preparation and review of periodic reports. The Company has made specific provisions on the contents and requirements for the verification of financial data, especially requiring the responsible persons of each major department to issue a statement letter to be assumed by individuals from the bottom to the top.
- The Company adhered to fair disclosure and held result briefings or presentations in Hong Kong and Beijing immediately after the publication of annual and interim result announcement to ensure that all investors have equal access to relevant information.
- The Company actively participated in various surveys and inquiries conducted by regulators and exchanges, and earnestly put forward constructive opinions and suggestions.
- The Company attached great importance to the protection of the rights and interests of creditors. The Company had a good credit history, all interest-bearing liabilities were repaid on time without any instances of debt default or adverse credit records.
- The Company regularly invites different professional teams to provide training for Directors on the latest development of relevant laws and regulations, market environment and industry development, so as to enhance their ability to perform their duties.

Responsibilities towards the Investors

China Unicom strengthened proactive and effective investor relations management, coordinated regulatory, analyst, shareholder and securities media relations. This significantly enhanced the influence of the capital market and continuously enhanced the value of the Company and shareholders. Annual general meeting shall be held every year, and extraordinary general meeting may be held when the Board deems it appropriate, the Company's Directors and representatives of Board committees will attend the meetings. All matters at the Company's general meetings are resolved by poll and the relevant procedures are explained at the meeting and the Company publishes the poll results in a timely manner, thereby offering protection of the shareholders' rights and interests. Latest updates on the Company's significant business developments are being provided in a timely and accurate manner through announcements, press releases and the Company's website (www.chinaunicom.com.hk), so that investors can keep timely understand of the Company's latest developments. The Company was awarded the "Asia's Best IR Team (Telecoms)" by Institutional Investor.

- An Investor Relations Department is in place to provide investors with the information and services they require and to actively engage with investors and fund managers.
- The Company adopted Shareholders' Communication Policy to ensure that the shareholders are provided with readily, equal and timely access to balanced and understandable information to protect their right to know.
- The Company focused on strengthening communication with the capital market, enriched communication methods, organised a number of reverse investor roadshows/"Visiting Listed Companies" activities, and arranged the management to carry out roadshow activities from time to time. Throughout the year, the Company organised/participated in nearly 100 international capital market communication activities, and the communication with investors, analysts and the media increased significantly compared with last year.
- The Company actively respond to investors' concerns, and transparently makes adequate disclosures on the Company's efforts to address climate-related risks on climate change issues that have been widely concerned by investors in recent years.

Shareholding structure



Shareholding Structure Chart of China Unicom

Notes:

* In 2017, approximately 10.9 billion shares of China United Network Communications Limited were acquired by the strategic investors introduced by the mixed ownership reform through non public share issuance and transfer of existing shares. These shares were no longer restricted from sale in November 2020.

** Pursuant to the phase 2 restrictive share incentive scheme in 2022, China United Network Communications Limited granted restricted shares to the core management talents and professional talents.

*** The shares held by China Unicom Group (BVI) Limited do not include its pre-emptive right of 225,722,791 shares of China Unicom (Hong Kong) Limited.

As at 31 December 2023

Standardising Board governance

To serve the best interests of the Company and its shareholders, the Board of Directors of the Company is responsible for reviewing and approving major matters of the Company, including, amongst others, business strategies and budgets, major investments, capital market operations and mergers and acquisitions. It is also responsible for supervising risk management and internal control, approving environmental, social and governance strategies, and reviewing and approving the announcements periodically published by the Company regarding its business results and operating activities. In addition, the Board of Directors has overall responsibility of environmental, social and governance strategies and reporting. There are three Board committees under the Board, namely the Audit Committee, the Remuneration Committee and the Nomination Committee, each of which has a written charter, which is available on the websites of the Company and the Hong Kong Stock Exchange.

Directors and senior management



Chen Zhongyue
Chairman and
Chief Executive Officer



Wang Junzhi
Executive Director



Liang Baojun
Senior Vice President



He Biao
Senior Vice President



Tang Yongbo
Senior Vice President



Li Yuzhuo
Executive Director and
Chief Financial Officer



Cao Xingxin
Senior Vice President



Cheung Wing Lam Linus
Independent
Non-executive Director



Wong Wai Ming
Independent
Non-executive Director



Chung Shui Ming Timpson
Independent
Non-executive Director



Law Fan Chiu Fun Fanny
Independent
Non-executive Director

Note: Changes in the composition of the Board and the management during the year 2023 and up to the date of this report.
Chen Zhongyue (appointed as Chairman on 2 December 2023);
Cao Xingxin (appointed as Senior Vice President on 8 March 2023);
Liu Lie Hong (resigned on 30 July 2023 due to change in work arrangement).

Board diversity and independence

The Board comprises executive Directors and independent non-executive Directors. The Board of Directors comprises experts from diversified professions such as telecommunication, information industry, technology, finance, banking, investment and management, and is diversified in terms of gender, age, duration of service, educational background, professional experience, etc., which contributed to the enhanced management standard and more regulated operation of corporate governance of the Company, and results in a more comprehensive and balanced Board structure and decision-making process.

The Board currently comprises seven members, consisting of three executive Directors and four independent non-executive Directors. The Company has established various channels for independent non executive Directors to express their views in an open and honest manner and, if necessary, in a confidential manner. The independent non executive Directors have been making positive contributions to the development of the Company's strategies and policies through independent, constructive and informed advice. Apart from the regular Board meeting, the Chairman meets annually with independent non-executive Directors, without the presence of other Directors, which further promotes the exchange of diversified views and opinions. These views and opinions facilitate the Board in making their decisions in the shareholders' best interests. All independent non-executive Directors have confirmed their independence to the Company upon their appointment and annually.

Board election

In order to ensure a standardised and transparent process for the nomination and election of Directors, the Company has established the Nomination Committee. With respect to the nomination and appointment of new directors and senior management members and the succession planning for Directors, the Nomination Committee would, after considering the Company's need for new directors and/or senior management members, identify a wide range of candidates from within the Company and the human resources market and make recommendations to the Board. The Nomination Committee will consider candidates on merit against objective criteria and with due regard to the benefits of diversity on the Board, including but not limited to gender, age, cultural and educational background, professional experience, skills, knowledge and duration of service. After having obtained the consent from candidates in relation to the relevant nomination and based on the Company's actual needs, the Board would convene a meeting, attendees of which include non-executive Directors, to consider the qualifications of the candidates. The Directors of the Company (including non-executive Directors) are not appointed for a specific term. However, pursuant to the Company's articles of association, one-third of the directors shall retire from office by rotation and shall be eligible for re-election at each annual general meeting.

Building a digital industry ecology

Strengthening strategic cooperation management

China Unicom strengthened the strategic cooperation under the strategic guidance, strengthened the coordination of strategic cooperation, and established the strategic cooperation system and mechanism of China Unicom. We have established more in-depth strategic partnerships with a number of important partners to achieve mutual benefits and win-win results. We innovated the cooperation model and continuously expanded the breadth and depth of cooperation. We built a digital management platform to promote the implementation of strategic cooperation.

Building a strategic cooperation management system

China Unicom formulated the "Administrative Measures for Strategic Cooperation of China Unicom", built a strategic cooperation management system, established and improved the management mechanism, and implemented hierarchical and classified management. We established a group-level strategic cooperation working group to standardise the work flows, in order to realise cross-profession and cross-field collaborative interaction, and ensure the implementation of strategic cooperation projects.

Joining hands to build a strategic cooperation ecology

China Unicom has established mutual trust and mutual benefit partnerships with various partners to achieve resource sharing, complementary advantages and common development. We attached great importance to communication and collaboration with partners, strengthened the mutual visits of senior management and daily communication mechanism, and solved problems in cooperation in a timely manner to ensure the smooth progress of cooperation projects.

Improving supply chain management

With the goal of ensuring supply, improving efficiency and controlling risks, China Unicom strengthened the construction of a two-level centralised procurement operation system at the group level and at the provincial level, and continued to promote the upgrading of the modern supply chain system. We formulated the China Unicom Supplier Management Regulations and other systems, to standardise supplier management, and build a fair, good and clean cooperation environment.

- We optimised supplier screening standards and added ESG elements related to environmental and energy emissions such as ISO14001 and ISO50001.

- We implemented list management of positive and negative behaviours and rewarded suppliers with excellent product evaluation and assessment results; For those that caused negative impacts and economic losses in the construction of communication networks, production and operation, quality services, corporate image, etc., measures such as prohibition of access, suspension of cooperation, and order for rectification were implemented to urge suppliers to improve their product and service capabilities, and promote the upstream and downstream of the supply chain to jointly fulfil social responsibilities.

- We continuously optimised the supplier blacklist management mechanism, refined the identification standards and disciplinary measures, clarified the supervision responsibilities, accurately punished the “hunting” behaviour, and promoted the purification of the external anti-corruption environment.

- The Company strengthened the all-round strategic coordination with strategic suppliers, connected with more than 200 suppliers, and realised strategic cooperation such as supply chain coordination, information push, and material investigation.

25,000
new suppliers in 2023

	Region	Eastern China	Northern China	Central China	Southern China	Southwest China	Northwest China	Northeast China
2022	Number of suppliers	28,722	11,234	10,807	11,141	6,704	5,458	9,705
2023	Number of suppliers	33,420	15,730	12,400	12,725	7,364	6,057	7,685

Linking capital with precision

China Unicom adheres to the principle of “promoting investment through research and promoting production through investment”, focuses on strategic emerging industries and future industries development, and the construction of a modern cybersecurity industry chain. The Company made full use of market-oriented investment tools such as direct investment and funds, focused on key areas of main responsibilities and main businesses to make precise investment directions, refined post-investment management, improved investment returns, continuously promoted resource sharing and achievement co-construction with capital means, and promoted the iterative upgrading of China Unicom’s industrial ecology.

- **The Company deepened joint ventures and cooperation with upstream and downstream partners in the industrial chain, and won the “Group Competition” for the construction of digital industry ecology.** We established a joint venture Nebula Times Technology Co., Ltd. with Tencent to build an independent and controllable CDN/MEC platform by integrating China Unicom’s “network resources and capabilities” and Tencent’s “technology and ecology”; China Unicom Digital Intelligence Medical Technology Co., Ltd. was jointly established with Capital Construction Investment Medical, Guangzhou Capital Investment, Nansha Artificial Intelligence, etc. Relying on China Unicom Smart Medical task force, China Unicom Smart Medical Technology Co., Ltd. created independent and controllable medical and health information and medical and health data products and technical services.

- **The Company actively promoted the integration and connection of central and local resources and created a new landscape of win-win cooperation and development.** Focusing on accelerating the construction of the local digital government system and enhancing the efficiency of digital government, the Company actively participated in projects like Shaanxi on the Cloud and Digital Ningxia. Focusing on improving the local network infrastructure and consolidating the foundation of digital government construction, the Company promoted the new Internet exchange centre project in Shanghai under the guidance of the Ministry of Industry and Information Technology and the local government. With deepening the integration and development of local industrial chains as the core, the Company established the brain for the clothing industry in Zhejiang to promote the intelligent transformation and upgrading of the textile and clothing industry in Zhejiang.

- **The Company innovated investment methods and strengthened the industrial investment model of “parent funds + sub-funds” linkage.** The Company gave full play to the industrial guidance and capital amplification functions of parent funds, aggregated various social capital, and formed upstream and downstream investments in relevant industrial chains and supply chains in strategic emerging fields through investment mode of the “direct investment of parent funds + sub-funds”, so as to accelerate industrial upgrading.

The investment research platform won the second prize of the Financial Technology Innovation Competition (2023) held by the Science and Technology Innovation Department of the China Association of Science and Technology and the China Association of Communications, and applied for the Capital Engineering Innovation Practice Case of the Beijing Association of Science and Technology.

Preventing and defusing operational risks

Carrying out in-depth anti-corruption exercise

China Unicom adhered to the strict tone, strict measures and strict atmosphere, integrated the promotion of not daring to corrupt, not being able to corrupt, and not wanting to corrupt, coordinated the promotion of anti-four styles, anti-corruption and anti-privileges, and further consolidated and expanded the achievements of integrity, discipline and anti-corruption.

Improving the anti-corruption system

China Unicom continued to improve the system and mechanism, strengthen publicity and implementation, and resolutely curb and prevent corruption. For more information on the number and outcomes of corruption-related litigation cases, please visit the website of the Central Commission for Discipline Inspection and the National Supervisory Commission.

- **Standardising the acceptance of letters and visits.** The Opinions of China Unicom Disciplinary Inspection and Supervision Institutions on Several Issues Concerning the Application of the Regulations on Letters and Visits was issued to promote an accurate understanding of the core meaning and requirements, build a good order for letters and visits and reports, and improve the level of work standardisation.
- **Improving the penalty mechanism.** The Company further standardised the rules and regulations for disciplinary actions against those surveilled for of suspected violations of laws and crimes, improved the mechanism for linking the handling procedures of corruption cases, and strengthened the seriousness, standardisation and timeliness of disciplinary actions.
- **Improving anti-corruption efficiency.** We issued the Guiding Opinions on Further Strengthening and Standardising the Quality Review of Cases to clarify the evaluation standards and promote anti-corruption practises with the rule of law.

Improving the anti-corruption mechanism

Strengthening risk prevention and control. We continued to improve the integrity risk prevention and control system, sorted out integrity risk points, and improved prevention and control measures.

Strengthening supervision and control. The Company deepened the use of a three-dimensional supervision system, strengthened daily supervision around key personnel, key matters and key areas, and focused on small areas as early as possible to prevent snowballing; The Company deepened the use of digital means to carry out online real-time supervision and took the initiative to prevent risks in advance.

Deepening warning education. The Company filmed special films on warning education, reported corruption cases, organised trial hearings on cases, and carried out special warning education on typical cases to educate and guide cadres and employees to be aware of and respect, be vigilant and stick to the bottom line.

Deepening the construction of integrity culture in the new era. The Company released the core concept of China Unicom’s integrity culture and the integrity code of conduct, and promoted the integrity culture among the manager teams, departments, frontline staff, positions, families and partners.

More than
10,000
integrity culture activities



The Company’s cadres and employees promoting the core concept of China Unicom’s integrity culture

2.593 million
people received anti-corruption
education and training

100 % coverage of
directors and employees in anti-
corruption education activities

Improving the ability to counter risks

Improving the risk management system

China Unicom earnestly implemented regulatory requirements, continued to strengthen the construction of risk management systems, and established a risk management system covering the headquarters, branches and subsidiaries, covering key areas such as cybersecurity, data security, financial business, safe production, and honest practice.

Risk identification and early warning	<p>The Company strengthened the control of the source of major risks, continued to beware of and collect internal and external risk factors, analysed and identified the risk information faced by the Company, and strengthened the deep integration of the prevention and control of major operational risks with the implementation of the Company's strategies and the development of key tasks.</p>
Risk control and tracking	<p>It continuously strengthened the monitoring of major operational risks, regularly carried out daily operational risk monitoring and early warning in key areas, and carried out in-depth risk investigation and special rectification in key areas.</p>
Risk reporting and management	<p>In accordance with the relevant provisions of the capital market, the Company regularly discloses the risks that the Company may face, timely announces the occurrence, impact and response of major emergencies, and reports to the regulatory authorities as required.</p>
Regular supervision, audit and evaluation of information disclosure	<p>An accounting firm is engaged to audit the Company's financial reports and related internal control every year, which is combined with the Company's regular internal control self-evaluation and internal audit supervision to form a joint force of internal and external supervision to ensure that the Company's internal control design is reasonable and its implementation is effective, and the disclosed financial information is true, complete and accurate.</p>

Focusing on the construction of internal control

Adhering to the goal of "strengthening internal control, preventing risks and promoting compliance", China Unicom continued to deepen the construction of the internal control system, strengthened the effectiveness of the design and implementation of the internal control system, and comprehensively improved the ability of risk prevention and control.

Strengthening the construction of institutional system <p>The Company further promoted the hierarchical and classified management and control of rules and regulations, strictly implemented the control requirements such as plan formulation, system evaluation and version management, adhered to focus on formulation, rectification, rescission and interpretation, and promoted the agile iteration of the system. In 2023, the Company formulated and revised a total of 5,872 rules and regulations.</p>	Standardising internal control process <p>We adhered to the standardisation of process governance, iterated and improved the process governance methodology, focused on key businesses to carry out process governance, and formed a scientific, systematic and standardised process system.</p>	Strengthening internal control supervision and evaluation <p>We strengthened the organisational leadership and institutional construction of internal audit, adhered to the principle of "top-down audit", ensured the independence of audit work, continued to deepen the digital transformation of audit, strengthened the risk monitoring of important parts of internal control, achieved full coverage of audit in important areas, improved the efficiency of audit supervision, and promoted the effective operation of internal control.</p>
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Persistence in compliant and lawful operations

China Unicom has always been committed to building a business system that abides by laws and regulations, is resilient and attaches great importance to safety, continuously deepens the construction of corporate rule of law, continuously strengthens the prevention and control of legal risks, and improves the guarantee mechanism for the prevention and control of major risks, so as to escort the realisation of high-quality development.

Improving the compliance management system

China Unicom strengthened and expanded the compliance management system, improved the compliance review process, revised the Compliance Management Measures, and issued the Compliance Management System Evaluation Measures, Labour Employment Compliance Guidelines and other management systems.

- **Improving the compliance organisation system.** The Group and its subsidiaries simultaneously set up chief compliance officers and organised training on duty performance capabilities; The branches and subsidiaries have set up special positions for compliance management, and professional departments at all levels have added compliance administrators to strengthen the compliance team.

- **Improving the compliance operation mechanism.** We formed a list of important decision-making compliance review matters for professional lines, embedding compliance review nodes in the contract system; lists of compliance risk identification were updated to evaluate compliance management.

- **Improving the compliance review process.** We conducted compliance review on operation and management such as rules and regulations, decision-making on major issues and contract signing to ensure legal and compliant operation. In terms of process setting, the compliance review process was embedded in the operational and management process to ensure that compliance review is a pre-requisite procedure for relevant operational and management activities. In terms of review, the Company evaluated whether the relevant operation and management activities and their carriers were in compliance with the requirements of national laws and regulations, regulatory requirements, industry standards, international treaties, rules, the Articles of Association, rules and regulations, etc.

- **Intensifying the publicity of laws.** The Company fully implemented the “Eighth Five-Year Plan”, significantly enhanced the publicity of the rule of law, and significantly improved the enthusiasm and initiative of employees to learn the law. The Company established the legal publicity platform of “rule of law in WO”, published 6,000 legal publicity articles and videos, and recorded more than 300,000 legal employees and more than 42 million employees read.

- **Strengthening intellectual property protection.** We issued the management measures for copyrights and software copyrights, improved 4 patent management-related systems, supported 1,457 software copyright applications, registered 66 trademarks such as “China Unicom Digital Technology”, formulated comprehensive strategies to protect important rights and interests such as “King Card”, monitored and filed 52 trademark objections, and took the initiative to eliminate barriers to rights, so as to protect the formation of high-quality scientific and technological innovation achievements.



Continuously strengthening foreign compliance

China Unicom implemented the opinions on the compliance with foreign laws, strengthened overseas anti-commercial bribery compliance, and carried out special risk investigation of overseas legal compliance to respond to overseas risk events in a prudent manner.

Making every effort to ensure safe production

China Unicom continued to consolidate the achievements of the three-year action plan for production safety, and continued to improve the level of corporate safety governance with the “Year of Safety Management Enhancement” and the “Special Investigation and Rectification of Major Hidden Dangers 2023 Action” as the key measures.

- Focusing on key areas and strengthening source management, the Company continued to carry out safety production inspections, identified a total of 39,756 potential risks, and completed the rectification of 37,139 items, with a rectification rate of 93.4%.

- The Company organised nearly 3,000 safety production publicity activities.

- The Company completed 4 batches of 19 sessions of fire safety professional practical training for 1,224 safety supervision personnel at all levels, which improved the professional quality of fire safety management personnel.

- The Company improved the management systems such as the China Unicom Measures for the Supervision and Administration of Work Safety and the China Unicom Measures for the Administration of Fire Precautions, and gradually established an evaluation mechanism for the work safety management process on top of the existing incident assessment.

The government and enterprise compliance operation R&D project of China Unicom Software Research Institute won the “2023 Outstanding Government and Enterprise Business Innovation Project” award. The award was released by the 2024 China's financial TMT “Top Show List” organised by the operator finance website.



Awarded the “2023 Outstanding Government and Enterprise Business Innovation Project” award

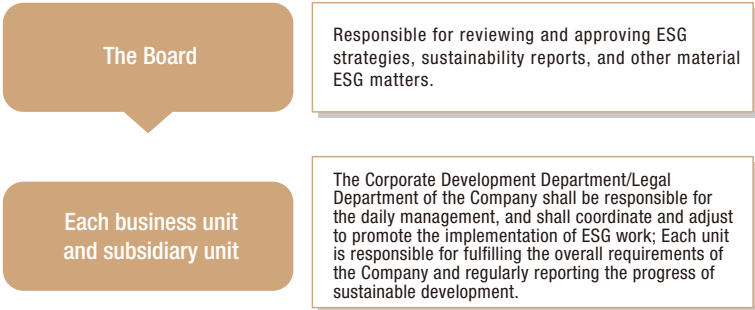


Responsibility Management

Sustainable Development System

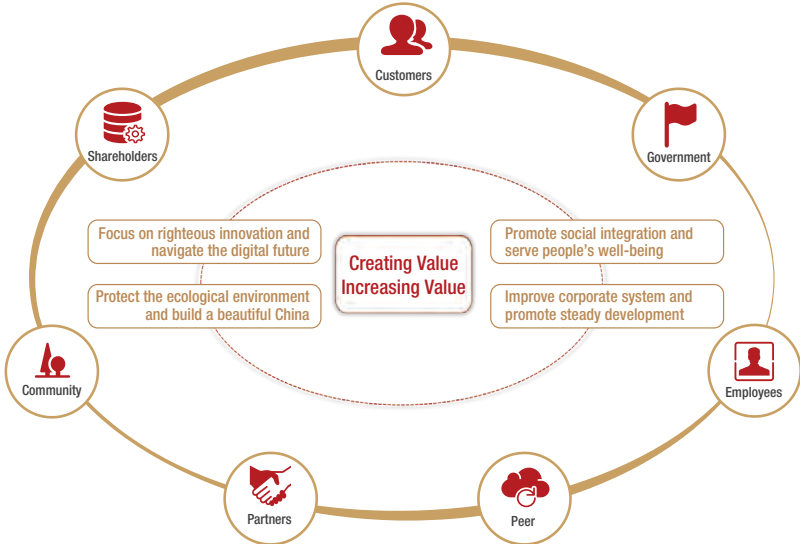
China Unicom attaches great importance to the management of environmental, social and governance related matters. The Board of Directors is responsible for formulating the Company’s environmental, social and governance management strategies, regularly listening to the Company’s reports on environmental, social and governance related work, reviewing the Company’s performance, giving opinions and instructions to the management and relevant departments on optimising environmental, social and governance, approving the disclosure of the Company’s environmental, social and governance reports, and promoting sustainable development practises in an orderly manner. The Board of the Company actively manages environmental, social and governance risks and opportunities, integrates sustainable development with business practises, continuously supervises the Company’s risk management and internal control systems, and incorporates environmental, social and governance related risks into the risk identification and assessment process for analysis to ensure that the Company has established an effective risk management and internal control system.

The Board of Directors of China Unicom assumes responsibility for ESG strategies and reporting, including approving ESG plans, reviewing ESG goals and progress, and approving sustainability reports and other material matters. The specific daily work shall be undertaken by the Corporate Development Department/Legal Department, and other professional departments, provincial branches and subsidiaries shall be responsible for the implementation of social responsibilities in the professional field and regularly report the implementation of sustainable development work.



Sustainable Development Strategy

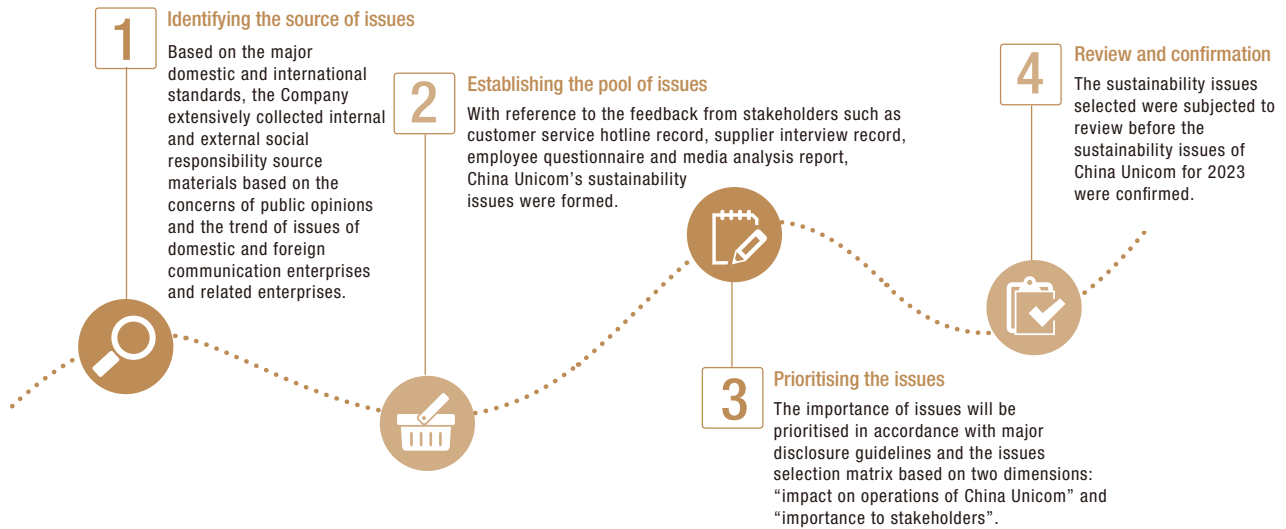
Guided by the new development philosophy of innovation, coordination, greenness, openness and sharing, China Unicom continued to practise the construction of a cyberpower and Digital China with practical actions, built a sustainable development system of China Unicom, and promoted the Company to take active actions in enhancing core functions and core competitiveness, so as to achieve higher quality, higher sustainability and safer development.



Management of Substantive Issues

Identification of material issues

China Unicom has established a selection procedure for sustainable development issues based on the principle of “closely following standards, regularly updating and continuously improving”, closely following domestic and international situations and social hotspots, continuously benchmarking advanced enterprises, and constantly updating sustainable development issues. In 2023, the Company will lead the practise of corporate responsibility with four substantive issues to ensure that the fulfilment of responsibilities meets the needs of society and people’s well-being, and responds to the concerns of stakeholders.



China Unicom Sustainability Issues Selection Matrix

The four major core issues of China Unicom in 2023 were determined through the analysis and selection of the issues collected according to the procedures for selection of sustainability issues and the issues selection matrix.



Communication with Stakeholders

Stakeholder	Communication method	Expectations for China Unicom
Government	<ul style="list-style-type: none"> • Meetings • Face-to-face communication 	<ul style="list-style-type: none"> • Security services during important periods • Zero data leakage
Customers	<ul style="list-style-type: none"> • Meetings • Service hotline • Weibo/WeChat 	<ul style="list-style-type: none"> • Network information security assurance • Personal privacy protection • Accelerating the marketing of innovative products
Partners	<ul style="list-style-type: none"> • Partner conference • Meetings, interviews • Self-service portals of partners • Regular high-level mutual visits with partners 	<ul style="list-style-type: none"> • Promote rapid, healthy and controllable development of network security industry • Promote the development of basic network security platform • Organising seminars to carry out ecological exchange • Broad field of cooperation • Fair and open opportunities for cooperation • Extensive and convenient supporting services • Promote the cultivation and enhancement of key product capabilities • Company operation Green environmental protection • Recycling to reduce pollution • Implements the “dual carbon” goal
Employees	<ul style="list-style-type: none"> • Workers' congress • Online communication with the general manager • Corporate public conference • Democratic life meeting 	<ul style="list-style-type: none"> • Protection of legitimate rights and interests • Broad career development opportunities • Effective vocational skills education • Equal employment equal pay • Opportunities to participate in democratic management • Assistance in difficult time • Comfortable and safe working environment
Community	<ul style="list-style-type: none"> • Meetings • Seminars • Visits 	<ul style="list-style-type: none"> • Continuous and effective donation • Comprehensively promote rural revitalisation • Carry out public welfare volunteer activities • Energy saving and environmental protection of communication equipment
All stakeholders	<ul style="list-style-type: none"> • Meetings • Interviews • Weibo/WeChat 	<ul style="list-style-type: none"> • Increase the proportion of scientific and technological personnel • Increase the proportion of R&D investment • Smart products to improve quality of life • Innovative forward-looking communications technology • Management system adapting to digitalisation, network and intelligence

Enhancing Sustainable Capabilities

In 2023, China Unicom continued to strengthen its responsibility capacity and continuously promote the concept of responsibility rooted in the awareness of all employees. The Company established a two-level sustainability team at the Group and branch/subsidiary levels. It extensively and actively promoted the implementation of responsibility practise and encouraged the improvement of the Group's ability to fulfil its responsibilities through case studies, which resulted in many awards from various sectors.

The Company has sufficient resource allocation in ESG. The Corporate Development Department/Legal Department has a team of senior employees who have been engaged in ESG-related work for many years. The China Unicom Research Institute has a professional ESG research team to support the Company's ESG work, and has sufficient budget for ESG training, report preparation, publicity and communication every year. Relevant personnel engaging in ESG work actively participate in various exchange seminars and training held by the sustainable development industry, pay attention to the development trend of responsibility, learn from the experience of excellent enterprises, and contribute ideas and opinions. In 2023, the ESG training covered more than 100 people, with a training time of 50 hours, helping to promote sustainable development in depth.

- Awarded the “Top 100 ESG Listed Companies in China Value Selection” by Securities Times.
- Awarded the “Asia's Best CSR” by Corporate Governance Asia.
- Awarded the “Platinum Award – Excellence in Environmental, Social and Governance” by The Asset.
- Awarded the “Aona Award-2023 Golden Award for Responsibility” selected by the 6th Social Responsibility Conference.
- Awarded the “Golden Key • Award” by the Journal of Sustainable Development Economy.
- Awarded the “2023 Best ESG Practise Case of Listed Companies” by the China Association for Public Companies.
- Awarded the “Best Corporate Governance Responsibility Award” by Sina Finance Golden Kirin ESG Forum 2023.
- The “Digital Village Platform empowers the construction of digital villages and promotes the construction and innovative practise of rural development management system” was selected into the Blue Book on Social Responsibility of Central Enterprises (2023) by the SASAC, and the “China Unicom's Support for Overseas Students to Witnessing the Strength and Responsibility of Central Enterprises” was selected into the Blue Book on Overseas Social Responsibility of Central Enterprises (2023) by the SASAC.

Appendices

Key Performance

Category	Indicators	Unit	2021	2022	2023
Operations and development	Total assets	RMB billion	591.08	642.66	661.05
	Operating revenue	RMB billion	327.85	354.94	372.60
	Service revenue	RMB billion	296.15	319.35	335.17
	Profit before income tax	RMB billion	17.93	20.59	22.95
	Number of internet billing subscribers	Thousand	317,115	322,698	333,298
	Number of broadband online subscribers	Thousand	95,046	103,630	113,416
	Cumulative number of IoT terminal connections [†]	Thousand	/	385,540	493,911
Network capabilities	Number of customers served by virtual private networks in 5G industry [†]	Units	/	3,805	8,563
	Number of 4G available base stations ⁵	Thousand	1,890	2,276	Over 2,900
	Total number of 5G base station construction	Thousand	690	1,000	Over 1,210
	4G population coverage	%	95	98	99
	Number of fixed network broadband access ports	Billion	0.239	0.250	0.266
	Broadband coverage rate in administrative % villages in ten northern provinces	%	98	99	99
	Gigabit fibre network coverage capacity	Billion households	0.108	0.208	0.356
	Urban 20M or above broadband network	%	99	99	99
	Rural 4M or above broadband network coverage	%	100	100	100
	Coverage rate of mobile network in township	%	100	100	100
	Coverage of mobile network administrative villages	%	93	96	98
	The co-construction rate of pole lines	%	95	95	99.2
	Cable sharing rate	%	93	93	99.6
	Co-construction rate of pipelines	%	85	91	94.9
	Sharing rate of pipelines	%	92	93	98.2
	International internet external bandwidth	G	5,312	5,860	7,000
Commitment in major assurance initiatives	Number of data centre racks	Thousand	312	363	405
	Total number of emergency communication guarantees ⁶	Times	695	672	160
	Emergency communication support personnel ⁶	Thousand person-time	670	790	242
	Mobile emergency communication vehicles ⁶	Thousand vehicle-time	155	285	70
	Investment in emergency communication equipment ⁶	Thousand set-time	172	186	13

Category	Indicators	Unit	2021	2022	2023
Independent innovation	R&D investment	RMB billion	13.23	14.38	15.12
	Number of patent applied	Items	2,224	2,672	4,398
	Number of patents granted	Items	1,128	1,666	2,287
Customer service	Overall satisfaction	Points	81.68	81.97	81.78
	Including: Mobile business customer satisfaction	Points	80.62	81.24	80.93
	Fixed line phone customer satisfaction	Points	88.41	88.34	88.94
	Fixed Internet customer satisfaction	Points	81.84	81.32	81.29
	Customer complaint and report rate ¹¹	Person-time/ million users	–	–	746.5
People-oriented	Total number of employees	Person	243,380	244,658	242,891
	Gender proportion of employees	Male: female	1.62:1	1.63:1	1.62:1
	Proportion of ethnic minority employees	%	6.8	6.8	6.98
	Proportion of female in senior management	%	12.4	12.8	12.3
	Input in employee training	RMB thousand	340,990	333,320	464,650
	Training hours per employee	Hours	94	118	115
	Network college online learning person-time	Person	4,200	5,004	5,986
	Network college per capita learning hours	Hours	2,373	2,465	2,653
	Proportion of contracted employees in labour	%	100	100	100
	Input to help and support employees suffered from difficulties	RMB thousand	70,220	81,000	120,000
	Employee turnover rate	%	1.69	2.18	2.06
	Number of new employees	Person	12,479	13,260	9,446
	Number of new male employees	Person	7,947	8,468	5,975
	Number of new female employees	Person	4,532	4,792	3,471
	Number of employees who voluntarily resign	Person	3,939	3,200	3,321
	Number of male employees who voluntarily resigned	Person	2,515	2,103	2,063
	Number of female employees who voluntarily resigned	Person	1,424	1,097	1,258
	Number of dismissed employees during the year	Person	1,458	2,122	1,686
	Number of dismissed male employees	Person	927	1,369	1,083
	Number of dismissed female employees	Person	531	753	603
	Turnover rate of employees aged below 30	%	6.23	4.23	6.98
	Turnover rate of employees aged 30–50	%	0.94	0.94	1.34
	Turnover rate of employees aged over 50	%	0.10	0.35	0.72
	Turnover rate of male employees	%	1.67	1.39	2.09
	Turnover rate of female employees	%	1.53	1.18	2.01
	Turnover rate of domestic employees	%	1.69	1.31	1.4
	Turnover rate of oversea employees	%	0.58	1.68	3.2
	Number of work-related fatalities	Person	0	0	0
	Rate of work-related fatalities	%	0	0	0
	Lost days due to work injury	Day	0	0	0

Category	Indicators	Unit	2021	2022	2023
Low-carbon development	Special investment in energy conservation and emission reduction	RMB billion	0.13	0.168	0.336
	Greenhouse gas emission reduction	Thousand tonnes of carbon dioxide equivalent	360	120	1,360
	Water resources consumption	Thousand tonnes	16,980	16,630	14,920
	Water consumption density	Tons/RMB Million	51.65	50.72	40.04
	Total energy consumption	Thousand tonnes of standard coal	2,700	2,890	2,920
	Energy saving	Thousand tonnes of standard coal	77	269	415
	Fossil energy consumption	Thousand tonnes of standard coal	100	60	50
	Gasoline consumption ^{7,9}	Millions of litres	37	40	29
	Diesel consumption ^{7,9}	Millions of litres	20	11	9
	Natural gas consumption ⁹	Millions of m ³	5.81	4.65	4.09
	Coal consumption ⁹	Thousand tonnes	40	1	0.3
	Electricity consumption	Billion kWh	20.4	22.2	22.5
	Comprehensive Energy consumption per unit of information flow	Kg of standard coal/TB	3.7	2.4	2.3
	Greenhouse gas emissions ¹⁰	Million tonnes	12.97	13.4	13.25
	Total direct emission of GHG (category I)	Million tonnes	0.53	0.14	0.10
	Total indirect emission of GHG (category II)	Million tonnes	12.44	13.22	13.15
	Sulphur dioxide emission	Tonnes	20	2	0.1
	Scrap disposal and recycling amount	RMB billion	0.456	0.63	0.655
	Disposal of scrapped batteries	Thousand tonnes	12.2	9.3	12.3
	Comprehensive waste treatment volume	Thousand tonnes	33.4	28.7	29.7
Compliance management	Number of employees trained in compliance with laws and regulations	Thousand persons	243	200	300
	Production safety training sessions	Times	119	131	169
	Production safety training coverage rate	%	100	100	100
Community responsibility	Number of registered volunteers	Units	57,550	89,714	95,734
	Credit rating ⁸	Grade	AAA	AAA	AAA
	Total tax paid	RMB billion	7.93	7.11	8.60
	Employment creation	Person	13,038	13,349	9,446
	Total donations	RMB thousand	2,082	1,045	1,436

Notes:

1. Data Description: The data and information collection of this report mainly sourced from the Company's internal data collection system and relevant statistical reports, as well as the corporate sustainable development practise cases submitted by provincial companies. There is no material change in relation to the methods used for prepping the disclosure. The data for 2023 quoted in this report is the final statistical data. If there is any discrepancy between the financial data and the annual report, the annual report shall prevail. The monetary unit adopted in this report is RMB.
2. Please refer to the Description to the Report for the details of the report reference standards.
3. Quality assurance: The Board of Directors and all directors undertake that the information disclosed in the report is authentic, complete and correct, with no false record or misleading statements.
4. To better reflect the Company's good progress in grasping new opportunities, embracing new changes and achieving new development, the Company has adjusted the disclosure of its monthly operational statistics since 22 March 2022, and improved market transparency in a number of key business areas such as "Ubiquitous Connectivity, Innovative Application, Smart Services and Technological Innovation".
5. From the perspective of user perception, in order to more accurately reflect the 4G network coverage, the "number of 4G base stations" was replaced with the "number of available 4G base stations".
6. In 2023, the Company established and improved the important communication guarantee scheduling mechanism, refined the hierarchical and classified management standards, and adjusted the statistical calibre such as the number, personnel, vehicles and equipment investment for important communication guarantee services.
7. With reference to the requirements of ESG information disclosure, gasoline and diesel consumption has been measured by volume unit since 2022.
8. The credit rating of China United Network Communications Corporation Limited was granted by United Credit Ratings Co., Ltd. and China Chengxin International Credit Rating Co., Ltd.
9. The data statistics of petrol consumption, diesel consumption, natural gas consumption, electricity consumption and coal consumption cover the headquarters and 31 provincial branches. The conversion factor of each energy consumption shall refer to "General Rules for the Calculation of the Comprehensive Energy Consumption".
10. Statistical methods of greenhouse gas emissions mainly refer to ISO 14064.
11. The data source of customer complaint and report rate in 2023 is from the Ministry of Industry and Information Technology of the People's Republic of China. Such number adopts different statistical calibres with monthly average complaint rate in the year in 2021 and 2022, thereby 2021 and 2022 data are shown as "--".

Honours and Recognition

- China Unicom ranked 267th in “Fortune Global 500” in 2023.
- China Unicom ranked 277th in “Forbes Global 2000” in 2023.
- China Unicom was voted as “Asia’s Most Honoured Telecom Company”, by Institutional Investor for eight consecutive years. China Unicom was also voted as “Asia’s Best CEO (Telecoms)”, “Asia’s Best CFO (Telecoms)”, “Asia’s Best IR Team (Telecoms)” and “Asia’s Best Board (Telecoms)”.
 - China Unicom was awarded the “Best Overall Company in China – Gold”, the “Best CFO in China – Gold”, “Best Investor Relations in China – Gold” and “Best DEI Strategy in China – Gold” by FinanceAsia.
 - China Unicom was awarded the “Best CSR in Asia”, “Best CEO in Asia”, “Best CFO in Asia”, “Best Corporate Communications” and “Best Investor Relations Company” by Corporate Governance Asia.
 - China Unicom’s website won “Best use of Video – Gold” and “Best Use of Motion Graphics – Gold” in 2023 International W3 Awards, and the Gold Award of the “2023 Astrid Awards” and the Gold Award of the “2022/2023 Mercury Awards” in 2023.
 - China Unicom was awarded the “Best Listed Company” and “Best CFO of Listed Company” by the China Securities Golden Bauhinia Awards in 2023.
 - China Unicom was awarded the “Best in Communications Sector” in the “IR Magazine Awards – Greater China 2023”.

Description to the Report

Reporting Period	From 1 January to 31 December 2023, with some contents exceeding the aforesaid period.
Reporting Cycle	China Unicom (Hong Kong) Limited Sustainability Report is an annual report.
Scope of the Report	This report covers China United Network Communications Limited and its subsidiaries. For the convenience of expression, “China Unicom”, “the Group”, “the Company” and “we” are used in the presentation of this report.
Reporting Reference Standard	Guidelines for State-owned Enterprises to Better Fulfil Social Responsibilities issued by the State-owned Assets Supervision and Administration Commission of the State Council; Guidelines for ESG Information Disclosure of Listed Companies Controlled by Central Enterprises issued by the State-owned Assets Supervision and Administration Commission of the State Council; Guidelines for Preparation of Corporate Social Responsibility Report issued by the Shanghai Stock Exchange; HKEX ESG Reporting Guide; Reporting Reference Standard Guidelines for Preparation of Social Responsibility Report, AQSIQ and SAC; Chinese Academy of Social Sciences’ Guidelines for the Preparation of Corporate Social Responsibility Reports in China (CASS-CSR 3.0); Chinese Academy of Social Sciences’ Guidelines for the Preparation of Corporate Social Responsibility Reports in China (CASS-ESG 5.0); GRI Sustainability Reporting Standards (latest version) issued by the Global Sustainability Standards Board (GSSB); Corporate Social Responsibility Management System of China’s Information and Communication Industry issued by the China Association of Communications Enterprises.
Report Data Description	The 2023 data quoted in this report are final statistical data. In case of any discrepancy between the financial data herein and those in annual report, the annual report shall prevail.
Reporting Quality Assurance	The Board of Directors and all directors undertake that the information disclosed in the report is authentic, complete and correct, with no false record or misleading statement.
Language versions and availability	The Company’s sustainability report is available in both Chinese and English version in both paper and online formats. The Chinese and English version of the online report is available on the website of China Unicom: http://www.chinaunicom.com.hk .
Contact information	Address: China Unicom Corporate Development Department, No. 21 Jinrong Street, Xicheng District, Beijing Postal code: 100033 Fax: 86-10-66258604 Email: cuijc15@chinaunicom.cn

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Notes:

- As China Unicom is a massive entity and its business covers a wide geographical region, currently the Company is not able to produce full statistics over its waste production (including hazardous and non-hazardous categories) as prescribed in A1.3 and A1.4. Upon identification of material topics, we mainly report on the recycling and reuse of main resources utilised by the Company in the course of operation including battery, terminals and comprehensive supplies. The Company will establish related data collection system in the future.
- As the Company mainly engages in the provision of information communication services, packaging material used for the finished products as prescribed in A2.5 is not applicable to the Company's business practice.
- Product recycling indicator involved in B6.1 is not applicable to the actual business of the Company. Through the identification of substantive agenda, the Company mainly reported on the maintenance of network information security, the protection of emergency communication, and the protection of customer rights and interests in accordance with the law.

Chinese Academy of Social Sciences CASS-ESG5.0

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Note:

- As the Company mainly engages in the provision of telecommunication services, packaging for finished products and discharge of waste water and waste gas as prescribed in E2.7-2.8, E3.1-3.4 are not applicable to the Company's business practice.

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Note:

1. Material gases such as ozone-depleting substances (ODS), nitrogen oxides (NOX) and sulphur oxides (SOX) cited in 305-6 and 305-7 are not the major emissions of the Company.

Feedback

Dear Reader,

Thank you for reading China Unicom's 2023 Sustainability Report, which is the eighth sustainability report published by the Company to the public. In order to better provide you and other stakeholders with valuable information while facilitating the supervision of social responsibility works as well as enhancing the capability and standard of performing social responsibility, we would like to have your valuable opinions and suggestions regarding this report.

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• **Your capacity:**

A. Customer B. Shareholder C. Government D. Community E. Business partner F. Media G. Social organization
 H. Others (Please specify) _____

• **Overall evaluation of China Unicom's Sustainability Report:**

A. Excellent B. Good C. Fair D. Not Satisfactory E. Poor

• **Evaluation of China Unicom's performance in economic, social and environmental responsibilities:**

Economic responsibility A. Excellent B. Good C. General D. Not Satisfactory E. Poor

Social responsibility A. Excellent B. Good C. General D. Not Satisfactory E. Poor

Environmental responsibility A. Excellent B. Good C. General D. Not Satisfactory E. Poor

• **Response and disclosure in this report in connection with the concerns of stakeholders?**

A. Excellent B. Good C. Fair D. Not Satisfactory E. Poor

• **Overall evaluation of this report in terms of the clarity, accuracy and integrity of the disclosure of information, data and index:**

Clarity A. Excellent B. Good C. General D. Not Satisfactory E. Poor

Accuracy A. Excellent B. Good C. General D. Not Satisfactory E. Poor

Integrity A. Excellent B. Good C. General D. Not Satisfactory E. Poor

• **Readability of this report in terms of content arrangement and layout design?**

Content Arrangement A. Excellent B. Fair C. Poor

Layout Design A. Excellent B. Fair C. Poor

• **Any other opinion/suggestion for our work and report of sustainability?**

Thank you for your feedback and precious time.



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