

SOCIAL
RESPONSIBILITY
REPORT OF
2019



Connect You and Me
and Let Responsibilities Grow



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MESSAGE FROM CHAIRMAN

The year 2019 marked the 70th anniversary of the founding of the People's Republic of China. It also was a political development year when both the central inspection and rectification work and the thematic education of "Remain true to our original aspiration and keep our mission firmly in mind" were pushed forward; a transformation year when downward pressure was withstood on the one hand and the transformation determination and efforts were held fast to on the other hand; and a historically converging year when the industrial ecosystem was reshaped and the 5G general trend was set to "stabilize today and benefit future in the long run". Under the strong leadership of the CPC Central Committee with Comrade Xi Jinping as the core, we studied in depth and put into practice the spirits of the 19th CPC National Congress and the plenary sessions of the 19th CPC Central Committee. We exerted our efforts to handle the key matters, to stabilize the overall situation and set the general trend. We persisted in the new development philosophy, upheld the strategy of focus, innovation and cooperation, deepened the building of a "Five New" establishment, implemented Internet-oriented operation transformation, further promoted the mixed-ownership reform, insisted on the sustainable development road, and drove the growth of social responsibilities in corporate operation and development, to make new contributions to satisfying people's growing needs for a better information life.

Implemented the strategy of building China into a cyber power and empowered industries to transform and upgrade. We earnestly put into practice General Secretary Xi Jinping's discourse on the strategy of building China into a cyber power, and gave full play to our role as a "main force" in cyber power and digital China building. We accelerated the construction of a new generation of high-speed, mobile, safe and ubiquitous information infrastructure, boosted network supply-side structural reform and promoted 5G development in a new model of co-build and co-share to double the coverage, access speed and bandwidth. The 4G network supported the automatic provisioning of VoLTE service, the population coverage rate reached 93%, and the network speed kept leading the industry. The number of our broadband network ports came up to 221 million, and the Gigabit to the Home demonstration was conducted in 131 cities on the basis of the Megabit broadband. We exerted more efforts on providing faster and more affordable Internet connection and number portability. The rates for mobile network data traffic, broadband and Internet private lines for SMEs, and international roaming were cut down respectively by more than 20%, 15% and 29%, and the number portability service has been successfully provided nationwide, to practically bring benefits to people, enable them to enjoy communications freedom and facilitate information consumption upgrading. Upholding that "Innovation is the primary engine of development", we sped up efforts to make breakthroughs in core technologies in the information field such as 5G, cloud computing, big data, IoT, AI, blockchain and quantum communications, and submitted 500 contributions on international standards and applied for 1,439 patents. Besides, we propelled the in-depth integration between digital economy and real economy at a faster speed, focused on key industries such as e-government, education, health care, transportation, tourism and industrial manufacturing, deepened the layout of innovation service capability, as well as provided diversified "smart +" applications and 5G industrial applications to facilitate the transformation and upgrading of traditional industries, economy and society and the replacement of old growth drivers with new ones.

Adhered to the people-centric principle and promoted social sustainable development. We have always been committed to sharing

the development results of the communications industry with hundreds of millions of people to a larger extent, and taken meeting people's growing needs for better communications as our starting point and objective for development. We put into practice the high-quality development requirements in depth, energetically promoted service innovation and business model innovation, and were among the first to publish our 5G brand logo "5G™" and the thematic slogan "Let the future grow". We continued to complete our smart home product system, launched cross-field integrated service products in an innovative way, created intensive and intelligent big service experience, as well as did a good job in preventing and cracking down on communications information fraud, to provide citizens with good information services that they may use with trust. We created a general pattern for poverty alleviation and exerted more efforts to targeted poverty alleviation. We assumed the task of targeted assistance to 1,198 poor counties, arranged 322 poverty alleviation projects through industry development, and drove work on information universal service and poverty alleviation through network development with the coverage rate of mobile network in those administrative villages reaching 84%, to help win the battle against poverty and build a moderately prosperous society in all respects. We successfully completed the task of guaranteeing communications for the celebration of the 70th anniversary of the People's Republic of China and other events, exerted full efforts to the fight against the COVID-19 epidemic, donated RMB30 million for epidemic prevention and control in the first place, and finished the communications network building for Huoshenshan Hospital and Leishenshan Hospital in Wuhan in record time, manifesting our strength as a central enterprise. Believing in the development philosophy that human and nature are a community of life, we invested more in the promotion of low-carbon technologies and the shutdown of outdated production capacity, strengthened the management of electromagnetic radiation, built green digital business outlets and green supply system, as well as developed green solutions in an innovated way, to help to realize ecological benefits for people.

Called for consultation, co-construction and co-creation to build a smart cooperation ecosystem. We have always followed the cooperation philosophy of "consultation and co-construction for win-win results", and kept expanding the cooperation dimension, width and depth with strategic investors and industry chains. We published a brand-new smart ecosystem strategy, formally launched the ecosystem cooperation brand "Unicom Empowerment", established a hierarchical, layered and ladder-style cooperation system, and arranged the three ecosystems of smart home, big video and pan-smart terminal. We sped up the establishment of a cooperation and innovation system for 5G development by setting up "5G Application Innovation Alliance" and "5G International Cooperation Alliance", launching a "Pioneer Program", focusing on 10+ key industries, incubating industry application products, innovating business models, developing industry standards, and building a capital cooperation platform, in order to create a thriving new ecosystem for 5G industry. We explored a new platform-based cooperation model for different industries, and enhanced cooperation with chain businesses such as the post, finance, insurance, lottery, gas station, and express delivery, to share resources for win-win cooperation. We deepened cooperation with capitals by establishing joint ventures Yunjing Culture and Tourism, Yundee and iCloudShield respectively with Tencent, Kingdee and Qi An Xin, and introducing JD as a strategic investor in Smart Steps. We persevered in promoting ecosystem building in the industry, and correcting and controlling such vicious competition at the cost of customers' interests and industrial value, so as to drive the sustainable and healthy development of the whole industry.

Further pushed forward the mixed-ownership reform to improve the governance capability of the enterprise. We implemented the spirit of the Fourth Plenary Session of the 19th CPC Central Committee in earnest, and carried out the discussion of "Three All" in the thematic education of "Remain true to our original aspiration and keep our mission firmly in mind" to promote the modernization of both the governance system and capability. The streamlining and re-organization was deepened and the organizations of branch companies at provincial and city level were streamlined by 10.5% and 24.7% respectively. The sub-division reform was advanced iteratively. A total of 24,000 "small CEOs" were selected and about 177,000 employees joined the sub-divided units accumulatively, truly arousing their sense of ownership and taking the company as their home. Human resources reform was comprehensively boosted by implementing three systems' reform, formulating "20 provisions" for staff team building, enhancing the building of young leaders' team and promoting personnel supply side structural reform. The four levels of professional talents totaled 15,000. We also kept following the incremental gains sharing mechanism and re-shaped the education and training system. The employees' senses of gain and happiness continued to improve. Internet-oriented operation transformation was implemented revolving around experience, marketing, product, IT, network, platform and ecosystem, and management, to drive the enterprise to improve both quality and efficiency. The mixed-ownership reform at the operation level was deepened. The all-field entrusted contract-out operation reform in Yunnan Branch was completed and the socialized cooperation reform in 7 city-level companies of Guangxi Branch was moved forward in an overall way. In addition, we carried out rectifications of "institutionalized" problems identified in the Headquarters, and actively carried forward 26 rectification tasks in 6 aspects to boost the Company's high-quality development. The mixed-ownership reform of China Unicom has not only consolidated state-owned capitals, but also offered ideas to how to make SOEs stronger, better and larger.

The year 2020 is the last year of building a moderately prosperous society in all respects and the 13th "Five-year Plan", and also the starting year for the comprehensive construction and operation of 5G. China Unicom will take Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the guidance, fully implement the spirits of the 19th CPC National Congress, the 2nd, 3rd and 4th Plenary Sessions of the 19th CPC Central Committee, put into practice the arrangements of the Central Economic Working Conference, and stick closely to the objectives and missions of building a moderately prosperous society in all respects. We will adhere to the general principle of pursuing progress while ensuring stability, follow the new development philosophy, stick to the main line of supply-side structural reform, keep taking deepened reform as the driver, hold fast to the Strategy of Focus, Innovation and Cooperation, further push forward the mixed-ownership reform, and build the "Five New" establishment. We will solidly advance the comprehensive Internet-oriented operation transformation by moving around "value, development, fundamentals and passion", and strive to create a new paradigm of high-quality development to make contributions to the building of a moderately prosperous society in all respects and the success of the 13th "Five-year Plan".

Chairman of China United Network Communications Group Co., Ltd.

WELCOME TO CHINA UNICOM

🏠 Company Profile

China United Network Communications Group Co., Ltd. (“China Unicom”) was officially established on 6 January 2009 on the basis of the merger of former China Netcom and former China Unicom. It has subsidiaries in 31 provinces (autonomous regions and municipalities) across China and many countries and regions around the world. It is the only Chinese telecom operator listed on the stock exchanges in New York, Hong Kong and Shanghai. It has been listed in Fortune 500 for eleven consecutive years, and ranked the 262nd in 2019.

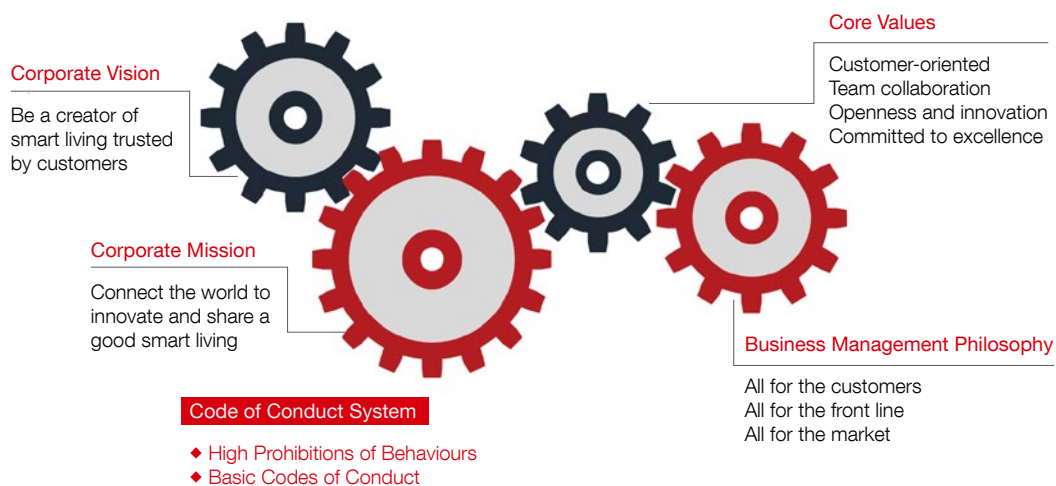
The main businesses operated by China Unicom include fixed and mobile communications services, domestic and international communications facilities services, satellite IPLC service, data communications service, network access service and value-added telecom services, as well as system integration service related to information and communications services. On 28 April 2009, China Unicom rolled out an all-service brand “WO”, which represents our innovation service philosophy and provides comprehensive services to individuals, family customers and group clients. China Unicom owns a modern communications network covering entire China and linking the world. We have been actively pushing forward broadband-based fixed and mobile network development,

and promoted the implementation of the cyber power strategy at the corporate level so as to provide comprehensive and high-quality information and communications services to the wide users. China Unicom is a dual-4G operator, i.e. having both the TD-LTE and the LTE FDD 4G licences. Now, China Unicom has entered a new phase of 4G development. On 23 April 2019, China Unicom officially launched its 5G brand logo “5Gⁿ” and the theme slogan “Let the future grow”.

In 2019, China Unicom put into practice the new development philosophy further, implemented the high-quality development requirement resolutely, took the initiative to advance the industrial ecosystem building, carried out 5G network co-building and co-sharing in a strong way, continued to deepen the mixed-ownership reform, and kept enhancing the building of a “Five New” establishment. In future, under the leadership of the CPC Central Committee, China Unicom will intensify the implementation of its focus strategy, push forward the mixed-ownership reform in depth, and continue high-quality development guided by innovation and transformation, to contribute to the achievement of the first Centenary Goal of building a moderately prosperous society in all respects.

🏠 Cultural Philosophy

In 2019, China Unicom continued corporate culture development exercise, to improve its cultural soft strength and competitiveness, and invigorate and make the enterprise strong with the aim to contribute to the strategy of making China strong by culture development. China Unicom’s corporate culture system comprises a core value system, including the Company’s vision, mission, core values and business management philosophy, as well as a code of conduct system consisting of the “High Prohibitions of Behaviours” and the Basic Codes of Conduct.

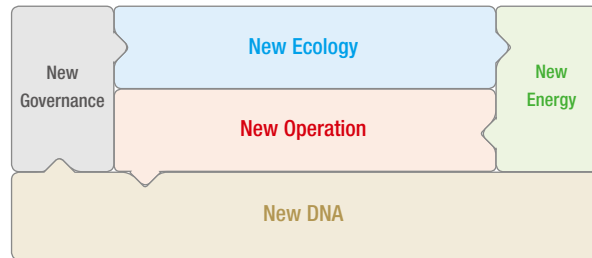


China Unicom Corporate Culture System

🏠 Corporate Strategy

China Unicom meticulously implemented the development philosophy of “innovation, coordination, eco-friendliness, openness and sharing”, persisted in practicing people-centric development, and deepened the implementation of the Strategy of Focus, Innovation and Cooperation as well as pushed forward the mixed-ownership reform further in accordance with its resource endowment. Guided by the building of a “Five New” establishment, the Company advanced Internet-oriented operation, and took the initiative to make innovation and transformation in all fields such as organizational structure, human resources, sub-divided unit reform, and mixed-ownership reform in subsidiaries. In the future, the Company will

continue to stick to the leadership of Party building in guiding reforms and development, thoroughly implement the new development philosophy, invigorate the enterprise by developing culture, foster solidarity among staff and intensify reforms to start China Unicom's high-quality development road and contribute to the building of a moderately prosperous society in all respects and the success of the 13th "Five-year Plan".



China Unicom Strategic Framework

Management



Wang Xiaochu

Secretary of Party Leadership Group
Chairman



Li Fushen

Deputy Secretary of Party Leadership Group
Executive Director



Mai Yanzhou

Member of Party Leadership Group
Vice President



Liang Baojun

Member of Party Leadership Group
Vice President



Zhu Keping

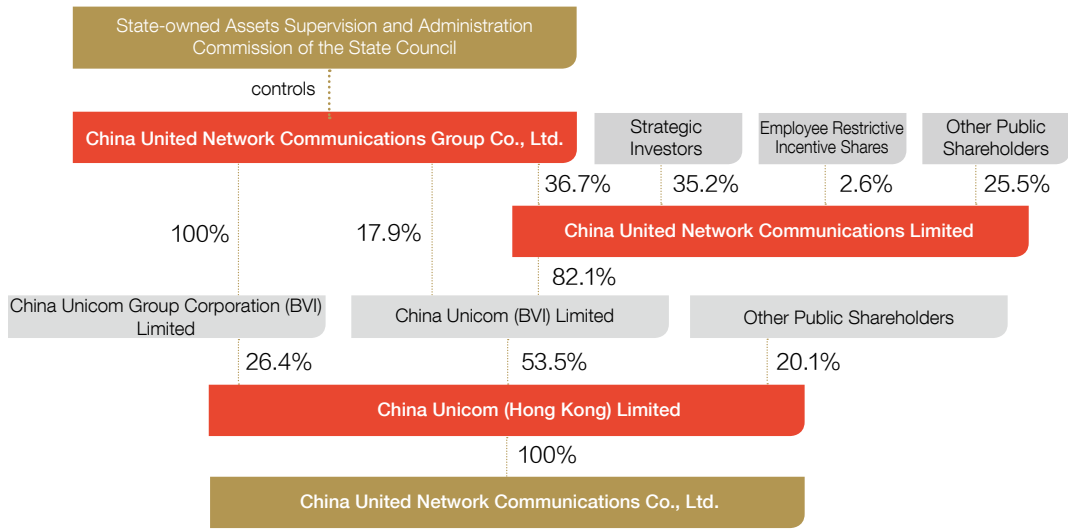
Member of Party Leadership Group
Chief Accountant



Fan Yunjun

Member of Party Leadership Group
Vice President

Equity Structure



China Unicom Equity Structure

Note:

1. Data as of 31 December 2019.
2. The shares of China United Network Communications Limited held by strategic investors represented the shares acquired by the strategic investors introduced by the mixed-ownership reform from non-public share issuance and transfer of existing shares.
3. The shares held by China Unicom Group Corporation (BVI) Limited excludes the preemption interest in 225,722,791 shares of China Unicom (Hong Kong) Limited.

Organizational Structure

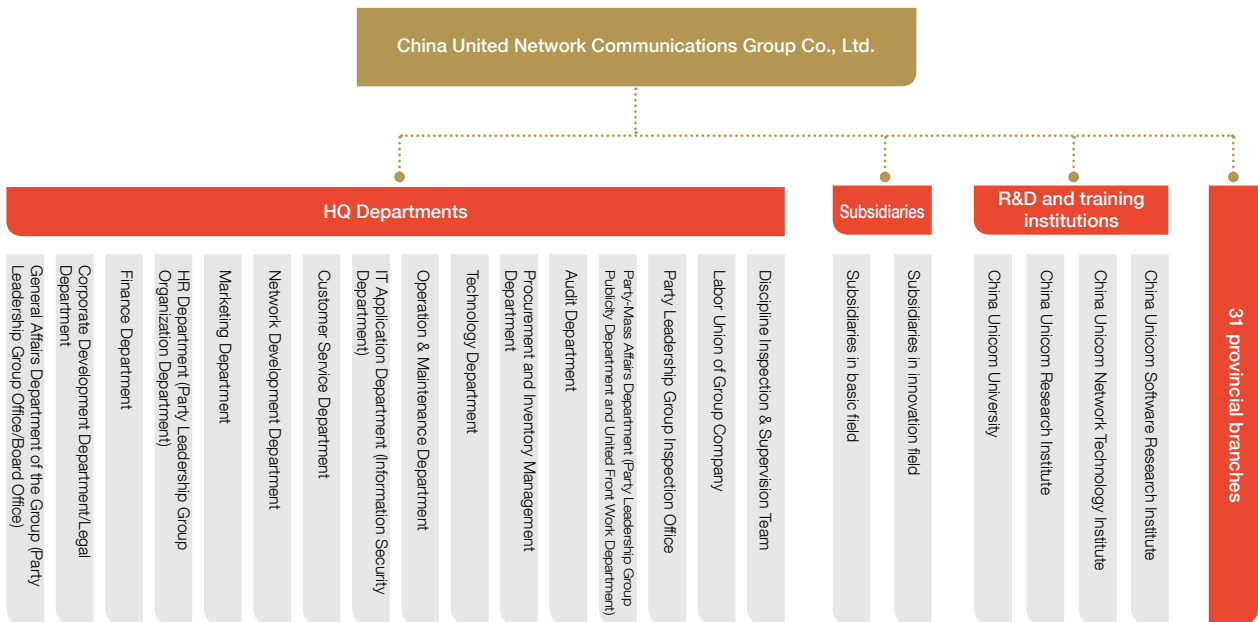


Chart of China Unicom Organizational Structure



Striving to be a “Pioneer” in Deepened SoEs Reform

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Striving to be a “Pioneer” in Deepened SoEs Reform

As the first enterprise implementing the mixed-ownership reform in the whole Group, China Unicom sticks to high-quality Party building to lead high-quality development, further implemented the reform guideline of “enhancing governance, strengthening incentives, protruding core businesses and raising efficiency”, and advanced the reform in depth on the basis of completing the ownership mixing by promoting streamlining and re-organization, three systems’ reform, sub-division reform, operation-level mixed-ownership reform and Internet-oriented transformation, offering useful experience to deepening the SoEs reform.

Measures adopted in 2019

- Carried out the discussion on “Three All” and accepted the monitoring from wide Party members and masses.
- Streamlining and re-organization 2.0 started to take effect, the provincial and city-level branch companies’ institutions were respectively reduced by 10.5% and 24.7% year by year, and the number of managers at provincial branch companies were cut down by 12% at average.
- All-production scenario sub-division reform went further and deeper, and the reform in the network line took the initial effect.
- Seriously implemented the “Dual Hundred Action”, and Yunnan branch company and CUSU were in the first batch of branch/subsidiary level pilot mixed-ownership reform.
- On the basis of Internet-oriented operation transformation 1.0, the Internet-oriented operation transformation 2.0 was fully promoted taking into account the environment changes inside and outside of the Company.

Actions to be taken in 2020

- To continue to consolidate and practice the results of the “Three All” discussion and facilitate normalized operation of the through train to Party Leadership Group.
- To keep carrying out all-production scenario sub-division reform, based on which to take customers as the center, re-establish the organizational order system in the market line and re-constitute the peripheral production organization system.
- To start the “deep dive” of mixed-ownership reform, and socialized operation cooperation will be explored by China Unicom Guangxi branch.
- To implement Internet-oriented operation transformation 2.0 in depth, improve the execution capability of the organization, and perfect supporting safeguarding mechanisms.

Upholding the Guidance of Party Building Work

China Unicom earnestly implemented the arrangements and requirements of the CPC Central Committee, studied the spirits of the 19th CPC National Congress as well as the 2nd, 3rd and 4th Plenary Sessions of the 19th CPC Central Committee, stuck to and strengthened the comprehensive leadership of the Party to the enterprise, and made solid progress in Party building within the enterprise. The Company made an all-out effort to enforce strict Party discipline, highlighted its political capability and enhanced its organizational capacity, intensified inspection and rectification efforts, and moved forward the anti-corruption and integrity upholding work, so as to drive the Company’s high-quality development with high-quality Party building.

Strengthening political development

Enhancing ideological education

China Unicom has always taken studying and putting into practice Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the primary political task, kept implementing the spirits of the 19th CPC National Congress and plenary sessions, exerted efforts to deeply comprehend the spirits of the key speeches, instructions and comments of General Secretary Xi, followed up and studied in time important



Chairman Wang Xiaochu gave a Party lecture to students of the Party School

discourses, including those on the cyber power strategy, implementing the new development philosophy, and practising the people-centered development idea, formulated several special implementation plans after studies, gave full play to the demonstration and model role of the central group, and diversified the means and contents of theoretical study for employees.

◎ Incorporating the Party building work into the Company's central work

The setup of grass-roots Party organizations was regulated and incorporated into the organizational system of the enterprise. China Unicom carried out rationality check of the setup of Party branches, with a special focus on the irrational setup of joint Party branches and requiring them to make rectifications immediately, to practically strengthen the effective coverage of grass-roots Party organizations.

Enhanced the management of Party members and brought into play the pioneering role of Party members. China Unicom organized a comprehensive investigation of the politics status of all contract employees one by one to straighten out their Party membership and include them into corresponding grass-roots Party organizations for management.

Intensified the management of corresponding supports and strove to improve both quality and efficiency. China Unicom explored and implemented an access system for Party workers to further enhance the capabilities of the Party workers' team. We further optimized the assessment and evaluation measures for Party building work to give play to the role of Party building assessment as a "baton" or a "wind vane".



"Youths' Hearts for the Party, Making Contributions in a New Era" - China Unicom Communist Youth League theme day for commemorating the 100th anniversary of the May 4th Movement



China Unicom "70 Years in Lights & Shadows" special activity



Red education theme month activity for employees



Branch companies nationwide watched/listened to the live broadcast of the 70th anniversary celebrations of the founding of the People's Republic of China in different ways

◎ “Remain true to our original aspiration and keep our mission firmly in mind” thematic education – “Three All” discussion

In accordance with the unified arrangement for the thematic education “Remain true to our original aspiration and keep our mission firmly in mind” made by the CPC Central Committee, China Unicom combined the thematic education with tour inspection & rectification, and carried out a large-scale discussion on “Three All” (all for customers, all for the frontline, and all for the market) in an innovative way of “Internet +” based on its responsibilities and missions as a national basic communications operator, accepting the open monitoring from wide Party members and the masses. Featuring in dragnet investigation and list-based rectification, the discussion focused on hot issues at the primary level and ploughed into rectifications, through which, benign interaction has been built between the grass-roots and the headquarters, solidarity and collaboration have been established among departments, formalism and bureaucratism have been effectively dealt with, and grass-roots burden reduction has been promoted. The “Three All” philosophy has been deeply rooted in the hearts of the staff. Team awareness, service awareness and innovation awareness have been effectively enhanced. The discussion has also been highly recognized by the central theme education guidance team and the tour supervision team, and widely praised by grass-roots employees.



“Three All” theme activities were carried out in different ways in different provinces

Problems collected exceeded **50,000**

Nearly **18,000** employees & **8,000** Party branches participated in questions posing

Problems' resolution rate reached **91%** Overall satisfying rate reached **94%**

◎ Deepening anti-corruption work

China Unicom promoted the reform of the discipline inspection and supervision mechanism in depth, further enhanced the supervision responsibility of the discipline inspection and supervision team by innovating the organizational way and perfecting the system & mechanism, and consolidated the landslide victory from combating corruption, to drive forward the building of the system and mechanism for the officials “dare not corrupt, can't corrupt, and do not want to corrupt”, and realize high-quality development for discipline inspection and supervision work.

- Advanced the reform of discipline inspection and supervision system and mechanism, established and completed supporting systems, as well as made adjustments and improvements in terms of the leading system, working mechanism and management system of discipline inspection and supervision in the enterprise.
- Intensified supervision of rectifications against problems identified in central tour inspection, implemented and detailed daily supervision, deepened work style construction, and continued the rectification of prominent formalist and bureaucratic problems.
- Organized and carried forward the “three-in-one” (entity channels, social agents and commission payment) special inspection, handling and accountability work, which is expected to retrieve a loss of RMB388 million for the Company, and suspend and save RMB288 million of commissions.
- Continued to maintain a tough position in cracking down on corruption and the political environment in the enterprise has been improved significantly. Based on the year-on-year decline of 21% in 2018, the number of letters and visits for whistle-blowing received within the whole system was down by another 8% year on year in 2019. Clarified and justified leaders who were maliciously accused of, and selected and made public some typical false reporting cases in the whole system.
- Revised “China Unicom Management Measures of the Black List of Suppliers”, and established a punishment mechanism against staff who seek “options” corruption within 3 years after resignation or retirement.
- Strengthened discipline education and normalized the warning education. In 2019, the Company carried out 4 special warning education oriented to the Party members and leaders in the whole system to raise their self-consciousness of “do not want to corrupt”.

19,000 Party members & leaders participated in the online reporting of their situations in abiding by the Six Disciplines of the Party

Held annual routine talks for **21,000** person-time

Circulated **18** notifications on formalism and bureaucratism cases in **4** times in the whole year

◎ Promoting compliance operation

Legal compliance operation is an indispensable factor for maintaining an enterprise's sustainable benign development. China Unicom has always taken compliance management as its development cornerstone, and exerted efforts to improve the enterprise's compliance management level, enhance compliance operation responsibility, and perfect compliance management system to develop a compliance management paradigm with all staff participation, clear responsibilities and whole-process supervision, and a corporate atmosphere laying stress on compliance operation.

◎ Operation in compliance with laws and regulations

We established a legal compliance philosophy and management system, and stated clearly to take “establishing and improving a compliance management system and promoting the effective implementation of compliance management” as a legal construction priority of China Unicom in 2019.

Organized legal compliance training for **2,514** times
245,000 employees participated in legal compliance training

- Printed and issued “China Unicom Compliance Management Measures (Trial)” and “China Unicom Integrity and Compliance Manual”, laying a solid foundation for developing compliance management rules and regulations.
- Put into practice the 7th Five-year Plan for Legal Publicity and Education, and created a legal culture atmosphere through diversified legal publicity work. Compiled 8 issues of “Special Issue on Law Learning for Leading Cadres” and “Special Issue on Rule of Law Information”, publishing over 180 articles on law popularization; and carried out several special law popularization activities such as knowledge contests on “3.15” World Consumer Rights Day, “4.26” World Intellectual Property Day and “12.4” National Constitution Day. The Law Popularization Office of the Group was awarded as a National Advanced Group in the Interim of the 7th Five-year Plan for Legal Publicity and Education. Legal cases and knowledge were compiled and distributed in multiple forms including both online and offline ways.
- Held China Unicom “Compliance Wo” micro-video contest, solicited 377 works, and promoted award-winning works on China Unicom’s Pioneering Study Platform.
- Opened a WeChat public account “China Unicom Compliance Wo” to regularly push and update compliance management knowledge, introduce China Unicom’s latest compliance work, and build a corporate image of compliance management for China Unicom.
- During the year, about 880,000 economic contracts were signed, and both the review rate and the performance rate of the contracts reached 100%.

◎ Risk preventio

China Unicom continued to improve its internal control system, published 83 regulations and rules, updated and optimized “China Unicom Internal Control Regulations”, which enhanced the risk management level.

- Gave full play to the role of internal audit and other joint forces of internal supervision, kept improving the internal supervision system, fulfilled the requirements of “necessary and strict audit and accountability” in fields with major operation risks and critical business links, and comprehensively advanced the whole coverage of audit.
- Enhanced process control, and produced a differentiated overall assessment report for 31 provinces; unified smart finance sharing service regulations, and consolidated financial fundamental management to strongly support operation risk management; and vigorously did a good job in the verification of the joint venture’s equity investment in advance, the cooperation plan and the relevant risk prevention.
- Seriously held responsible for illegal operation, received 84 clues on illegal operation, dealt with 117 people and recovered a loss of RMB3.4 million.

🔧 Pushing forward Mixed-ownership Reform in Depth

🔧 Streamlining and re-organization for higher efficiency

In 2019, China Unicom continued to reform its organization and pushed forward streamlining and re-organization 2.0. Oriented at an Internet-based organizational system and governance capability modernization, the Company intensified overall planning and intensive sharing, and exerted efforts to make the front end stronger, the middle end more solid and the back end more professional, so as to build an organizational system with clear responsibilities, fast response and strong execution, and accelerate its transformation from “government-led management and administrative operation” to “corporate management and market operation”.

YoY Provincial branch companies’ units were cut down by **10.5%** YoY, city-level branch companies’ units down by **24.7%**

Number of managers at provincial companies reduced by **12%** on average

🔧 Human resource reform for stronger incentives

Centering on marketization, and focusing on three reform topics of management of leaders, supply of talents and positive incentives, China Unicom carried forward the reconstruction of the human resource management system and the mechanism innovation in a systematic way and used innovative mechanisms to stimulate vitality and unite strengths.

- Attached importance to the leading role of corporate strategies, to fully reflect the orientation of resource allocation, the effectiveness of vitality stimulation and the perspectiveness of talents development, and to rebuild the Company’s core competitiveness in the HR field.
- Laid emphasis on the systematicness, integrality and synergy of reform, and facilitated the HR systems and mechanisms to cooperate with each other in plan design, to support each other in implementation and to complement each other in the reform effects.
- Laid stress on the pertinence and accuracy of reform, insisted on the principle of classified reform to define organization and personnel classification, and implemented differentiated resource allocation and management mechanisms; paid attention to the integration of marketization and humanization to enhance employees’ sense of gain from the reform.

📍 Sub-division reform showing effects

All-production scenario sub-division reform is a specific practice to implement the major decisions and arrangements of the Party and the state such as those made at the Central Economic Working Conference and the Symposium on SOE Reform, an important way to promote the mixed-ownership reform, a strategic arrangement to build "Five New" establishment, as well as a practical action to fulfill the "Three All". In 2019, China Unicom drove further the all-production scenario sub-division reform in an overall way by establishing a value creation-oriented assessment, stimulation and allocation model for responsibilities, rights and benefits, and building a service supporting system that efficiently transmit the demands of customers and the frontline within the enterprise, in order to stimulate the vitality of the frontline production units at a wider range and deeper level, bring vitality to employees and the enterprise, and increase and share value between employees and the enterprise at the same.

Established **25,000** sub-divided units nationwide **177,000** employees in contract-out units

📍 Picking out and promoting talents and decentralization

The sub-division reform has achieved remarkable results in stimulating vitality at the frontline, facilitating development and increasing business volume and revenue. Small CEOs of the sub-divided units is a key link in such reform. In terms of the employment of small CEOs at all levels, education background, job grades, qualifications and other static requirements are no longer limiting conditions, instead, capabilities and performance are the ones with particular focus. Meantime, the Company deepened streamlining and re-organization, and guided outstanding employees at the home office at different levels to engage in those sub-divided units to transmit the freshest and the most energetic blood to the frontline.

In order to further stimulate the vitality of the grass-roots units, incremental income sharing mechanism is implemented for sub-divided units. Featuring in real open budget, full authorization, and more resources allocated to the grassroots, the mechanism aims to enable the grass-roots units to "control costs, arrange investment and allocate remunerations by themselves", promote small CEOs to fulfill "independent operation and self-management", to gradually transform to being benefits-oriented, effectively stimulate their operation vitality and value creativity, and motivate the frontline to roll up their sleeves to work harder.

📍 Sub-division reform at the network line for cost reduction and efficiency improvement

Focusing on the goal of improving both quality and efficiency, China Unicom further advanced the sub-division reform at the network line based on energy consumption cost, tower cost and other critical cost control scenarios, and stimulated the transformation potentials and struggle vitality of a batch of staff engaging in operation and maintenance. In 2019, the number of grids at the network line increased by 155% year on year, and the number of grid workers grew by 101% year on year.

China Unicom Henan Luohe branch company optimized its network grid and established a trinity network value and operation system of "gross profit led + incremental income sharing + KXI assessment", through which it was the fastest one in dismantling old equipment and effectively reduced network operation cost. In the meantime, it drew on collective wisdom, transformed the 2G equipment withdrawn from the network and re-introduced it into production. In 2019, the company accumulatively gained RMB7.84 million from tapping potentials and improving efficiency, contributed a profit of 16.8%, and shared incremental income RMB265,000. The per capita income was RMB27,000, the labor productivity increased by 5.6%, the grid per capita income was up by 14.5%, and the income of the small CEO grew by 29.3% on average.



“‘Re-employment’ of 2G Equipment Withdrawn from Network in China Unicom Luohe Branch”, published in People's Posts and Telecommunications on 15 October 2019

China Unicom Hebei branch company took the lead in launching a virtual micro organization "Transmission BU" based on the model of professional projects. The BU applied a project-based management system, and explicitly defined the reward and punishment policy through signing an open and transparent agreement. It targeted 9 network projects, used intelligent means to improve efficiency, cut down costs through network optimization, realized self construction, self maintenance and enhanced capability. During the year, a total of RMB4.095 million of value creation incentive was achieved, which was shared based on the quantitative work of team members, reflecting more pay for more work and breaking the "big-pot" distribution system.

◎ Setting models and empowering the frontline

China Unicom set models by inviting local network and small CEOs who did a good job to share their experience, as vivid grass-roots practices and experience could not only enhance the frontline staff's initiative and creativity, but also contribute more wisdoms to comprehensively deepening the reform through refinement and sublimation. The Company established a frontline-oriented excellent case sharing mechanism, and organized frontline experience communication video meeting, on-site view and learning, and other activities, to strengthen communication among companies and small CEOs. In December 2019, an "Appraisal Contest on Excellent Cases on Grass-roots Innovation Practices in Sub-division Reform" was held as an appraisal and demonstration stage to select replicable, referential and propagable excellent cases to motivate and empower the frontline.



China Unicom Appraisal Contest on Excellent Cases on Grass-roots Innovation Practices in Sub-division Reform in 2019

◎ Injecting vitality to mixed-ownership reform of operation

◎ China Unicom Yunnan branch's "Xiaogang Village reform"

In May 2019, on the basis of previous socialized cooperation pilot work carried out in prefectural companies, China Unicom Yunnan branch company, as the only provincial branch of a central enterprise in the "Dual Hundred Action", signed "Dual Hundred Action" cooperation agreement on comprehensive reform with Jiangsu Hengtong Optic-Electric Co., Ltd., Ningbo Yajin Electronic Technology Co., Ltd., and Beijing Sinonet Science & Technology Co., Ltd., and officially launched China Unicom Yunnan branch-wide socialized cooperation.



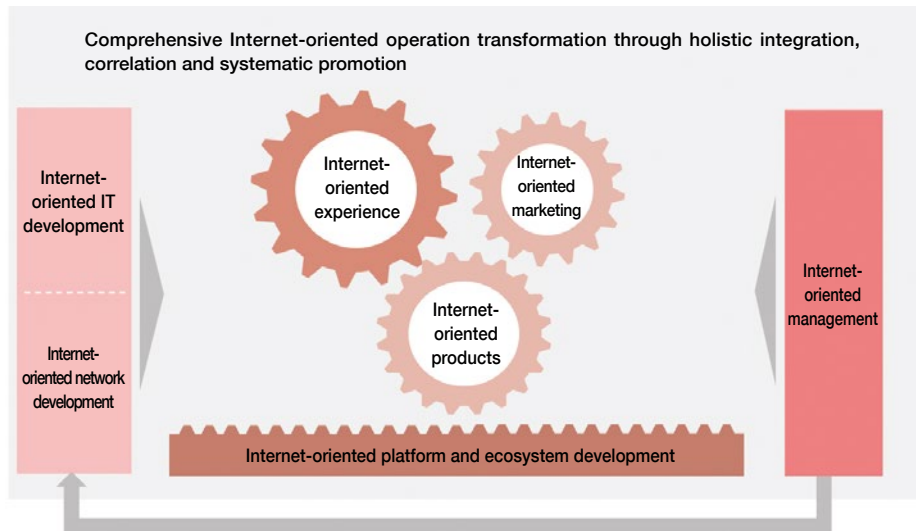
Signing ceremony of the "Dual Hundred Action" cooperation agreement on comprehensive reform

◎ China Unicom Guangxi branch started mixed-ownership reform

In November 2019, China Unicom Guangxi branch started the open recruiting of socialized operation partners for its 7 prefectural sub-branch companies. The finalists will be responsible for contributing capitals and building the access layer network and the innovation service platform for Guangxi branch's subordinate prefectural companies including the one in Liuzhou.

Implementing Internet-oriented Transformation

In 2019, based on the Internet-oriented operation transformation 1.0, China Unicom advanced the comprehensive transformation 2.0 by taking into account the environment changes inside and outside the Company, and strove to be a 360° digital life creator trusted by customers on the road to build a world-leading enterprise.



The comprehensive Internet-oriented operation transformation 2.0 served customers from the perspective of 360° digital life, reviewed and transformed the existing products and marketing system by taking customer experience into consideration, and made innovations of both the platform and the ecosystem, to drive the open evolution of networks and IT, break through management bottlenecks, activate the organization, drive the transformation towards comprehensive Internet-oriented operation in a systematic way, as well as continuously raise customer awareness, and improve employees' engagement and operating efficiency.





Striving to be a “Key Contributor” to National Cyberpower

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Striving to be a “Key Contributor” to National Cyberpower

China Unicom has shouldered the responsibility to build China's industrial leadership and made its endeavor to be a key contributor to national cyberpower. It has continued its intensive efforts in building the ICT infrastructure, enriching the portfolio of communications products and services, vigorously enhancing network quality and customer experience, and improving the level of overall ICT development in China with an aim to solidify high-quality national development, provide customers with satisfactory quality communications services and allow more consumers to benefit from the dividends of technological advancement and to enjoy better business experience.

Measures adopted in 2019

- In 2019 - the year when 5G began to take off, commercialized 5G and released a new brand logo 5G⁺ and slogan – “Let the future grow”.
- Continued to improve network speed and cut down tariff. The average mobile data tariff was further reduced by over 20%, the average broadband tariff for SMEs further down by 15% and data roaming charge between the Mainland and Hong Kong/Macao down by another 30%.
- On 6 November 2019, China Unicom launched commercial trials for phase-I functionality of cross-region services and products. On 27 November, number portability service went fully fledging.
- Continued an intensive effort to promote the establishment of an all-cloud-based smart network, actively build a smart, efficient Internet and improve the comprehensive efficiency of bearer networks.
- In 2019, 4G base stations reached 14.01 million and 5G base stations covered 50 cities, or 93% of total population.

Actions to be taken in 2020

- To provide users with integrated solutions to smart home, introduce diversified pan-smart terminals through various channels and nurture China Unicom ecosystem of converged smart home offerings.
- To continue the work in number portability, simplify the communication for portable, cross-region products, and promote cross-region services in both first/second-tier cities and townships.
- To comprehensively improve Internet-based services to provide customers with a variety of convenient online services.
- To improve and build a robust system of information security responsibility, enhance technical and operational capabilities, resolutely safeguard national cyber security and protect legitimate user rights and interests.
- To continue the intensive efforts to build all-cloud-based smart networks represented by 5G, engage actively in universal service provision and network-enabled poverty alleviation, and strengthen network infrastructure in remote and poor areas.

Bridging the Digital Divide

Optimizing network experience

Bearing in mind its original aspiration to build “networks with ingenuity”, China Unicom is committed to satisfying customers with premium-quality networks and being fully prepared to provide diverse services and applications in the future, especially those with high speed, large bandwidth and low-latency, supported by agile and quality network services.

Raising mobile network awareness

In 2019, there were 1.41 million 4G base stations, covering 93% of population and 84% of administrative villages, supporting 95% of typical scenarios and realizing 94% of VOLTE coverage throughout its entire network (96% in urban areas). In terms of 5G rollout, China Unicom worked with China Telecom in building the world's first 5G shared network, providing commercialized 5G in 50 cities in 2019 with a total of 62,000 5G base stations (20,000 were shared BSs from China Telecom). According to the statistics from the Broadband Development Alliance, China Unicom has led the industry with a download speed of 25.2 Mbps.



Flight test of and footage from a UAV powered by China Unicom 5G

◎ Expanding broadband coverage

China Unicom invested RMB8.8 billion in broadband and data networks in 2019. 12 million broadband ports were built, 85% of which were FTTH ports with a cost of RMB190 million. Another 4.39 million broadband ports were built under partnerships with the private sector, adding up the total count to 39.42 million, or 18.0% of all broadband ports, with an annual increase of 2%.

◎ Promoting universal service

Entrusted with great responsibilities, China Unicom has been proactive in fulfilling its social responsibility to benefit more people with high-quality services. As always, it is active in shouldering responsibility and doing its best to provide universal telecommunications services, accelerate the deployment of communications networks in poor areas and expedite the elimination of the “digital divide” in rural areas.

By the end of December 2019, the fourth batch of universal services had been completed, involving a total of 2,055 administrative villages. As for 4G base stations, 2,076 were built in administrative villages and 22 in border areas. The fifth batch of universal services will involve 2,859 administrative villages in 58 cities in 15 provinces. 3,075 4G base stations will be built in administrative villages and 176 in border areas. 521 base stations were already completed in administrative villages in 2019 while in the future, China Unicom will continue its efforts in “extensive coverage” of base stations to ensure that all villages can enjoy “full” signal.

China Unicom Qinghai branch company has always been on the journey of “national telecommunications universal service provision and ICT-enabled poverty alleviation”. In the trial project of the fourth batch of universal services, it enabled 4G wireless connectivity in 530 administrative villages in 18 districts and counties in 8 cities/prefectures across the province. Since 2016, it has registered greatest contribution amongst its peers by completing the task of network coverage for universal telecom service in a total of 2,300 pilot administrative villages (including 1,120 impoverished ones), accounting for 39.29% of the province’s total 5,854 administrative villages.

China Unicom Hami branch company in Xinjiang has been actively engaged in universal telecom service trials in 18 remote administrative villages in Hami city, Balkun county and Yiwu county. These trial projects have provided 3G and 4G signal coverage in the above areas, significantly facilitating balanced development of regional economy and society and helping narrow the digital divide between urban and rural areas for rural revitalization.



◎ Promoting network evolution

While maintaining network development momentum and current advantages, China Unicom continues to fully explore the architecture and evolution strategy of future-oriented smart network to enhance comprehensive capabilities of future-oriented network operation.

- Newly established mobile networks were all virtualized and cloud-based while new IoT networks were 100% virtualized. Efforts were continued to promote network upgrade toward SDNs, create new products with cloud-network collaboration and realize flexible business adjustment and self-service offering.
- Strove to improve the comprehensive bearing capacity of CUUI, an Industrial Internet, and continued to provide more diverse and smart solutions to inter-cloud WAN connectivity and networking applications with strong network support.
- Compiled the Cube-Net3.0 evolution plan and released the China Unicom White Paper on Computing Power Network and the China Unicom White Paper on Smart Metropolitan Area Network Technology.
- Focused on the research of open optical networks and related application requirements, completed OTN-related industry standards, formulated OTN management and control platform architecture and interface standards, independently developed OTN/WDM-CPE management and control platform, carried out experiments on live networks and promoted integrated and low-cost implementation and deployment of OTNs.
- Completed the design of overall reference architecture of white box base stations as well as other related work and collaborated with China Mobile and China Telecom in establishing the Open Radio Access Network Testing and Integration Center (OTIC) to expedite the development of the white box base station industry toward maturity.

The China169 backbone network has maintained industry leadership for 46 consecutive months in terms of average latency. China Unicom is active in expanding the Internet bandwidth at interconnection points. By the end of 2019, the domestic Internet bandwidth reached 7,911G. IPv6 upgrading was done at all points with direct connection to the Internet backbone with the domestic IPv6 Internet bandwidth of 7,662G. The capacity of domestic backbone network reached 288T and the bandwidth of international Internet gateway was 2,460G.

China Unicom Guangdong branch company has created a “smart all-fiber network” for the Guangdong-Hong Kong-Macao Greater Bay Area, realizing 1-3 ms latency between cities within the region, 1 ms latency between data centers and 1.5 ms latency between and among the three free trade zones in Guangzhou, Shenzhen and Zhuhai to meet the ultimate demand for extremely low latency from the financial, medical and other industries. Since its launch in August 2019, the network has acted as a strong support for digitalization in various sectors in the Greater Bay Area.

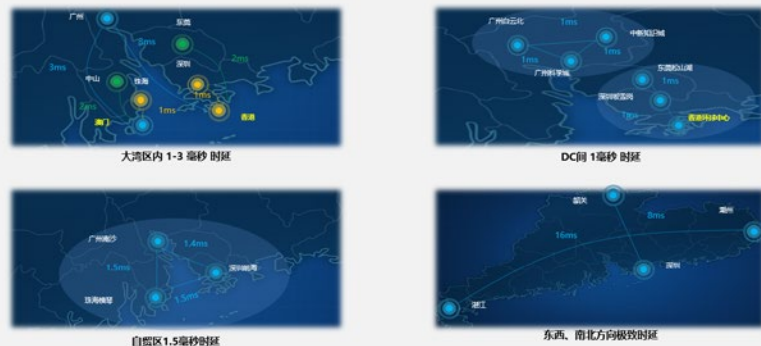


Illustration of the ultra-low latency circle enabled by China Unicom Guangdong branch company

Intensifying efforts for the “Higher Speed at Lower Cost” campaign

China Unicom adheres to the national deployment of the “Higher Speed at Lower Cost” program as well as the people-centered development philosophy. It has established a dedicated steering team and improved the accountability mechanism with senior officers taking the overall responsibility. Measures such as diversifying package design, creating more package value and increasing data offered in existing packages have been taken for “targeted tariff reduction and standardized package setting”. By doing so, the average tariff of mobile data was further reduced by over 20%, the average broadband tariff for SMEs down by another 15% and data roaming charge between the Mainland and Hong Kong/Macao by another 30%. In 2019, the NPS value of mobile network pricing was 85.4% higher than that in 2017. Consumer demands were better satisfied and high-quality development accelerated for digital economy and the upgrade of information consumption.

Tariff reduction policy for mobile broadband

- Data charge: enhanced efforts to promote offerings with more data, expand activation of secondary account under specific packages, increase data volume for existing packages, reduce the average price per unit of data; promoted content-related benefits and created more package value; and promoted discounted data packages, data charge caps and other preferential products.
- Roaming charge: launched data roaming discounts and other reduced tariffs for roaming in Hong Kong and Macau; carried out promotion campaigns for discounted data packages.
- Poverty alleviation package: issued the 2019 guideline on poverty alleviation package and incorporated related work into dedicated priorities of 2019 with a strong push; precision-based poverty alleviation package in provinces shall have a discount rate not less than 50% of the tariff of similar consumer packages, and even greater discounts could be encouraged in competent regions; improved the experience in using poverty alleviation packages and in principle, precise-based poverty alleviation packages must ensure 3G/4G mobile connectivity and a broadband downlink rate at 100Mbps.
- Standardized package setting: strictly controlled the product system and re-organized packages according to the four full-business product systems.

Tariff reduction policy for fixed broadband

- Reduced average tariffs for SME broadband and Internet leased lines.
- Launched basic corporate broadband products to meet basic business demand for Internet access.
- Promoted the comprehensive solutions to business ICTs through “cloud + network + application” and conducted targeted campaign for speed up and cost reduction to help improve ICT adoption by SMEs.
- Enhanced communication for product-specific tariffs and preferential policies so that more customers could understand and enjoy available discounts.

Launching number portability

“Number portability” is a project for the public with extensive social impact and significant social benefit. China Unicom firmly supports comprehensive number portability and believes this will further benefit the public through ICT services and also be conducive to continuous self-improvement in network and service quality. China Unicom has strengthened its responsibility fulfillment and enhanced overall coordination to essentially enable number portability as a practical approach to the freedom of communication that can be truly enjoyed by its users.

- Actively organized researches in five pilot provinces and formulated a nationwide implementation plan for number portability; improved comprehensive operation quality in all aspects including the network, business and service with a “user-centered” approach so that all users would feel assured and comfortable about the sincere and innovative services.
- Established a team of 2,000 staff with unremitting efforts to complete all preparatory work on time for number portability with high quality and efficiency and officially provided the “number portability” service nationwide starting from 27 November.
- Standardized related schemes to provide comprehensive guarantee for the activation and use of number portability services.
- Organized corporation-wide training on number portability in several steps and multiple rounds to ensure unified implementation at provincial, city and county levels and make sure that front-line staff can accurately understand and master business rules and operation procedures of number portability so that all policy requirements are in place at grassroots level.
- Introduced online-offline integration of service guarantee for number portability to allow users to apply for services easily at home.

To implement requirements of number portability with practical, accurate service guarantee, China Unicom branches in Gansu, Fujian, Hunan and other provinces organized multiple rounds of dedicated trainings on number portability to provide customers with better, more comfortable and convenient number portability services, which proved to be effective.



Training in China Unicom Gansu branch company



Training in China Unicom Fujian branch company



Training in China Unicom Hunan branch company

Sharing Digital Dividends

Dedication to brand imaging

China Unicom was the first to release 5G brand logo 5Gⁿ and slogan - Let the future grow. It has built an overarching 5G brand lineup and launched the 5G promotion program "Forerunner" which won the China International Advertising Festival Gold Award for Depth Marketing. As the Winter Olympics draws near, China Unicom, as an official partner, has created ten applications in three scenarios to better engage audiences, athletes and organizers under the theme of "China Unicom 5G, Empowering Smart Winter Olympics" to support the Winter Olympics in its communication, exhibition and themed activities. "China Unicom 5G, Empowering Smart Winter Olympics" was shown on the Weibo loading page with over 130 million hits on the hashtag and 62,000 posts, pushing the topic to No.6 on the Weibo Hot Search list.

China Unicom keeps enriching its brand to intensify the image as young & dynamic, open & cooperative, and innovative & enterprising. In 2019, its brand story articles and communication messaging were selected by SASAC as excellent example of publicity materials of central SOEs and won the "Enterprise with Best Organization" Award in the SASAC Brand Story Contest.



China Unicom, together with the Beijing Winter Olympics Organizing Committee and multiple universities across the country, launched a three-party initiative to kick off the recruitment program for "Winter Dream Ambassadors" on campus to promote the spirits of the Olympic Games among teenagers and students to popularize knowledge and culture related to the Winter Olympics; it also promoted winter sports nationwide to help achieve the goal of encouraging 300 million citizens to participate in winter sports.



Winter Dream Ambassador training



Final competition for Winter Dream Ambassador

As the strategic partner of the Chinese Table Tennis Association and the International Table Tennis Federation for more than a decade, China Unicom has been committed to promoting the popularity and development of table tennis. With the kick-start of 5G, it also made the best out of its own technical advantages to empower table tennis activities and support domestic and international competitions to make breakthroughs in innovative broadcasting, contributing to the dream of building a strong country in sports.



Live broadcasting of the 7th China Unicom "Table Tennis at Wo" National Final with 5G multi-view interaction

Devotion to product development

China Unicom has continued the Internet-oriented transformation and leverages high-quality development to build an operation structure guided by value management. China Unicom now has 460 million users, 320 million billed users of mobile services, 250 million 4G users and 83.478 million fixed broadband users. The penetration of FMC users reached 58.6%, 7.9 percentage points higher year on year.

Significant upgrade of 5G packages with five-star membership experience

The all-new China Unicom 5G package has a further "upgrade" on the basis of the original 4G package, offering more data, diverse content-related benefits and better services. The package is priced differently at RMB129, RMB159, RMB199, RMB239, RMB299, RMB399 and RMB599, containing 30GB-300GB data. Users who have pre-subscribed a 5G package will be directly entitled to discounts on monthly charge for 6 consecutive months and if they have been using China Unicom for 3 years and above, they will enjoy another 30% discount. Subscribers to China Unicom 5G packages also enjoy exclusive membership benefits, such as 5G video membership privileges (e.g. VR, 4K HD, AR, video ringback tones), music/reading privileges (e.g. Wo Read, Wo Music) and shopping discounts.



月费 (元/月)	流量 (GB)	语音 (分钟)	联通会员	网络服务	备注
129	30	500	4项 权益	5G优享服务	套外每分钟0.15元 短信0.1元/条 套外流量3元/GB
159	40	500			
199	60	1000	5G极速服务		
239	80	1000			
299	100	1500			
399	150	2000			
599	300	3000			

Smart home Internet

In terms of household Internet, China Unicom has been improving the "1 + 4 + X" smart home product portfolio with a focus on key businesses – "IPTV, WiFi, fixed telephony and security camera for WO smart home" to keep satisfying user demand for comprehensive household ICT services including "HD video streaming, smart networking, security monitoring and AI-powered smart voice recognition". At the same time, China Unicom has enhanced efforts in chaining up its business outlets to create more dedicated smart home environments for consumers. It also coordinates with all players along the industry chain to empower partners and build a smart ecosystem for win-win cooperation.

Diversified terminal supply

China Unicom has always adhered to an open, fair mechanism of supplier cooperation and sharing and cooperated with over 100 upstream and downstream terminal suppliers for mutual benefit to iterate and optimize the entire supply chain of terminals, steadily improve operation efficiency and ensure that users enjoy better terminal products and services from China Unicom channels.

- Negotiations were carried out with 47 supplier partners throughout the year to introduce hundreds of terminals for smart life, selling an accumulative 4 million devices.
- Worked with a total of 26 manufacturers of chips, modules, ODMs and terminals and Internet application providers to establish joint innovation laboratories of 5G terminals, R&D centers and application & operation innovation centers. China Unicom also built 5G Experience Centers in 300 self-owned business outlets, 311 public channels and vendors' own stores to bring 5G experience closer to more consumers.

Innovating convergence-enabled products

On 6 November 2019, China Unicom launched commercial trials for phase-I functionality of cross-region services and products to meet public demand for services across different locations while moving from one place to another. New services including e-invoice issuance and international roaming activation/deactivation in different location were provided to further diversify cross-region portfolio. By the end of December, a total of 617,648 cross-region services were handled nationwide (including SIM-card re-issuance & replacement and other previous cross-region services).

At the same time, China Unicom continued to apply the Internet way of thinking to the optimization of handling procedures and rules of converged services to promoted simplified procedures to handle converged services. So far, 19 provinces have adopted streamlined interface to handle these services with the average efficiency of time spent in business outlets increased by 40% and the average efficiency of processing time increased by 50%.



China Unicom cross-region products

◎ Differentiated products for public welfare

China Unicom 116114 hotline continues to provide more services for public welfare. In addition to health community and remote health inquiry, the comprehensive daily life information services can range from car removal calls to legal, employment, education, agriculture and psychological consultation. By the end of 2019, there were about 28 million times of information inquiry, legal consultation and other services to millions of individuals and corporate users across the country, and car removal call service to nearly 15 million users.

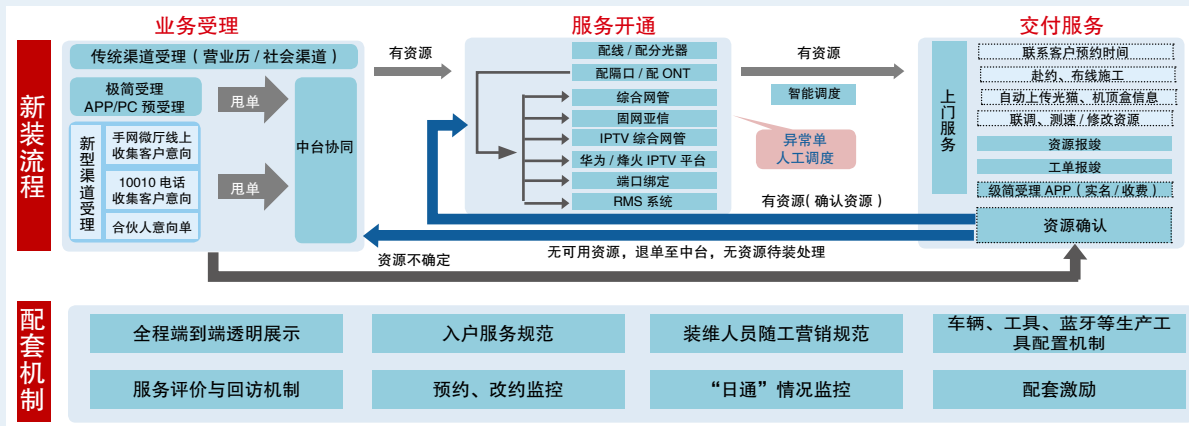
◎ Considerate quality service

◎ Improving customer perception

Centering on customer experience, China Unicom has prioritized solutions to chronic problems to continuously improve service quality and customer perception.

- Used the real-time evaluation system for customer perception to assess service quality by customer feedback and create a barometer for customer perception evaluation; improved product experience management system that required all newly launched products to be verified by the product experience center under the Customer Service Department so that no product that failed the verification shall be on the market; strengthened customer experience branding and communication to comprehensively improve brand recognition of China Unicom customer service.
- Established a coherent interaction system across all channels to address persistent pain points in offline channels and improve the understandability and user-friendliness of online channels. Combed through outstanding offline deficiencies with optimization that helped reduce 45% types of complicated problems related to converged services while improving 96 scenarios.
- Strengthened capacity building on centralized platform sharing, provided professional service support to front-end applications and continued optimization of business operation processes, reducing business handling steps and handling time by over 50% while shortening the handling time in business outlets to less than 10 minutes; established intensive operation system for smart customer service to realize human-machine interaction with smart receptionists; then optimized processes and harmonized standards to shorten trouble-shooting cycles and comprehensively improve customer perception.
- Established a supervision system on problem solving progress that remarkably improved rectification results required by the State Council general inspection team, raising both front-line and customer satisfaction.

China Unicom Heilongjiang branch company carried out a stock-taking and optimization of production organization, management mechanism and production tools involved in broadband installation and maintenance. This helped achieve installation within 24 hours, transparent online display of the entire installation process, progress check at any time and even evaluation of the service engineer in smart home enablement, delivering the real “broadband activation in one day” and comprehensively improving the broadband customer perception.



Optimized content of “broadband activation in one day”

◎ Innovating Internet-enabled services

Following up closely on the Internet development trends and customer needs, China Unicom has been active in expanding Internet-enabled services. Service channels have been launched on WeChat, Baidu Baike, Zhihu, Douyin and other Internet platforms; meanwhile, search engine traffic optimization, open robotic capability and more measures have been taken to constantly improved the scale of Internet-enabled services. A total of 1.21 billion times of services were provided through tier-1 channels and China Unicom-related knowledge was visited 300 million times on Baidu Knows, surpassing Xiaomi and Huawei as TOP 1 partners rated by Baidu.

◎ Improving service quality

China Unicom has mobilized comprehensive efforts and drawn on past experiences for solving similar problems to push rectification on key deficiencies. It will leverage the State Council general inspection as an opportunity to facilitate dedicated efforts in correcting outstanding problems.

- Adhered to problem-oriented approaches to comprehensive review of deficiencies existing in the company's regimes, processes and rules to address not a single problem but one type of problems with identified solutions.

- Continued the rectification of key issues throughout the country and adopted systematic review and process re-design to focus efforts in addressing issues such as differentiated rights between old and new subscribers, charge on value-added service and the second visit to business outlets for the same problem.
- Carried out the “Bear in mind the original aspiration to double customer satisfaction” campaign, set challenging targets to drive dynamics and solidify problem solving mechanisms through comprehensive assessment and specific evaluation.
- Adopted a complaint-driven approach to addressing problems at their root causes and established a long-term mechanism featuring closed-loop solution, professional collaboration, service early warning, management accountability and correction against negative feedbacks to eradicate challenging headaches. MIIT statistics in 2019 showed a 50.3% y-o-y decrease in accumulated effective complaints at 219.1 cases per million users.

China Unicom Shandong branch company had discussions with grassroots staff, communicated with its customers, combined complaint data with complaint analysis and collected information to summarize some key factors affecting customers' NPS perception with an aim to improve service reputation among customers.

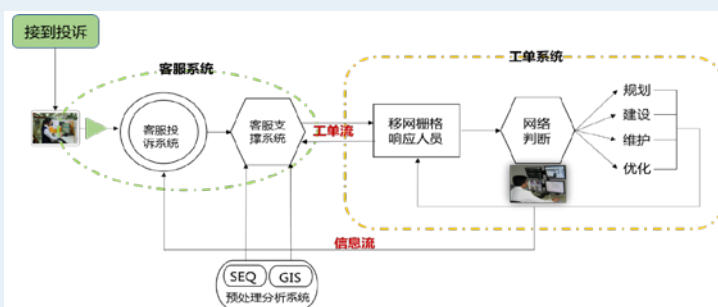


Active response to complaints

In 2019, China Unicom continued to improve and strengthen complaint management using a matrix-based model. No abusive charges have been filed during the year, indicating notable success in complaint management.

- Prioritized customer perception as a target, tightened control on the criteria for closing complaint cases, shortened time-limits for complaint handling, strictly abided by principles such as “the first to be inquired of is to be responsible of solving the complaint”, authorization given to front-end receptionists for service remedies and immediate commitments with an aim to practically enable “double improvement” – both in the quality and efficiency of solving complaints.
- Adopted a “dual closed-loop” complaint solving mechanism for individual problems and clusters of key problems so that lessons learnt from one single complaint could be applied to avoid problems of the same type.
- Took measures in complaint prevention. More than 30,000 problems were identified through the “Three Everything” discussion on corporate culture to make a comprehensive analysis on issues affecting customer perception and solve them in a fully transparent manner. Moreover, inferences were drawn from such activities to identify clusters of key issues necessary to be addressed under the supervision of the CPC Party Leadership Group of China Unicom Group to ensure effective solution to a number of persistent problems with negative impact on customer perception.
- In 2019, 20.976 million complaints were filed through the 10010 hotline with a decrease of 22.0% month-on-month while monthly complaint rate was 38.5 cases per 10,000 users on average, or a decrease of 23.7% month-on-month. Both the quantity and the ratio of complaint were remarkably reduced with 98.1% of complaints successfully solved, or 0.3% increase month-on-month.

China Unicom Shanxi branch company carried out data mining on the network side with process re-design and managerial innovation to build a new management system featuring “complaint-driven integration of front-end and back-end of mobile services”. While receiving and registering complaints, the cause of default was identified and messages containing terminal information, default data and network perception were provided promptly to the front-end to facilitate the communication between the front desk receptionist and the customer. This greatly shortened the time needed for reception and raised the success rate of online trouble-shooting, which further improved user perception with prompt response to problems.



Mechanism for trouble ticket workflow

China Unicom Beijing branch company integrated system resources comprehensively to build a complaint monitoring and early warning system capable of real-time warnings of overtime, repetition and multiple reminders. It also upgraded manual warning of complaints several times to complete the early warning system in service, risk and manual warning dimensions to allow real-time monitoring and early warning of customer complaints. Meanwhile, it urged relevant departments to address complaints from their root causes to improve both the customer perception and service efficiency.



Real-time monitoring and early warning modules

◎ Improving customer service reputation

China Unicom has continued to strengthen customer experience branding and communication to comprehensively enhance customer service brand recognition so customers can help spread positive reputation.

- A series of service initiatives were launched, the 10015 was renamed as Consumer Rights Protection Hotline, and commitment was made to ensure a reply on complaint handling results within 3 business days.
- The NPS evaluation was carried out on customer recognition and satisfaction. In 2019, scores on the mobile network increased by 7.2 and those on the broadband increased by 8.1. Among them, scores on the mobile network infrastructure raised by 7.4, the business NPS raised by 10.3 and the service NPS raised by 23.4, ranking among the top in the industry.

◎ Guaranteeing transparent consumption

China Unicom conscientiously implements the Law of the People's Republic of China on Protection of the Rights and Interests of the Consumers and other applicable laws and regulations related to protecting customer rights and interests, stringently controls billing and charging practices, protects customers' right to know about their consumption and strengthens consumer education on its products and services.

- Enhanced publicity by the combined use of traditional and new Internet media while leveraging business outlets, mobile APPs, online portals and various other self-owned channel to communicate product and service information to consumers in a prompt, truthful, accurate and easily understandable manner.
- Launched dedicated actions on bundled sales, unauthorized changes to subscribed packages and other practices violating the marketing rules and put in place strict control and serious penalty on service activation, trial, change or customization without confirmed content from the user.
- Focused recommendation on packages with simple, clear tariff structure and unified tariff schemes nationwide to effectively streamline package lineup.
- Continuously optimized templates for "form-free" services to ensure consumption clarity and transparency.

🌐 Synergy in channel empowerment

◎ Improving efficiency of self-owned business outlets

China Unicom has pushed forward the chainstore model of operation of self-owned business outlets in greater depth and at greater length to create digitalized, novel business outlets with excellent experience, diversified portfolio and quality service for customers to enjoy better experience.

- Improved the comprehensive efficiency of business outlets and took an experience-oriented approach to enabling the chainstore model in smart life demonstration centers and digitalized business outlets and strove to provide customers with more comprehensive services.
- Optimized capacity building for service teams in business outlets to fully empower them through migrating simple businesses online, process optimization and training while optimizing the staffing design to create service teams supportive to the chainstore model of operation.

◎ Building a channel system featuring online/offline integration

China Unicom has optimized its integrated online/offline channel system centering around customers' daily footprint to allow customers to enjoy services and experiences anytime and anywhere through any channel under all scenarios.

- Continued intensive e-channels operation for centralized operation of all 2I2C products.
- Optimized integrated marketing models, relied on the "QR-Code Retail 2.0" and the smart Internet middle office for constant iteration, and made best effort to promote the establishment of a large delivery network for delivery to different location, activation of converged services, customer retention, value enhancement and a number of other key functions to go live.

🌐 Creating a Clean Cyberspace

🌐 Implementing "Real-name policy"

China Unicom has implemented real-name policy strictly in accordance with MIIT requirements and achieved 100% real-name registration in its telephone users.

- From 1 December, 2019, all physical channels began to adopt technical measures for dynamic face recognition, put in place strict real-name registration for network access, enhanced double-check on real-name registration profiles of new subscribers and strengthened control in partner channels.

China Unicom Yunnan branch company launched the "Five-star exclusive privilege" activity to improve customer service perception. It included six premium services – online service privilege, priority access to manual customer service, VIP lane in business outlets, change of service location free of charge, free replacement and reissuance of SIM cards, Privilege Day - to further enhance service perception among high-end customers.

- Services were designed in various hierarchies. For example, in the "Five-star exclusive privilege" activity, six differentiated services were provided in a hierarchical structure.

China Unicom Guangdong branch company improved on-premise experience in its business outlets through upgrading service facilities and ICT-enabled transformation, standardized service standards, publicity approaches and communication scripts and conducted service skill assessment and process optimization to comprehensively raise the service level of its business outlets.



- Strengthened product standardization, re-designed the number of 2I2C packages batch by batch and optimized product tariff structures.
- Developed APPs for traffic-intensive portals and kept optimizing service experience while improving basic business functions; made active exploration of new operation models and built a multistakeholder ecosystem of cooperation among channels, users and provincial branches for mutual benefits.

- Continued stock-taking on existing users to ensure "consistency between registered ID and real name" as well as self-check on real-name registration for IoT cards across all network infrastructure.
- Strengthened practical constraint through contracts and launched publicity campaigns to enhance risk monitoring of abnormal network access.
- Refined details to improve the accountability scheme for real-name registration and conducted two rounds of third-party "mystery customer".
- Cooperated with MIIT actively in the joint debugging and online operation of the "Verification Platform for Registered Telecom Subscriber Information".

China Unicom Shanghai branch company established a real-name verification system and enhanced risk control to guard against frauds. In 2019, a total of 4,273,800 real-name photos were activated, randomly checked and submitted for registration and reviews while 91,900 non-compliant orders were identified through examinations and all non-compliant accounts were deactivated. During a review of real-name photos in August 2019, an agent of Pudong branch was found to activate over 40,000 accounts in violation of regulations. As a result, all such accounts were deactivated to eliminate potential risk of fraudulence through using these accounts.

Protecting user privacy

China Unicom has been active in implementing requirements of CAC and MIIT on the collection and use of users' personal information in compliance with laws and regulations and completed the revision of the User Privacy Policy of China Unicom and Network Access Service Agreement for China Unicom Customers to fully protect user privacy.

Cracking down on telecom fraud

China Unicom has remained determined in preventing and combating telecom fraud for the purpose of fulfilling social responsibility as a state-owned enterprise, maintaining normal communications order and protecting the legitimate user rights and interests.

- Took thorough actions against phone scams, unwanted calls and spam messages. In 2019, a total of 50.38 million scam calls from overseas were blocked, 936,000 accounts were deactivated due to scam and unwanted calls and 1.16 billion pieces of spam messages were blocked. User reported cases were on a general decline.
- Strengthened data security management and control, took prompt actions to prevent the risk of data and personal information breach, conducted 4 self-inspections to rectify deficiencies as well as technical examination of APPs having over one million users to correct problems when proper. No major data security incidents were reported.
- Took full advantage of big data technology resources and developed abnormality identification models that helped detect a remarkable number of GOIP and other devices and provided effective assistance to the police in tracking fraudulent practices.

Drawing upon its capacity in Internet-based big data analytics and precise intervention, China Unicom Beijing branch company built a library of highly suspected websites that will automatically trigger pop up reminders on mobile phones to address frequent complaints from patients and consumers regarding frauds from medical institutions or non-institutional organizations in the name of medical institutions. This proved to be a helpful tool for government agencies to regulate health care industry and its services for public welfare.



China Unicom Henan branch company continued to innovate integrated management models to guard against scams and unwanted calls through accurate detection of scam or fraud phone numbers, prompt deactivation, supervised rectification and accountability tracked down to the source of calls. This effectively improved the accuracy and efficiency in the fight against and prevention of frauds and scams, secured communications of users as well as their property and enhanced customer perception.

Protecting cyber security

Entrusted as the guard for cyber security, China Unicom has continued its efforts to optimize network security products and strengthen service capabilities. In terms of government and corporate customers, China Unicom has improved the Cloud Shield security product system to build further cleansing capacity of DDoS prevention products to the level of 3T with additional intelligent filtering and protection for IPv6 traffic. It has officially released the security product for domain name protection and comprehensively carried out product research and development for Web security, vulnerability scanning, DC security other protection. It has also provided effective support to guarantee network security in important scenarios such as the two sessions, the "Belt and Road" summit and the Military World Games.

In term of public customers, China Unicom has held constant education campaigns on network security. A reminder message service was launched in January 2019 for calls from international numbers. Since then, 100.67 million reminders were pushed to customers while 1.53 billion pieces of text or multi-media messages were sent for various security alerts.

China Unicom Tianjin branch company developed a "three-dimensional electronic fence for security protection" to comprehensively monitor and protect data collection, access and transfer. It covers all network traffic on the core mobile network of China Unicom Tianjin and ensures that no outsider "has access to" the fundamental network and that no information is "accessible", "without encryption", "vulnerable to tampering" or "can be transferred", further securing the network and data in the platform system while lowering the security risk of data and information breach.



Striving to be a “Pillar” for Public Good

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Striving to be a “Pillar” for Public Good

China Unicom pays great attention and makes great efforts to improve public welfare. It is always active in leveraging its expertise and technical advantages to serve public good through emergency communications enablement, precision-based poverty alleviation, charitable donation, and assistance to people in difficulty, voluntary services and other activities. It is determined to empower the employees to grow together with the enterprise and seriously fulfill overseas responsibilities for thriving business and society that benefit the general public.

Measures adopted in 2019

- Engaged in rescue and disaster relief to secure communications during flood seasons and epidemics.
- Provided communications guarantee for major events including the Expo 2019 Beijing, the “Belt and Road” Forum for International Cooperation and activities to celebrate the 70th anniversary of the founding of the People’s Republic of China.
- Targeted poverty alleviation through communications services, consumption boost, industrial boost, etc. for public welfare.
- Deeply involved in charitable community activities to provide care to socially disadvantaged groups through voluntary poverty alleviation, community services and other voluntary activities; actively fulfilled overseas responsibilities.
- Established warm and harmonious labor relationship and practically protected the legitimate rights and interests of employees with attention given to their physical and mental health to improve their sense of gain.

Actions to be taken in 2020

- To strengthen emergency drills and conduct security investigations to guarantee communications network services to the most premium level and even beyond.
- To draw upon business, industry and reform advantages while focusing on industries, people’s livelihood and ICTs to fully fulfill social responsibilities in the field of poverty reduction with clear targets in assistance through multi-stakeholder engagement.
- To actively participate in various charitable activities to build a unified volunteer service brand that communicates corporate culture.
- To promote market-oriented reform of human resources to allow employees to share development results with the company and constantly improve their sense of gain.

Guaranteeing Emergency Communications

Engagement in rescue and disaster relief

Revising emergency plans and conduct emergency drills

In 2019, China Unicom revised its emergency preparedness plan for communications enablement, organized emergency drills and conducted safety investigations. All rectification was completed before the flood season with a daily reporting routine put in place. After an emergency outbreak, the emergency command platform would be activated in a timely manner with 24/7 support on duty to ensure that the repair and maintenance teams could depart for the rescue scene as prompt as possible.

Securing communications during flood season

Facing severe floods, mountain torrents, debris flows, landslides and other disasters in 2019, China Unicom demonstrated its a high sense of responsibility in overcoming difficulties and dangers to secure communications for important organizations in the CPC Party units, governments, military units, and flood and drought prevention and control headquarters during the flood season. In 2019, there was a total input of RMB258.38 million in disaster relief with 97,850 rescuers, 39,676 vehicles for rescue, 3,688 pieces of emergency equipment, 40,266 emergency diesel generators and 391.27 million emergency text messages sent.

RMB **258.38** million of funds and **97,850** personnel for disaster relief in 2019

Combating Typhoon “Lekima”

In August 2019, Taizhou, Zhejiang was severely hit by the landing of super-intense tropical cyclone LEKIMA, damaging communications facilities and putting power supply in Wenling city basically paralyzed. China Unicom made a concerted effort to fight against the typhoon through coordinating 310 portable, 68 on-wheel diesel generators, woven sand bags, pumps, fiber optic cables, electric cables, cement poles and other materials. Technicians braved the flood and rushed to the scene with necessary equipment to repair damaged communications facilities to their fastest speed to recover network signals.



Providing communications guarantee

Communications guarantee for Expo 2019 Beijing

During the World Horticultural Exposition in Beijing from 28 April to 9 October, China Unicom leveraged its Beijing branch to provide leased lines, 3G/4G/5G mobile communications and other network services as well as 5G-enabled smart health services for the Expo 2019, involving 115 base stations to guarantee 3G/4G/5G services, 19 newly-built 5G base stations, 508 communities under premium guarantee, 653 technicians on duty, 96 vehicles and 3 cell-on-wheels to secure the highest level and best quality of communications service under the most stringent standards, through the most practical measures and for the best results of the event.



Communications guarantee for the Second “Belt and Road” Forum for International Cooperation

China Unicom provided support to guarantee communications services, network security and information security during the Second “Belt and Road” Forum for International Cooperation from 25 to 27 April 2019 in Beijing. It provided multiple communications services as well as innovative services and applications such as security situation awareness, big data-enabled traffic monitoring & analysis and cloud-based integration to the China National Convention Center and Yanqi Lake International Convention & Exhibition Center; besides, it also provided video transmission and related services to CCTV, Xinhua News Agency, Beijing TV Station and other media. Full 5G coverage was available in E1E2 news center, the Core Island in Huairou, news center Villa-9 and other areas with a total of 766 leased lines including 394 new lines specially for the event.

Communications guarantee for the celebration of the 70th anniversary of the founding of New China

The celebration of the 70th anniversary of the founding of the People’s Republic of China was held on 1 October and China Unicom provided communications network support to its best effort in order to achieve perfection in every detail ranging from the majestic military parade and the exciting parade formation to the deafening gun salute and the splendid evening firework show. That success was the result of 1,315 support personnel, 138 vehicles, 7 magneto telephones in 356 guaranteed locations, 643 telephones, 324 analog dedicated lines, 664 pairs of fiber cables and 309 video transmission channels.



Highlight 1: World record on football field – “Wonderful Project”



Highlight 2: 5G+4K HD video backhaul



Highlight 3: The most streamlined identity authentication based on blockchain technology



Highlight 4: Fireworks control system with millisecond-precision

🇨🇳 National solidarity to fight against COVID-19, China Unicom on the move - China Unicom profile in the prevention and control of the epidemic

Go where there is epidemic and fight it till it perishes. Since the outbreak of the COVID-19 epidemic, China Unicom has been determined to fulfill its political responsibility from a political perspective. Firmly adhering to the important instructions and guiding spirit from General Secretary Xi Jinping as well as decisions and deployments by the CPC Central Committee and the State Council, China Unicom raised "awareness in four aspects", strengthened "self-confidence in four areas" and ensured "two guarantees" to align its thoughts and actions with decisions and deployments by the CPC Central Committee, accomplish tasks assigned by the central and local governments and relevant ministries and fulfill its mission in providing basic telecommunications services to fight and win the battle against the epidemic through mobilizing all resources and nation-wide synergy.

📍 Unified for epidemic prevention and control

China Unicom attached great importance to epidemic prevention and control, issuing a corporate-wide notice immediately after the outbreak. It established a steering group for prevention and control headed by Wang Xiaochu, the Party Leadership Group Secretary and Chairman of China Unicom Group, improved the communication mechanism, strengthened on-duty staffing for emergency response and put in place a daily reporting routine for epidemic prevention and control. On 28 January 2020, the steering group held a meeting to re-examine and further deploy necessary response to the epidemic and called on China Unicom to draw upon its full advantage to contribute to national efforts in prevention and control.

📍 Standing out to contribute as a central SOE

China Unicom made its best effort to provide emergency communications and network guarantee services to secure smooth communications. It promptly activated the mechanism for national emergency response to ensure smooth functioning of command systems of CPC units and governments. By 7 February 2020, there was an input of 150,000 personnel on-duty, 130,000 personnel for emergency support, 46,000 vehicles for emergency response and repair and 34,000 dedicated lines for critical guarantee. During the epidemic prevention and control, China Unicom actively cooperated with government departments to publicize over 6.7 billion pieces of various information for public welfare, including epidemic warnings, traffic conditions, public health tips and knowledge on prevention and control, contributing to curbing the spread of misinformation and rumors on the Internet.

📍 When difficulty arises, help comes from all sides

China Unicom donated RMB30 million in cash to Hubei Charity Federation for epidemic prevention and control. By 27 January, the Group Company and 15 provincial branches including those in Tianjin, Shanghai, Shandong and Shanxi raised around 250,000 masks, 300,000 pairs of medical gloves, a multitude of protective clothing and disinfectants while two batches of medical and communications materials were already sent to support efforts in Hubei.

📍 Braving the epidemic to win the battle in Wuhan

China Unicom invested around RMB10 million to ensure the readiness of communications network for the newly built hospitals in Wuhan as quickly as possible. China Unicom Hubei branch company rushed to the forefront against the freezing cold and worked day and night to make available 3G/4G/5G communications network coverage within 36 hours for the Huoshenshan Hospital and within 2 days for the Leishenshan Hospital, setting new records in the activation of base stations. China Unicom Hubei promptly finished the expansion of dedicated lines between the Hubei CDC and all cities in the province as well as dedicated lines for BGI Genomics, the place where a large number of nucleic acid testing took place. As of 31 January, China Unicom Hubei had sent 3,861 personnel and 1,435 vehicles for service guarantee, inspected 14,317 kilometers of communications lines, identified and recovered 1,141 failures, and sent a total of 128.54 million pieces of text messages related to epidemic prevention and control, acting as an important force in combating the epidemic.



China Unicom Hubei network team working for the Leishenshan Hospital



Construction site of communications network for Huoshenshan Hospital

📍 Smart service to support the fight against the epidemic

China Unicom provided multiple products and services for epidemic prevention and control to ministries, media and medical, educational, business and environmental protection institutions. It helped the Chinese Center for Disease Prevention and Control with 39 dedicated lines under critical guarantee and a free upgrade of the gold private network from the current 300Mbps to 500Mbps. During the epidemic, free cloud-based video conference services were provided to meet the needs of emergency commands, remote consultation and inquiry and HD video conferences. Classroom on the cloud, big data-enabled prevention and control services, body temperature monitoring based on thermal imaging, epidemic prevention material management platform, follow-up visits by AI robots and other related services were also provided to help win the battle against the epidemic.

- “Postponed deactivation” and other special business policies were implemented to suspend the deactivation of 250 million users in 19 provinces severely affected by the epidemic while each of China Unicom subscribers in medical teams coming to support Hubei was given a credit of 520 yuan to fully guarantee communications services. Subscribers in Hubei were also given free data for dedicated video streaming apps together with a 7-day free membership, benefiting 130,000 users.
- The cloud-based video conference system was provided to support work from home for nearly 18,000 institutions and departments in 31 provinces, autonomous regions and municipalities, with 122,200 registered users and serving 44,600 video conferences.
- Big data-based epidemic prevention and control services were launched with 13 data models and 6 AI-assisted prevention products developed, 7 big data platforms delivered, 3,920 data and analysis reports sent in encrypted forms, 2,511 visualization accounts activated and 60.442 million pieces of epidemic alerts and remind information sent.
- Responded to the Ministry of Education’s deployment to “shutdown schools without suspending education” with the launch of “Wo Classroom Online” - an innovative and comprehensive solutions for elementary and high schools.
- Organized activities for free movie on IPTV and 5G Wo video and provided 163 million hours of on-demand movies and TV dramas during the Spring Festival.

Note: the above data was as of 18 February 2020.

Targeted Poverty Alleviation

The number of service channels in rural and remote poverty-stricken

areas reached **185,000** in 2019

Launching packages to support poverty reduction

China Unicom has designed preferential tariff policies in poverty-stricken and rural areas to relief the burden on users in need.

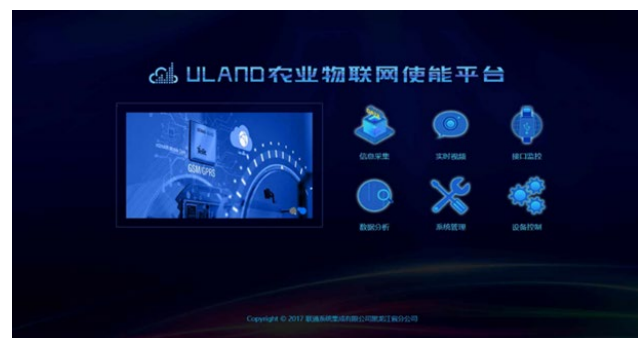
- Poverty alleviation packages benefited over 530,000 registered poor users, bringing practical dividends to the poor.
- Provided rural residents with preferential tariff design including cost-effective data packages and packages combining basic and converged services. At the same time, payment on instalment was bundled with smart terminals and applications for rural support to bring more benefits and privileges to rural residents.
- Provincial branches in places such as Tianjin, Hebei, Liaoning, Jilin, Anhui, Hubei, Hunan, Guangdong, Chongqing, Sichuan, Guizhou, Yunnan, Tibet and Xinjiang provided preferential broadband and converged service packages based on local conditions in poor areas on a case-by-case basis.

China Unicom Shandong branch company designed preferential policies for poverty alleviation with remarkable discounts to poor households, including the Beautifully Rural voice package, Best Data Plan Shandong and 100Mbps broadband, benefiting 43,600 poor households with a discount of RMB7.9 million. It worked with Houji village in Houji town of Cao county, Heze city in the “Dual Play for Co-construction” program to provide mobile phones with one-year free service to seniors living by themselves, build vegetable greenhouses, lay drainage pipes, harden roads and improve other infrastructure.

Developing smart solutions to poverty alleviation

China Unicom develops the next generation ICTs such as the mobile Internet, cloud computing, big data and IoT in convergence with agricultural production, operation, management and services to speed up the transformation of agricultural production patterns, innovate agro-produce distribution channels, realize efficient and transparent agricultural management and promote the adoption of agricultural information services amongst villages and households to nurture a new landscape of ICT application as a comprehensive support to modern agriculture and urban-rural integration.

- The “Wo Land” cloud platform for smart agriculture leverages the mobile Internet, cloud computing, big data, remote sensing and other technology to create the “Internet+agriculture” solutions covering the entire industrial chain from agricultural production, operation, management to service for a regional industry cluster of modern agriculture.
- The cloud platform for agricultural production environment monitoring provides comprehensive functions including information collection at the sensing layer of agricultural IoT, data analysis, IoT-based information dashboard, health check, video surveillance, equipment management and interactive control to provide data support and network exposure to top-layer agricultural applications such as agro-produce traceability and rural e-commerce platform.



China Unicom Fuzhou branch company built an accurate model based on the Fuzhou Public Fund Supervision Platform to monitor data related to 70 types of funds for public welfare worth of RMB6.9 billion to benefit 1.6 million people. The platform would automatically detect abnormal fund granting and publicize fund details online in a clear dashboard. Since its launch over a year ago, more than 50,000 daily visits were received with a total number of more than 28 million hits, clues were identified involving 597 personnel, 208 people punished for violating CPC disciplines or government rules, making the website a powerful tool for supervision that satisfies governments and the public while providing effective and efficient convenience.

China Unicom Hunan branch company developed a "smart poverty alleviation" platform with an innovative model of "big data+targeted poverty alleviation" by using big data, cloud computing, mobile Internet and other technologies for such functionalities as data comparison, early warning, poverty alleviation policy and "Big Picture on One Screen" to provide support and "target individuals in need precisely in specific households in every village". In 2018, it effectively helped Huitong county to eliminate poverty; in 2019, it cross-checked information and data related to assistance policies and measures enjoyed by 69,458 residents in 19,163 households with in the county, producing accurate comparison of over 300,000 pieces of data for poverty elimination enabled by ICTs.



Integrated Management Platform for Smart Poverty Alleviation



"Big Picture on One Screen" website for smart poverty alleviation

Dedicated assistance

China Unicom took active measures in assuming the responsibility for dedicated assistance to 1,855 poor villages in 1,198 counties through more than 500 units and 1,440 support personnel providing service in the front line for poverty alleviation. Leveraging industry advantages for targeted poverty alleviation, China Unicom focused on "two reliefs and three guarantees" as well as projects for people's livelihood to implement assistance programs in poor areas in multiple aspects ranging from industry empowerment, consumption boost, education to infrastructure construction. In 2019, it helped 43,300 registered poor households out of poverty.

- Established a system of care for poverty alleviation staff, helping address difficulties for more than 1,440 poverty alleviation staff. China Unicom Xinjiang branch company allocated special funds to improve working and living conditions for all 200 village workers with special health and accident insurances.
- Arranged 322 industry-driven poverty alleviation projects, trained over 5,200 rural workers and backbone technicians, funded 1,338 poor students and invested medical and health care resources that benefited 2,242 poor residents.
- Prioritized consumption boost for poverty alleviation in the procurement for employee welfare and holiday benefit, and encouraged all employees to make good use of China Unicom flagship store for poverty alleviation to prioritize products from poverty-stricken areas. With such initiatives, the corporation contributed to poverty alleviation through a total consumption over RMB73 million.
- Made sincere efforts to assisted Tibet with focuses on the demonstration village for a well-off society in Wenbudangsang township and the demolition of dilapidated houses for registered poor households with reconstruction and relocation arrangements to improve local livelihood with safer housing, especially the guarantee for poor households.

2019 contribution to poverty alleviation in cash and in kind totaled RMB **230** million

China Unicom Hainan branch company adhered to the principle of "eliminating illiteracy + boosting confidence" at its designated location in Wenxin village, Lingao county and carried out targeted action for poverty alleviation through education, health care, industry and ecological protection. More than RMB200,000 was invested in 2019. The "Beautifully Rural" program was enhanced through joint activities with local governments to plant over 16,000 trees and flowers including bougainvillea. Efforts were also made to boost local industries through an "Experimental Park for Papaya Industry" by planting 160 papaya seedlings together with the launch of a "Coconut Industry Demonstration Park". In 11 towns and some large administrative villages in Baisha county, "e-commerce supermarkets for poverty alleviation" were established and both poor households and other villagers could register accounts, exchange credits for their labor and use credits to buy goods in the supermarkets. This helped and guided the thriving of local e-commerce supported by village-level e-commerce service stations.



China Unicom Henan branch company boosted local industry for poverty alleviation in its designated location, the Nianzigou village. It invested a total of RMB1.035 million in industrial projects and various infrastructure improvement, helping mobilize another RMB1.37 million from other sources for varied purposes. Given the characteristics of local resources, a demonstration farm for bee breeding, the Lu's chicken farm and the forsythia tea processing workshop were built and the corn grit processing industry was developed, with an annual production capacity of 400 kg of honey and a monthly production of 45,000 green shell eggs. The village registered a collective revenue increase by 3 folds in 2019.



Comparison of the demonstration farm for bee breeding before and after its completion



Comparison of the Lu's chicken farm before and after its completion



Corn grit processing plant

China Unicom Shanxi branch company sent 218 staff to serve as officials in 141 impoverished villages (3 to be assisted by CU provincial branch, 14 by city-based branches and 124 by county-based ones) for support in poverty reduction. In 2019, 8,939 residents from 3,734 households in 36 villages were lifted out of poverty, further benefiting 70,462 residents from 28,618 households. Various channels and methods were used to help designated villages sell agricultural and sideline products, including 140 tons of corn and 5,000 kg of millet from Chaijiayao village and persimmons from Guoyuan village in Pinglu county.



As friendly units for mutual help, China Union Jiangsu branch company and China Unicom Xinjiang branch company actively supported each other with complementary resources. China Unicom Jiangsu continued its purchase of agricultural products from Xinjiang for poverty alleviation, solving difficulties of local poor residents in agricultural product sales; it dispatched officers with CPC membership to Xinjiang as a way to gain experience and support local work in poverty alleviation through partnerships in CPC capacity building, marketing, ICT adoption, human resources and other projects; equipment was also provided for better assistance. In 2019, a total of RMB4,326,300 was invested as poverty alleviation funds, including RMB1.48 million in 9 projects, RMB2,846,300 to boost consumption, achieving remarkable results in poverty alleviation cooperation between the eastern and western regions.

Engaging in charitable undertakings for poverty alleviation

China Unicom has always been committed to poverty alleviation and charitable undertakings, bringing warmth to poor areas.

- Around 10,000 volunteers participated in voluntary poverty alleviation activities, assisting nearly 50,000 people and raising over RMB8 million of voluntary funds for poverty alleviation through paired assistance, donations and purchase of products from poor regions.
- Innovated and explored the model of “credit + cash donation” for poverty alleviation and work with the China Youth Development Foundation to launch an initiative of charitable action on “Credits to help students realize their dreams to study”. Under the initiative, 363,000 participants from the general public and within the corporation were mobilized in a fund-raising totaled RMB4.007 million, helping 3,350 impoverished students in designated counties continue their education.
- Labor union leaders went to the front line of poverty alleviation and actively organized volunteer teams to support education, sales and the donation of computers and clothing. China Unicom Guangdong launched a targeted action on poverty alleviation and reduction in 75 poor villages, helping 10,000 poverty-stricken residents out of poverty.
- Organized a photo contest and exhibition titled “China Unicom Acting against Poverty” to raise public awareness of charitable efforts in poverty alleviation and mobilize employees to actively contribute their share of care for the impoverished.



China Unicom Jiangmen branch company in a charitable campaign for a nursing home



China Unicom offered "scarves for a warm winter" to children in Geji county, Tibet



China Unicom Hunan branch company provided winter necessities to residents in Dongjiu village

China Unicom Zhejiang branch company organized the Third Customer Day for Public Welfare – live broadcast for shopping "Dazhan peach" with an aim for poverty alleviation. The event recored a cumulative exposure to 10,889,100 people with 838,100 audiences during the live broadcast and 4.554 million likes, helping sell 7,700 kg of peaches, or 3,080 boxes, from Duishan village, Dazhan township, Xianju county. It also assisted Duishan village to create a live broadcast room, opened an "Official Flagship Store for Best Fruits in Xianju" on taobao platform and taught local residents techniques in live broadcast and online shop operation so that "farmers" had another role as "shopkeepers".



China Unicom Zhejiang branch company provided charitable assistance to Duishan village in live broadcast



Honest villages joined hands with online opinion leaders in live broadcast with a call for charitable action

Devotion to Charitable Community Activities

Donation for public good

RMB **240** million of donation in 2019

The company has established a robust management system on donation for public welfare and leveraged industry advantages in active social responsibility fulfillment to repay the society and contribute to the sustainable development of charitable undertakings.

Program covered by donation	Donation (in RMB10,000)
Donation for designated regions (poverty reduction)	20358
Assistance to border regions (Tibet and Xinjiang)	2754
Others (culture, sports, education, health, public welfare, environment protection, etc.)	560
Total	23672

Care for the vulnerables

China Unicom has always prioritized the practice of social responsibility and caring for vulnerable groups. It has dug into the real needs of the disabled, children, students, migrant workers and other groups and provided assistance accordingly through donations, charity performances, employment support and other services.

- Actively participated in charitable activities organized by the Disabled Persons' Federation to assist the disabled and provided discounts and exemption on monthly subscription charge, preferential packages, accessible facilities and other services. It designed special counters and green tracks in business outlets with priority services to the visually, hearing and speech impaired groups. There were also door-to-door services for people with difficulty in mobility.
- Provided the 8-yuan floor price in the national super-data package for low-income and elderly groups to effectively protect consumer rights and interests; by the end of 2019, it benefited about 3 million users.

In the “Little Swallow” activity to “Create a Beautiful Smart Life”, China Unicom Huzhou branch company provided a series of lectures for the elderly on the use of smart phones and the prevention of telecom fraud. It also supported the Deaf’s Day charity sales, the Special Olympics Day activities organized by the Municipal Disabled Persons’ Federation, the Curling Competition of People with Disabilities and other charitable activities. In 2019, 106 courses were provided, serving 1,995 senior citizens, while 94 volunteer service campaigns were organized to support urban development, benefiting 2,541 people.



Assistance to the elderly in using smart phones



Support to the curling competition of people with disabilities

China Unicom Chongqing launched the “WO for Youth Program” to help the poor but intelligent children, college students, left-at-home children, psychologically challenged children or those with special needs in Chongqing. It donated RMB280,000 in funds and 3,000 SIM cards, raised RMB180,000 of charity fund for 100 poor primary and middle school students in Chongqing, built 12 “China Unicom Chongqing Bookstores of Love”, and organized various activities such as the hands-on classes to comprehensively improve the life of young people.



“China Unicom Chongqing Bookstores of Love” donated by the “WO for Youth” charity fund

In 2019, China Unicom Sichuan branch company built 62 “Yellow ribbon cheer-you-up stations” with the main purpose to provide free water, place to rest, mobile phone charging facility, WiFi access and other convenience to sanitation workers, couriers, disabled people, left-at-home citizens and other social groups in need, serving more than 1,500 outdoor workers.



Service for sanitation workers



Service for couriers



Series of charitable activities by China Unicom Shenzhen branch company

China Unicom Shenzhen branch company upgraded its “Warm way home” campaign through 12,439 activities such as “Shenzhen – a City Filled with Love”, “Spring Back to Shenzhen”, “Volunteer City 3.0” and “China Unicom People in West China”, benefiting over 400,000 residents working in construction, sanitation and other sectors as well as those with disabilities. These paved the way to bring care to incoming population who would feel “at home in Shenzhen” and created a new model of “social interaction, resource coordination and synergy for care”.

Enthusiasm for volunteer activities

China Unicom has formulated a voluntary service system in the volunteer spirit of “dedication, friendship, mutual assistance and progress” and continued voluntary activities for poverty alleviation, community service, caring for children and serving the elderly in various ways to practice the core values of socialism with concrete actions.

- Participated in more than 1,800 voluntary service organizations with over 55,000 volunteers in education support, community service and assistance to those in need, helping more than 240,000 people.
- Worked with the China Youth Development Foundation to launch the “Scarf for a warm winter” volunteer campaign, raising a total of more than RMB290,000. The campaign promotion text was viewed over millions of times, succeeding in providing 3,015 sets of cold-proof materials for all children in kindergartens, primary schools and junior high schools in Geji county in Tibet. The remaining funds were all transferred to the “China Unicom Credit to Aid Education Program” to provide financial assistance to registered poor students in Geji county.

The number of registered volunteers reached **47,930**

55,004 volunteer service activities

- Organized the large-scale public welfare campaign “Ping Pong stars in the making - love and care to realize the dreams of children in Xinjiang to play table tennis”, during which all donation would be dedicated to children in Kizilsu Kirgiz Autonomous Prefecture in Xinjiang.
- In 2019, China Unicom was awarded the honorary title of “Best Partner in Public Welfare for Project Hope” by China Youth Development Foundation.

The Jinan Call Center No.1 under China Unicom Shandong branch constantly organized charitable donations, raising 149 books and 121 stationery items such as notebooks, pencils and colored pens for children in Chenzhuang village, Liji town, Yuncheng county, Heze city; a thousand pieces of winter clothes and other materials for poor people living in “Labai village, Hongmo township, Mianning county, Xichang city, Liangshan Yi Autonomous Prefecture, Sichuan province” and “Yisongzhai village, Aba Tibetan and Qiang Autonomous Prefecture, Sichuan province”; winter clothes and other daily necessities for children in the Angel Childeren’s Home in Jinan, doing their best with practical actions to pay back the society.

China Unicom Sichuan branch company held a winter series of charitable activities supported by members from 23 Communist Youth Leagues at grassroot level in over 2,000 volunteer activities to plant trees, provide convenient services to the public, pay special attention to the vulnerables, visit veterans from the War against Japanese Invasion and help sanitation keeping. In these activities, more than RMB7,000 was donated for the “Scarf for a warm winter” and other charitable activities; 8,000 pairs of gloves were donated by the CYL committee of China Unicom Sichuan to satisfy the need from poverty-stricken villages, disadvantaged groups, schools and other entities.

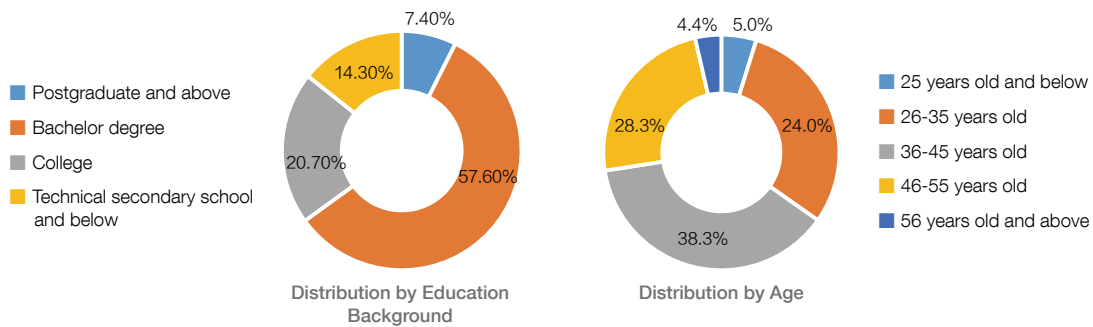


Winter series of charitable activities by China Unicom Sichuan branch company

Since the launched of “China Unicom Bookstore of Love” in 2013, China Unicom Xinjiang branch company continued its efforts and managed to build a total of 295 bookstores by 2019 with 270,000 donated books for around 160,000 primary and secondary school students of all ethnic groups in Xinjiang. This year, it launched the “u live broadcast” in 4 primary schools, including the Togobast Elementary School in Jiashi county, Kashgar city, to enable online interaction between students and subscribers who donated their credits. The live broadcast had over 7.8 million viewers and such interaction helped more people learn about Xinjiang and get closer to the place.

🌐 Paying Attention to Employee Development

China Unicom prioritizes its employees as the cornerstone of development and clearly points out that human resources are the fundamental resource of a company. In 2019, the CPC Leadership Group of the corporation issued Several Opinions on Strengthening Employee Team Building (referred to as “the 20 Articles”). 20 practical measures were put in place to address the most concerned issues by employees with attentions paid in five aspects - political stance and thoughts, professional development, compensation and benefits, skills & capacity building, and professional & personal life; market-based HR reforms were carried out to benefit the employees from business development and enhance their sense of gain; actions were also taken to protect employees’ legitimate rights and interests, care for their physical and mental health, and nurture a warm and harmonious labor relationship to raise the sense of happiness and gain amongst employees for common growth and development of the enterprise and its employees.



Employees (person)	Employees newly recruited (person)	Gender distribution (Male: Female)	Proportion of ethnic minority employees (%)	Turnover rate (%)
258523	10296	1.53 : 1	7.33	1.85

Note: Employees include mainly in-service employees and personnel under labour dispatch arrangements.

China Unicom Henan branch company thoroughly implemented “the 20 Articles” and established a work record that clarified six priorities in employee team building: the first is to incorporate the promotion of “the 20 Articles” into themed education campaigns. The second is to routinize “talks with employees in five situations”. The third is to carry out a series of activities under the theme “Me and My China Unicom”, including the “Illustration for the 20 Articles” creativity contest, the “Best for CUers” proposal presentation and the “I am China Unicom spokesperson” happy employee SHOW activities. The fourth is to assess the status quo of professional teams to formulate employment plans. The fifth is to ensure funding support for volunteers in China Unicom Group’s “Volunteer to breakthrough” activity. The sixth is to steadily push forward the establishment of “five types of facilities” for operations ins townships to optimize the working and living environment of local employees.

During its implementation of “the 20 Articles”, China Unicom Ningde branch company in Fujian province conducted a series of activities including the “Learn to be a strong business” book reading lectures, the “Me and my motherland” poem recital with music, singing competitions themed “Never forget the original aspiration to accomplish our mission” and other education campaigns to strengthen employees’ beliefs; carried out “WO for health” activities at grassroot levels, “Casual talks among us” and established yoga clubs for the physical and mental health of employees; built the “Home of employees” - the activity room functioning as fitness center, yoga room, place for physical therapy and coffee room - to improve the working environment for employees.



China Unicom Mudanjiang branch company further combined the implementation of “the 20 Articles” with its “Pioneering culture” activities to promote employee care from the very subtle aspects. It held the “Thank You” family open day to invite “pioneer” representatives and their family members to personally experience the corporate culture; organized the “Welcome Home” themed event for retired employees, during which 48 endeavoring former employees were invited back “home” to China Unicom, the place they always held dear to.



Protecting employees’ rights and interests

China Unicom stringently enforces provisions specified in the Employment Contract Law and signs contracts with 100% of its employees. In particular, some branches have also signed special contracts such as the Collective Agreement on the Protection of the Rights and Interests of Female Employees in 20 provinces and the Collective Agreement on Salary Negotiation in 16 provinces. The company complies strictly with the Interim Provisions on Dispatched Labor, continues efforts in further employment optimization with standardized management and implements the “equal pay for equal work” policy in accordance with national requirements, leading to continuous increase in employee satisfaction.

The whole corporation strictly abides by national policies on social insurance, housing provident fund and enterprise annuities for its employees to be covered by retirement, health, workplace injury, maternity and unemployment insurances as well as enterprise annuities on a voluntary basis. It guarantees employees’ rights to leave and take vacations with the paid leave scheme, provides overtime pay or extra paid leave for hours of work in excess and reserves positions for employees on maternity/paternity leave to protect employees’ legitimate rights and interests; it also offers all employees an annual health check together with health lectures and critical illness insurances to keep improving employee health guarantee.

China Unicom attaches great importance to protecting human rights and respecting personal privacy. In the process of recruitment and promotion, discriminate against employees by age, ethnicity, gender, etc. is strictly forbidden while child labor and forced labor are strictly prohibited. Mechanisms are established to protect employee rights and interests and provide easy access to filing complaints. Within the corporation, 131 labor dispute settlement organizations have been established at various levels with 251 mediators. Seven disputes were submitted for mediation and no discrimination cases were reported in 2019.

China Unicom has improved salary determination mechanism to solidify the authority of the board of directors in remuneration management for China Unicom Group. Salary distribution for front-line employees adopts a mechanism to share incremental revenue, increasing per capita salary by 7% year-on-year; HR cost adjustment has been made based on evaluation in light of efficiency and fairness, adjusting RMB220 million of existing labor cost in 5 provinces as a breakthrough in rigid cost layout; incentive resources are expanded for innovation through hard supply, raising per capita salary for those in the area of innovation by 22% year-on-year. A long-term incentive framework has been established and the flexible welfare system improved to further enhance employees’ sense of gain.

Prioritizing talent nurturing

China Unicom leverages a four-tier talent development scheme and solidifies the dual-track to nurture for professionals. It has organized talent capacity building for IT, network operation and maintenance, industrial Internet, finance, HR and legal teams to form a four-tier hierarchy from leading professionals, experts, backbone talents to promising talents, helping selecting 15,000 professionals. Employees incorporated into the talent management scheme can enjoy faster promotion to positions equivalent to the management team, nurturing a benign mechanism and atmosphere for potential talents to stand out within the company.

© Establishing a “special zone” of talent

China Unicom has gone a step further in establishing a new market-based talent nurturing mechanism under the principle to “break bottlenecks in 6 aspects”. For the management team in innovation-driven, Internet-based subsidiaries, the hierarchy of ranking levels was broken. At the same time, further efforts have been made to introduce more high-level talents with the development of the Special Plan for the Work in Bring in Leading Professionals, targeting top talents and industry experts in such fields as cloud computing, big data, IoT, artificial intelligence and security. Greater efforts would be made to attract more high-level talents from overseas through multiple channels for HR search and recommendation.

Invested around RMB **1.49** billion of resources dedicated to innovation
Introduced **11** high-level talents and over **20** top professionals and industry experts

- Increase in quantity: continued the three talent programs - the “U talented student”, “Talent hunt” and “Running Water” – for greater talent supply from three sources: fresh graduates, high-level talent hunting and current employees, contributing over 7,000 candidates to the “special zone” of talent in the field of innovation.
- Building capabilities: continued the three talent development plans - “U Growth”, “Engine” and “Accelerator” - to improve IT skills and innovation capability of fresh graduates, current employees and innovative talents, establish standard capability and curriculum scheme in 24 professional directions, design over 1,000 online courses and build a training base for IT professionals, providing trainings to 70,000 employees and certifying 24,000 in exams.
- Enhancing the role: continued the two talent plans - “Joint innovation” and “Share” - to encourage talented employees to create greater value by means of centralized transfer across units and the establishment of a knowledge sharing system.

© Restructuring the education and training system

China Unicom has circulated the Guidelines on Comprehensive Implementation of New Spirits and Requirements Related to Education and Training in the New Era and on Continuous Strengthening of Training Systems, the China Unicom Group Annual Plan of Key Trainings and other documents to form the overall framework of education and training systems and promote its implementation across all units.

- The Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era was identified as an important part in the education and training for CPC party members and managers. A total of 951 training sessions were organized for management teams within China Unicom Group with more than 27,000 participants.
- Continued to improve training course design. Focused on the field of innovation and designed the competency and curriculum schemes for 17 sub-directions in 7 disciplines with the development of 318 course outlines; established competency and curriculum schemes for 11 sub-directions in 4 network-related disciplines with 274 course outlines; established competency standards in 3 disciplines related to government and corporate customers.
- Made a good effort in the establishment of the online college with corresponding online courses. Fully leveraged Internet-based approaches to operation to constantly improve functions and applications of the online learning platform. More than 1,041 courses were added to the platform throughout the year, increasing the cumulative number of courses to 8,071 with over 18 million users.
- Held skill competitions among employees to support the new model of Internet-enabled operation. 1,400 skill competitions at all levels were organized throughout the year with more than 200,000 participants, including 34 at the headquarters level, making a record in terms of the number of competitions, participants and disciplines involved.

Subject	Content of training
Management	12 rounds of training courses in combination with themed education, with a cumulative 901 participants; The “Step Outside” training program to organize 90 senior managers to conduct exchange, workshops and mutual learning with strategic partners introduced after the mixed ownership reform; Focused on the industrial Internet and other key businesses to arrange cooperation training for 115 mid- and high-level managers in professional disciplines; Selected 28 managers to participate in training sessions organized by COD and ministries.
Outstanding young officers	The “Training Workshop for Young and Middle-aged Officers” with 87 trainees in full-time learning program; A training demonstration class for outstanding young officers with 52 participants.
Innovative talents and discipline-specific professionals	190 professional skill training sessions at the headquarters covering more than 15,000 employees. Among them, 90 training sessions were on key businesses, with more than 5,000 trainees; 26 sessions were for innovative talents, with a cumulative number of more than 2,500 trainees; 2 sessions were for backbone staff at headquarters, with 78 trainees; Organized and implemented 8 sessions were for B-level talents in network-related disciplines, with 440 trainees.
Front-line employees	About 70,000 training sessions were held for front-line employees in business operation, installation and maintenance, and call centers, with a cumulative number of over 1.97 million trainees; Conducted competency certification among first-line employee, with 39,000 employees passing the exam throughout the year.



China Unicom Contest on IT Innovation Skills



China Unicom Big Data Innovation Competition & The "Smart Cloud+Fiber for Cloud Migration" Developers Contest



China Unicom Smart Home Engineer Contest



China Unicom Fujian branch company's Contest on Customer Service Skills



China Unicom Tianjin branch company's Contest on On-premise Delivery Marketing Skills



China Unicom Zhejiang branch company's Contest on Business Skills



China Unicom Hunan branch company's Contest on Customer Complaint Handling

◎ Selecting young outstanding officers

China Unicom has circulated the Notice on Measures to Further Strengthen Young Leadership Teams, setting both short-term and medium- to long-term goals with 17 specific measures refined from five aspects to build a long-term mechanism for the young leadership team building. Since June 2019, the CPC leadership team of China Unicom Group has promoted 11 tier-2 deputy managers, including 6 aged 45 and below, accounting for 55% of the total, or roughly 30% higher than the proportion in the same age group in previous three years.

🗣️ Respecting democratic participation

In 2019, China Unicom revised its corporate democracy management schemes applicable to operations at "city-province-HQ" levels, iterated and updated the employees' congress systems, and designed the template of operation processes of the employee congress to clarify the responsibilities and obligations of employee representatives and strengthen the role of the labor union as the executing body of the employees' congress. Labor unions at all levels established the ex-ante and ex-post reporting mechanisms for guidance, supervision and inspection to ensure operations at all levels submit major issues and issues having strong implications of employees' interests to the employees' congress for deliberation.



China Unicom held the Sixth Meeting of the Second Employees' Congress



Provincial branches held employees' congresses and press briefings

493 meetings of employees' congresses at all levels throughout the year

211 sessions of online interaction with general managers at all levels in 2019, with **80,000** participants

Prioritizing services to employees

China Unicom has always adhered to the philosophy of serving employees, serving collective interests and putting people first. It has continued to strengthen employee services and innovate measures to serve employees as a way to promoting corporate culture toward a positive, sound and harmonious atmosphere.

Innovative services for female employees

China Unicom has innovated services to female employees and adhered to the principle of protecting the rights and interests of female staff, gender equality and equal pay for equal work to allow female employees to equally exercise their legitimate rights; conscientiously taken measures to guarantee production safety and health for female staff, and formulated rules to provide convenience to female staff that are pregnant or breastfeeding to further standardize and institutionalize provisions related to protecting the rights of female employees.

In order to stimulate female employees for professional success, contribution and dedication, the labor union of China Unicom Group launched the "Empower women to sail toward a new era" campaign as a platform to encourage female staff in capacity building and pursue success in their career. In 2019, 106 HQ-level female model leaders and 104 outstanding female staff were awarded through corporate-wide assessment.

To solidify efforts in female care, labor unions at all levels actively carried out various activities such as special health lectures for women, knowledge training, talent show, EAP consultation and cultural, art and sports activities. Moreover, facilities including the "Mom stations" and "Priority parking" were put in place, lectures on female workers' rights and marriage law forums were organized, women worker-specific insurance were provided to female staff together with special health checks, and the establishment of more breastfeeding rooms were underway, all to bring love and care to each and every female employee.



China Unicom Xinjiang branch company's Female Star Award ceremony



"March 8" Women's Day celebrations by China Unicom Guangxi branch company

◎ Care for employees' daily lives

When it comes to employee care, China Unicom pays close attention to and focuses on addressing the most relevant issues most concerned by its employees. Child care programs have been further expanded with more diversified courses and content. In 2019, the number of programs and enrollment increased significantly, with 309 classes and 8,308 children under care, up by 40.4% and 18.6% respectively over the previous year.

Child care programs of CU branches in Shanxi, Shandong and Hunan provided services to all local staff; CU branches in Fujian, Shaanxi and Jiangsu launched, for the first time, child care for staff working in county-level operations, addressing a major headache for more employees; 10 child care programs in Guangdong, Shanghai, Jilin and Inner Mongolia were awarded the honorary title of "2019 Loving Care under National Labor Union" by the Committee of Women Workers under the All-China Federation of Trade Unions.



Efforts were continued to promote the renovation in the working and living environment of sub-divided units, focus on production activities within those units, and improve environment and conditions at grass-roots operations in terms of catering, drinking water and heating. A total of 3,800 units completed renovation through out the year, proving strong support to the sub-division reform.

As for attention to the psychological health of employees, the labor union of China Unicom Group continued to promote the EAP assistance program, improve the platform for mental health education, training & evaluation and counselling services, and strengthen the capacity building of professional psychological counseling teams.

Employees are all covered by critical illness insurance without any lapse or under-coverage. In 2019, 28 operations insured a coverage over 200,000 yuan while the type of risks and liabilities were also extended, raising the overall level of protection. Operations in 13 provinces paid for critical illness insurance for non-contract-based staff and other operations in 25 provinces set up employee care fund for mutual assistance to further expand the scope of insured protection, establishing a "three-in-one" assistance system encompassing critical illness insurance, mutual assistance fund and supplementary health insurance.



Chairman Wang Xiaochu, President Li Guohua (retired now) and Deputy Secretary of CU's Party Leadership Group Li Fushen in the 2019 Spring Festival celebration with retired executives at CU HQ

The number of certified EAP specialists and psychological counselors within China Unicom Group reached **300**

More than **40,000** employees received psychological counselling service in 2019

◎ Strengthened employee safety management

The company attaches great importance to production safety and has established a long-term mechanism to further strengthen accountability among branches, subsidiaries, management teams and all employees at each level; it has identified the responsible units for production safety in each provincial branches and subsidiaries under the name of "Safety Supervision Department" with designated "Safety Directors" to make known who would be responsible for safety-related issues; 13 HQ-level safety management rules and policies (including emergency plans) were compiled or revised in a comprehensive manner; pilot programs were organized to standardize the double-prevention system - risk classification & management, and hidden hazard investigation and treatment - as well as basic safety management at grassroots levels. Meanwhile, various methods such as new employee training, regular safety training and emergency drills were adopted to familiarize employees with safe operation procedures, safety instructions and knowledge related to accident prevention and emergency response measures. There were no production safety accidents leading to hurts or casualties throughout the year.

87 production safety trainings with **100%** coverage among employees

◎ Diversified entertainment activities

During the campaign to “bring cultural activities to” and “encourage physical excises for better health of” grassroots employees, all branches took into account local conditions and employees’ preference in organizing a variety of cultural and art activities including employee talent shows, speech contests, family days, singing contests, employee parties, recitals, photo exhibitions and calligraphy/painting exhibitions, as well as sports activities such as football, volleyball, table tennis, badminton, yoga, swimming, walking and marathon. All these activities had extensive local engagement and broad participation in diverse forms including through Internet applications. The number of sports games and cultural performances increased with greater support from various societies, associations and interest groups, gaining wider popularity amongst employees. On the occasion of public holidays and employee birthdays, activities such as dumpling making on the winter solstice, moon cake making in the Mid-Autumn Festival, zongzi making in the Dragon Boat Festival and birthday parties were organized, greatly raising the sense of belonging among employees.



2019 China Unicom Employee Badminton Games



2019 China Unicom National Employee Five-a-Side Football Match



Themed activities in Mid-Autumn Day and Dragon Boat Festival by provincial branches



2,276 associations and groups established at all levels within China Unicom Group

3,258 cultural and sports activities were organized with around **310,000** participants

◎ Assistance to employees in need

China Unicom has established an extensive, two-tier profile system for employees in need at provincial and city levels. In 2019, profiles for 4,400 employees were logged, with a y-o-y decrease of 36%. Almost every branch operation has put in place supportive measures for employee in need, such as family visits, special assistance programs during festivals, mutual assistance aid, Golden Autumn scholarship and life assistance, to provide targeted solutions to addressing the practical concerns and challenges for employees so they can step out of difficulty at an earlier date. At the same time, innovative approaches have been adopted in assistance measures and management through a unified online platform to formulate timetables on assistive measures and poverty alleviation progresses, realizing dynamic e-profile-based management of the entire process from file creation, assistance to the final poverty alleviation.

25 branches, including 150 local operations, established mutual assistance fund, which helped 1,500 people with a total payment of RMB12 million.

RMB **79** million in assistance to employees in need

RMB **28.75** million to extend solicitude

◎ Fulfilling Responsibilities in Overseas Markets

◎ Support to the “Belt and Road” initiative

◎ Promoting facility connectivity, significantly improving the interconnectivity of communications infrastructure

- In 2019, overseas investment by China Unicom in international business totaled RMB1.18 billion, of which RMB610 million was in the “Belt and Road” region.
- New investment was made in the Eurasian submarine cable No.5 (SMW5) expansion project, the Asia-Pacific direct submarine connectivity project (APG) and the New Cross Pacific (NCP) submarine cable project, expanding a capacity of 7.14T for “Belt and Road”-related submarine cables. So far, the company had engaged in more than 40 submarine cable systems with a total bandwidth of 34T, of which 18.27T was from cables landing in or directly connecting countries along the “Belt and Road”.
- Several new projects were launched for cross-border connectivity between China and Mongolia, Kazakhstan, Laos and other countries and regions, with an additional capacity of 1.1T. Currently, the company had built over 20 cross-border cable systems, connecting to 13 neighboring countries and regions.
- New points-of-presence (POPs) were delivered in Mandalay (Myanmar), Bangkok (Thailand) São Paulo (Brazil) and Manila (Philippines). Up till now, the company had built a total of 64 POPs overseas, of which 18 were in “Belt and Road” countries.
- The Shenzhen International Border Gateway Office was upgraded to a Regional Gateway for international communications business.

◎ Promoting people-to-people connectivity, providing high-quality international roaming services along the “Belt and Road”

- China Unicom actively responded to government requirements on speed-up and tariff reduction and further adjusted international roaming tariff to improve customer perception. For 40 popular roaming destinations along the Maritime Silk Road and in Europe and the Americas, high-speed data unit was increased to 1GB/day and international roaming tariff was reduced by 29%, of which voice roaming tariff witnessed an average decrease of 2% and data roaming down by an average of 30%.
- In 2019, the number of international roaming users along the “Belt and Road” increased by 38% year-on-year and data traffic increased by 1.2 times.
- The international roaming service experience continued to be improved and flat-rate products were launched for 58 destinations along the “Belt and Road”.

◎ Promoting trade and financial connectivity, steadily building service capacity along the “Belt and Road”

- 30 operations were established overseas, covering major countries and regions around the world, with 13 along the “Belt and Road”. Provide global enterprise customers with Comprehensive ICT services were provided to corporate customers featuring domestic-overseas integration and global end-to-end coverage, including global networking, Internet access, ICTs, cloud computing, Internet of Things, video conferencing, unified communications, content and security services. Public customers overseas were provided with global voice and data services. As for the global market, new products such as the premium network for Guangdong-Hong Kong-Macao Greater Bay Area were launched while customers in the financial industry were provided with ultra-low latency private networks and smart video private networks in 15 core nodes, connecting domestic and global offices.
- Long-term partnerships were established with over 300 international operators and the number of global ICT partners increased to 120, providing global connectivity and ICT services to more than 2,000 corporate customers and serving more than 500,000 mobile users overseas.
- Collaboration was strengthened with partners introduced after the mixed ownership reform to launch the cloud-network integration products (CCN + SAG) for enterprises “going global”.
- Innovation service capabilities were upgraded globally with the introduction of IoT roaming products in 50 “Belt and Road” countries.

🚩 Complying with local laws and regulations

◎ Securing compliance in business operation

China Unicom has continued to improve legal and regulatory compliance through comprehensive prevention, targeted investigation and special response to promote the establishment of “three major systems” - accountability system, internal control system and supervision system - with refined rules and full coverage, achieving downgrade or removal of 81% of 115 recorded risk control points.

- The establishment of PoPs was mainly based on a leasing model that met local rules on machine room rental; submarine cable projects were conducted strictly following local laws and regulations; IDCs and land cable projects sought local government support to the maximum extent as possible and satisfied local environment requirements with compensation to local residents as proper.
- Network coverage was leveraged to build efficient and stable information channels between domestic and overseas regions, supporting the development of the communications industry, boosting local economic activities and employment and providing dynamics for national economy.

◎ Highly prioritizing business integrity

China Unicom has adhered to customer-orientation and business integrity in its commitment to providing customers with the most professional solutions and the most considerate services to grow with customers toward a better future.

- During the Global Partners Conference was held in Shanghai in June 2019, “U”-centered themes were made a highlight - the international operator cooperation platform UP Program, the U Plus international product system and the CUniq brand for overseas mobile virtual business - enabling comprehensive coverage for partners, portfolio & solutions as well as mobile communications business.
- In 2019, China Unicom was awarded as “Outstanding Global Information Service Provider” and “Best Data Center Service Provider”. At the “Global Carrier Awards 2019” ceremony, it was awarded “Best Asian Wholesale Carrier”, “Best Subsea Innovation” and “Best 5G Deployment”, standing out amongst 420 operators worldwide to become the only one, apart from Deutsche Telekom and PCCW Global, to have won 3 awards.

◎ Localizing business operation

China Unicom has continued to promote localized procurement, create job opportunities through recruitment of local employees, and actively engage in communicating with local communities.

- Designed unified standards and adopted procurement proposal approval, procurement plan review, localized procurement and scenario-based authorization in procurement for comprehensive control over the entire process. In 2019, the global proportion of local procurement stood at around 70%.
- By the end of 2019, China Unicom Global had 874 employees, with 763 working overseas, among them, 287 were local employees and 318 were female.

China Unicom Europe actively participated in the property owner meetings held twice every year and the quarterly tenants security meetings to propose advices and participate in joint management and maintenance.

China Unicom South African joined the South Africa China Economy and Trade Association (SACETA) as a council member and actively participated in its activities. It leveraged the association as a platform to maintain good communication with embassies, consulates and many of the local Chinese operations.

Emphasizing responsibility in public welfare overseas

China Unicom has relied on China Unicom Global in the overall operation of international business. With the vision to “create value from international information service with customer trust”, China Unicom Global has been actively engaged in charitable activities overseas to fulfill its commitment to public welfare overseas.

On 1 March 2019, China Unicom Global Limited was awarded and certified with the “Caring Company” logo for social welfare by the Hong Kong Council of Social Service.



China Unicom Global continued its partnership with the Heep Hong Society in charitable activities and encouraged its employees to raise funds for children and youth of special needs.

On 12 September 2019, China Unicom Global participated in the 2019 Annual Working Meeting of the Women's Committee under the Hong Kong Chinese Enterprise Association and was further committed to services to local executives and young women's organizations and providing constant care to women.



On 27 October 2019, China Unicom Global participated in the “Innothon 10km” co-sponsored by the Hong Kong Information Technology Joint Council and the Hong Kong Science and Technology Parks Corporation to convey the message of healthy lifestyle to the IT community and the public and promote a low-carbon way of life.

On 25 February 2019, China Unicom Australia participated in the first fund-raising luncheon held by the China Chamber of Commerce in Australia for the Children's Hospital at Westhead to help children with cancer and fund cancer research projects.

On 28 July 2019, China Unicom Singapore participated in the “2019 China Taiping FunRun” as an active player in assuming local social responsibilities to contribute to social progress and advancement, receiving extensive recognition and applaud from local governments and people from all walks of life.

China Unicom Americas actively participated in the “No-Shave November”, a local event to donate for the Cancer Center of St. Jude Children's Research Hospital.

In December 2019, China Unicom Americas participated in a holiday toy donation hosted by the Mayor's Office of Asian and Pacific Islander Affairs (MOAPIA) in Washington, DC to help 140 young people in need aged between 3 and 15, receiving sincere gratitude from the CGCC Foundation.



Striving to be a “New Force” in Technological Innovation and Development

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Striving to be a “New Force” in Technological Innovation and Development

Technology serves as a powerful weapon, which makes countries strong, companies competitive and people live well. As an enabler of the digital economy, China Unicom has firmly held the key to overall development, namely technological innovation. It carries out technological innovation in key fields, deepens the layout of innovative businesses, works hard to achieve breakthroughs, and facilitates economic and social transformation and upgrading, as well as the emergence of new global growth drivers.

Measures adopted in 2019

- Actively promoted technological management innovation, technological innovation system and system construction to achieve positive results.
- Built a comprehensive network-leading technical support center and boosted the Internet transformation.
- Promoted product research and development, provided application solutions, built high-end think tanks, offered innovative support and reference for decision-making, built industrial chain cooperation ecology, and strengthened in-depth cooperation inside and outside the company.

Actions to be taken in 2020

- To further improve the technological innovation system, mechanism and process. In terms of forward-looking technological research, we will rationally distribute key research and development areas, and carry out research and development activities under the guide of technological development research and development planning.
- To continuously push forward technological research and development, innovate application solutions, and help to build an industrial power.
- To strengthen cloud computing, big data and IoT capabilities and business collaboration with BG units of the Group, and build industry ecology through innovative capital and business cooperation.

Developing Forward-looking Technologies

China Unicom has actively played a main innovation role, accelerated breakthroughs in core technologies in the information field, and made contributions to the construction of a network power with independent innovation.

Promoting the evolution of 5G technology

China Unicom responded positively to the national 5G strategy, made great investments in 5G technology research and development and experiments, led the completion of a number of specifications and projects based on 5G standards, thereby greatly promoting the development process of 5G. Besides, it took the lead in completing the Non-Stand Alone (NSA) test in China, and launched the new networking test of Stand Alone (SA) in 11 pilot cities. After completing 5G bearing internal and external field tests, it promoted the decoupling of 5G bearing equipment from different manufacturers.

The release of White Paper on General Technical Requirements for China Unicom 5G Industry Terminals and White Paper on China Unicom 5G General Module provides guidelines for industrial chain partners to develop and innovate 5G industry terminal products.



Take the lead in cloud businesses

China Unicom takes the lead in cloud services and creates an overall development strategy of cloud services featuring integrated cloud networks, security and credibility, multi-cloud collaboration and customized services. Based on cloud services, we integrated various products such as intelligent networks, IoT, big data and industrial Internet applications, built a new integrated product system, and provided overall solutions for vertical industries. In 2019, the total volume of cloud platform resources was 267,000 virtual processors (vCPUs) and 876.2 T of memory, the storage capacity reached 26.4 PB, and the cloud rate of intensive resource pool increased to 62.3%.

◎ Enriching cloud products and services

- In terms of public cloud, we have continuously enriched the supply capacity of “Wo Cloud” products, and worked with partners to provide integrated cloud computing services to customers under a unified “Wo Cloud” brand. At present, more than 250 “Wo Cloud” cooperative public cloud foundation and application products, 45 Wo Cloud market application products, and 116 Wo Cloud online functions have been launched.
- In terms of private cloud, we have continuously built safe and credible cloud platforms and cloud products, including 312 function points in 4 categories. Core technologies have been fully independently and controllably developed, and over 100 software copyright certificates have been obtained.
- In terms of industry cloud, we continued our exploration and practice in key industry fields, and made use of the unique advantages of Wo Cloud in cloud network integration and multi-cloud management to provide customers with professional and high-quality industry cloud solutions and products.
- In terms of cloud network integration, we actively promoted the deployment of intelligent network construction and built a new integrated cloud network.
- In terms of cloud integration services, we, with the support of local operation service team, strengthened the capacity building of integrated independent implementation, enhanced the professional operation service capabilities of cloud integration, cloud migration, cloud security, etc., and provided customers with integrated services including cloud planning consultation, scheme design, integrated implementation, cloud migration, security defense, etc.
- In terms of cloud platform application, Tiangong and Huiqi platforms have been applied to Guangdong, Sichuan, Shandong, Beijing, Jiangsu, Henan and other provinces, supporting computing, trading and big data applications and achieving good results.

◎ Improving Wo Cloud product system

- Formulated 4 crucial plans for Zaoyun, Lianyun, Tengyun and Huiyun, with a focus on the 31411 projects, namely, the construction of a three-tier cloud pool, cloud networking, 4 platforms, Wo Cloud products and cloud market.
- Built a backbone cloud pool with certain industry attributes in 31 provinces that carry out intra-provincial businesses and industry applications with local characteristics, as well as industry cloud services.
- Built edge nodes that meet industry standards at local networks or major customers to carry edge cloud requirements such as 5G and IoT according to business needs.
- Planned Ling cloud, Zhi cloud, Jie cloud and other sub-brands.

Wo Cloud products have obtained the Trusted Cloud-GPU Trusted Cloud Certificate, Trusted Cloud-Cloud Service Enterprise Credit Rating AAA Certificate and Trusted Cloud-Cloud Distribution Service Certificate issued by the China Academy of Information and Communications Technology (“CAICT”). China Unicom Wo Cloud Management Platform, China Unicom Wo Cloud Platform Beijing Resource Pool System and Wo Cloud Content Distribution System have passed three-level protection certification. In 2019, China Unicom Wo Cloud was shortlisted for the list of Cloud Platforms that Pass Cloud Computing Service Security Assessment released by the Cyberspace Administration of China, and named 2019 Leading Cloud Promotion Enterprises among Million Enterprises and 2019 Excellent Industry Solution for Enterprise Cloud Promotion at the 2019 National Annual Meeting of Million Enterprise Cloud Promotion and Cloud Ecology Summit.

In 2019, we kept optimizing products and services of Wo Cloud, and organizing and implementing projects such as Liuzhou Government Cloud (Phase II), Qinghai Xining Hospital of Traditional Chinese Medicine and Handan Education Cloud; and continued to provide high-quality services to Qinghai government cloud, tower, supreme people's court and other customers.

🔗 Strengthening big data capability

China Unicom actively builds the basic capability of big data, implements the national big data strategy, and puts into practice the “Big Data Capability Enhancement Plan”. We build an independent R&D-oriented, open and sharing, safe and controllable, and industry-leading big data capability system, and strive to become an intelligent data service operation expert and the main force in the construction of digital China.

- Consolidated the independent R&D capability, enhanced the independent modeling capability, had PB-level technical data processing and real-time analysis and model service capability of 100 billion-level data scale, and formed an industry model matrix covering 10 industries such as finance and education.
- Strengthened the integration capability of data assets, and processed over 180T of incremental data, 16,000 tables and 500,000 fields every day; built a whole life cycle data management and control governance system, and realized the value operation of internal and external tenant data models.

The total number of online and offline service customers exceeded **1,000**

Provided various data services more than **3** million times a day

- Improved security capabilities, built an independent, safe and controllable big data security protection system, formed a security control capability covering the whole life cycle of data, to protect national data and user privacy.
- Built AI basic capabilities and made breakthroughs in computer vision capabilities such as faces, license plates and objects through independent R&D of AI application innovation platforms. At the end of 2019, more than 20 autonomous capabilities such as face recognition and image recognition/retrieval were output.
- Enriched product capabilities, vertically covering finance, public safety, population, supervision and other industries, and horizontally establishing a multi-level product system. The products have been applied in more than 600 tourist attractions, more than 200 government organizations, financial industry and Internet companies.

China Unicom started the construction of the data center and launched the data security platform to realize data exchange in various scenarios. While ensuring data security, we enhanced the intensity of data open sharing and built the data middle-end ecology of the whole Group. Besides, we launched the construction of a data quality system, with the online log audit ratio of 31 provinces continuing to be below 120%. Through the construction of the customer insight system, customer context-awareness system and intensive stock management system, we fully enabled the marketing and management decisions.

China Unicom has set up joint laboratories with 4 universities, including the Beijing Institute of Technology, and carried out strategic cooperation with Aisino and State Grid Xiangnan Technology. In 2019, China Unicom ranked the first in market share of the telecom industry: Our big data business market share rose from 32.1% at the end of 2018 to 53.7% at present.

Enhancing the value of IoT

In terms of IoT service, China Unicom, with the basic platform as the core and the connection service, application service, component service and scheme integration service as the carriers, integrated the upstream and downstream partners of the industrial chain for collaborative innovation, helped the urban digital transformation, and strove to become the value enabler in the era when all things are intelligently connected, so as to provide customers with an intelligent life. China Unicom ranked the 4th among the world's top 500 Internet of Things companies in 2019.

Strengthening platform construction

- Improved the capability of the connection management platform: We optimized the operation stability of the self-built cellular connection platform, and the platform API has been called 2.2 billion times in several months.
- Built the capacity of equipment management platform: We completed the capacity building support of equipment management platform for industry, public utilities, safety, etc. At present, the equipment management platform carries more than 1,000 customers.
- Promoted the construction of application enabling: We continuously and iteratively enhanced the capabilities of customer-oriented platforms such as real-name system and 2C ordering, and completed the capacity building of Machine Vision (VI) according to the general needs of the industry and the development of innovative technologies.
- Deepened the platform self-research system: Through CMMI3 level-3 certification, the software maturity has entered a new level. We constantly enhanced the capability of the self-research team and realized all self-research of the platform iteration in 2019.

Improving the product system

Centering on the 4 major fields of intelligent manufacturing, smart city, digital supply chain and consumer electronics, we have built nearly 40 IoT products and programs to support the development of the national IoT business. In 2019, we facilitated nearly 100 projects, including Guangdong Smart Water Project Program, Liaoning Manhole Cover Project, Jiangsu Nanjing Smart Construction Site, Zhejiang Bearing Quality Inspection, etc.

The number of IoT connections reached **187** million



Set up IoT Joint Laboratory with Intel



Established IoT + Blockchain Joint Innovation Center with Wanxiang Group

◎ Constructing an industrial ecosystem

- Stabilized the alliance: The number of members of the IoT Industry Alliance of China Unicom has covered 304 partners in the IoT industry chain.
- Expanded the joint innovation mechanism: In 2019, we jointly built an IoT joint innovation center with 13 leading enterprises in various industries to carry out research and development of joint innovation products; actively cooperated with foreign alliance associations, such as participating in the preparation of the White Paper on Promoting the Construction and Development of Smart Cities through Smart Lighting by LUCI.
- Innovated acceleration center: With the help of the Qinhuai District Government, professional institutions and other resources, we empowered industrial clusters through the spiral model of "industry + capital + base" and strove to build a leading IoT innovation ecological center within 3-5 years.

🔬 Focusing on new technological breakthroughs

◎ Accelerating AI innovation and empowerment

China Unicom regards AI as an important strategic starting point to enhance the competitiveness of science and technology and gives full play to the leading effect of AI.

- Independently developed China Unicom network AI experimental platform, and completed ITU network intelligent classification standard verification. Led the project of ITU-T's first intelligent education standard based on a new generation of AI technology, and completed the release of ITU-T network intelligent classification standard.
- Supported the completion of more than 10 intelligent applications such as intelligent work order analysis application and intelligent robot room inspection and scheme preparation. AI-based IPRAN network alarm intelligent analysis and positioning platform has been applied, and the efficiency has been improved by more than 85%.
- Hosted the AI competition and the network AI forum.

◎ Facilitating the rise of the quantum communication industry

China Unicom actively carried out research, demonstration and application of network technology based on quantum communication, promoted ITU-T to set up a focus research group on quantum secure communication, built the first international commercial quantum encryption trunk line between Beijing and Xiongan, and realized a number of applications such as quantum encryption video conference system, winning the highest award of the 2019 World Summit on the Information Society.

🔬 Deepening standards and norms

China Unicom has promoted scientific and technological management innovation through a series of measures such as setting up a scientific and technological committee, exploring the establishment of a shared capital pool, improving TIC evaluation system and scientific and technological innovation incentive system, and creating a good atmosphere for scientific and technological innovation.

- In terms of international standards, China holds over 100 positions in many important international standards and open source organizations, including more than 20 important management positions, basically covering important international communication and IT fields. We led the establishment of 38 new standards and the issuance of 24 standards. Besides, we have joined in more than 40 domestic technical organizations, led over 50 standards in China Communications Standards Association and participated in the preparation of 280 standards.
- Participated in the project "Research and Development, Standardization and Application of NB-IoT Key Technologies" that won the first prize of the China Institute of Communications, and participated in 2 projects such as 3GPP International Standards that won the first prize of CCSA.
- Continuously developed Tiangong System 2.0, Wo Marketing (Bee Action) System, Natural Person System and other systems based on production needs, thereby greatly promoting the improvement of production efficiency and business empowerment.

China Unicom has set up company-wide database resources and service team, and accumulatively provided patent services for more than 8,800 people in 25 provinces, 13 subsidiaries and 10 headquarters departments. The proportion of major output units of applied patents such as provincial branches and molecular companies has increased from 9% to nearly 15%.

Responsibility Performance Indicators	2019
International standard contributions (articles)	500
Industry standard (item)	280
Number of patents applied (item)	1439
Number of authorized patents (item)	658

Promoting Industrial Upgrading

China Unicom actively explored the deep integration of technology and industry, continuously promoted scientific and technological innovation to help industrial upgrading, and enabled the emergence of new global growth drivers, to shape China's strengths in high-quality development.

Making an overall arrangement of smart education

With digital campus, application of education big data and application of AI in education as the core, China Unicom adhered to the concept of in-depth integration of information technology and education and teaching to further aggregate ecology, assist the construction of education informatization and promote the realization of education modernization.

China Unicom Zhejiang branch company used big data and AI technology to build a new comprehensive service platform for the college entrance examination, which helped parents and examinees to fill out the college application reasonably and efficiently, and reduced or even eliminated the differences and unfairness caused by information asymmetry so that more college entrance examination students will rationally choose suitable universities and majors on an equal footing.



New College Entrance Examination Comprehensive Service Platform of China Unicom Zhejiang branch company

Guangdong Unicom actively exerted its professional capabilities in 5G and education informatization to help realize the balance of educational resources. Through 5G + AR/VR, it achieved distance interaction and immersion teaching, so that high-quality educational resource sharing across campuses, schools and regions could become a reality, and more children in remote areas could enjoy high-quality educational resources.



Interactive teaching scene in Guangdong Experimental High School

Innovating smart medical care

Focusing on the field of hospital cloud promotion and regional health informatization, China Unicom continued to deepen the integration of new technologies and health services, helped the interconnection of regional medical data and the sharing of high-quality medical resources, and promoted the implementation of a graded diagnosis and treatment system, to eliminate the problem of "difficulty and high cost of getting medical treatment" for the common people, enable the common people to easily enjoy basic medical and health services, and realize the equalization of medical service resources.



5G Cross-city emergency transport in Liaoning



Remote ultrasound consultation in Sichuan



Picture of telemedicine guidance surgery sent in Heilongjiang



Intelligent emergency and critical care mobile unit

China Unicom Sichuan branch company assisted the Affiliated Hospital of North Sichuan Medical College in helping Meigu County, Liangshan Prefecture, to prevent and treat AIDS remotely. Through the “5G + telemedicine” model, the company helped Meigu County to improve its diagnosis and treatment level, breaking through the limitations of geographical conditions and available medical resources, and allowing more people to receive high-level and convenient assistance.



Remote consultation by the Affiliated Hospital of North Sichuan Medical College

📡 Developing smart transportation

China Unicom has actively developed a big data product system and an urban vehicle management product system to provide 5G + intelligent transportation logistics solutions. By further optimizing the allocation of resources, we have realized the improvement of urban traffic efficiency and the reduction of pollution emissions, bringing positive changes to economic development, social life and ecological environment.



One identity for all procedures in the Airport

China Unicom designed a smart travel integrated service system for Beijing Daxing International Airport. Based on the latest technology of “5G + AI”, three-dimensional intelligent travel service was constructed around the 3 dimensions of “one identity for all procedures in the airport”, “one network for intelligent experience” and “one core for luggage control”, bringing unprecedented new smart travel experience to passengers and helping the airport to create a new image of the country.

China Unicom Changzhou branch company effectively promoted the perception of the city's comprehensive parking system through the intelligent renovation of road parking space and unattended comprehensive management of parking lots, thus truly solving the problems of difficult and disorderly parking for the common people.



Smart Parking Lot in Changzhou, Jiangsu Province

📡 Developing smart governance

In response to the call of the state and the practical needs of all sectors of society, China Unicom, with the goal of improving the efficiency of government operation, enhancing scientific decision-making ability, and strengthening the perception of citizens and enterprises as the goal, is committed to becoming a builder and operating service provider of a new type of smart city, building a new type of smart city platform, forming the core capabilities of a new type of smart city represented by integrated city perception and AI-based data governance, fully assisting in the construction of a digital government, and establishing a social governance pattern of co-construction and co-governance.

China Unicom Xining branch company assisted the local government in building an “Internet + government service” platform to realize the pattern of “one number, one window, one network, one office and one time” for the masses. Currently, the number of high-frequency service items in the platform in the whole city has reached 300, the number of service items that are “processed within one visit” has reached 400, and the number of service items that do not require presence in person has reached 100.



Qinghai E-Government Service Platform

The Jiaxing “Smart NPC” network platform set up by China Unicom Jiaxing branch company realized the sharing, unified scheduling and unified management of information resources between the main station and 74 contact sub-stations, provided information support for scientific and democratic decision-making of the National People's Congress and its Standing Committee, and offered a convenient and efficient information platform for deputies to the National People's Congress to perform its duties.

Boosting smart agriculture

China Unicom has actively implemented the rural revitalization strategy, continuously carried out innovative integration of new technologies and smart agricultural applications, enhanced the social value of agricultural products and built a smart agricultural ecological circle from research and development, planting to sales.

China Unicom Guangdong branch company assisted the government in building a 5G simiao rice precision planting big data platform to realize intelligent perception and accurate management of planting and production of Zengcheng simiao rice. The application of this project greatly promotes the standardization application and promotion of rice planting in China. Besides, it can also be applied to other crop planting processes, greatly boosting the revitalization of agriculture and rural areas.



5G real-time monitoring data of rice growth environment

Building a smart factory

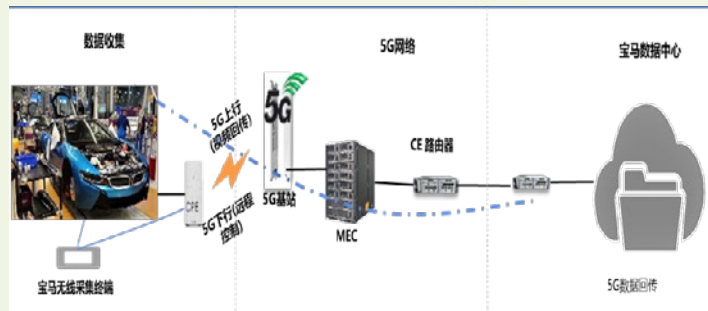
China Unicom is committed to becoming an enabler and service provider of 5G + AI industrial Internet. We build a core capability based on 5G + industrial edge cloud and centered on data services to facilitate transformation and upgrading of "Made in China", improve efficiency and optimize operations. We build a "5G fully connected smart factory" for large enterprises and provide industrial Internet platforms and application services of industrial clusters and industry clusters for small and medium-sized manufacturing enterprises.

China Unicom Guangdong branch company helped Yangjiang, the "Capital of Knives and Scissors in China", to build a cloud platform for hardware knives and scissors industrial clusters, which provided the whole process services from research and development design, production, sales and supply chain for the vast number of enterprises, promoted the evolution of innovation subjects from a single enterprise to multiple enterprises, the evolution of innovation process from serial innovation to parallel innovation, and the evolution of innovation system from closed innovation to open innovation, helped small and medium-sized enterprises in transformation and upgrading, and innovated a new mode of industrial cluster development.



Yangjiang Hardware Knife and Scissors Industry Cluster Cloud Platform

China Unicom Liaoning branch company has made full use of the characteristics of 5G network such as large bandwidth, low delay and high reliability, and carried out comprehensive cooperation with BMW Brilliance in intelligent manufacturing and industrial vision to become BMW Group's first automobile production base in the world to realize 5G + MEC application. Also, it successfully applied 5G + MEC to production links, effectively improving production efficiency.



Data Acquisition Networking Scheme



Striving to be a “Practitioner” of Ecological Civilization Construction

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Striving to be a “Practitioner” of Ecological Civilization Construction

Environment, like air, is hardly noticed when people are benefiting from it. China Unicom actively practices the development concept of “human and nature are communities of a shared life”, adheres to the basic national policy of saving resources and protecting the environment, protects the ecological environment like protecting eyes, treats the ecological environment like treating life, firmly implements green management, green network and green operation, and keeps the red line of ecological protection, to leave a beautiful home with blue sky, green land and clear water to future generations.

Measures adopted in 2019

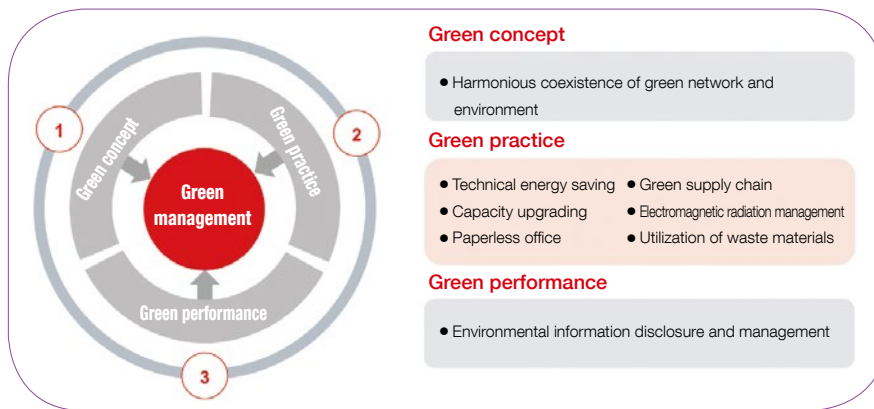
- Invested RMB104 million of special funds for energy conservation and emission reduction, promoted low-carbon technologies, upgraded and transform backward production capacity, and achieved a coverage rate of energy-saving technologies of over 70%.
- Strengthened the management of electromagnetic radiation and built a platform for publicizing electromagnetic radiation information.
- Built a green digital business hall, strengthened the green supply, and revitalized and reused assets with a value of RMB360 million.

Actions to be taken in 2020

- To continue to vigorously promote research on energy-saving technologies and apply mature energy-saving technologies to suitable computer room scenarios throughout the network.
- To track the future network development trend, focus on network energy conservation, and build and deploy 5G intelligent power monitoring system.
- To accelerate the research and application of new energy sources in communication networks.

In 2019, China Unicom adhered to the environmental protection concept of “harmonious coexistence of network and environment”, by persistently promoting energy conservation and consumption reduction, eliminating inefficient production capacity, reducing network energy consumption expenditure, and lowering the impact of greenhouse gas emissions on the environment, to help to fight the battle of pollution prevention and control, and realize ecological benefit for the people.

Strengthening Green Management



“Trinity” green management system of China Unicom

China Unicom has established a “trinity” green management system including green concept, green practice and green performance, continued to implement the Special Plan for Energy Conservation and Emission Reduction 2017-2020, formulated and implemented the Special Action for Cost Reduction and Efficiency Increase and the Special Implementation Plan for Fighting the Battle of Pollution Prevention and Control, and strove to improve our environmental management capabilities, reduce greenhouse gas emissions, improve the level of fine management, establish a long-term mechanism for green development, and help to win the battle of pollution prevention and control.

- Revised the China Unicom Infrastructure Construction Standard, put forward the power usage effectiveness (PUE) management target, and promoted the selection of new green technologies and new schemes for new construction/renovation and expansion projects according to local conditions.
- Formulated and implemented the Key Points for Energy Conservation and Emission Reduction in Computer Rooms of Unicom Cloud Data Company in 2019 to quantitatively evaluate energy conservation practices and PUE indicators. Each data center formulated work plans, optimized key system optimization and operation measures, refined facility ledgers, and carried out energy conservation measures.
- Built the differentiated capability of low-cost network operation around the mainline of network efficiency improvement and under the guidance of “5K” index, improved the network cost control capability, and reasonably reduced the maintenance cost per unit resource.

- Followed up and implemented special investments in energy conservation and emission reduction such as the energy-saving renovation of heat pipe air conditioners, distributed photovoltaic power generation, and renewal of old high-energy consumption power supply equipment.
- Joined GSMA's climate change working group to boost network energy conservation and reduce greenhouse gas emissions.

Special funds for energy conservation and emission reduction reached RMB **104** million in 2019

Issued the China Unicom Data Center Construction Standard (V2.0), formulated the zoning air conditioning system selection scheme and outdoor cold source introduction scheme based on China's climate zoning, climate conditions, energy conditions, air quality and other factors, and defined the PUE index requirements for different regions.

- In terms of green energy saving in mechanical and electrical engineering, put forward the guiding concept of energy saving equipment, circuit loss, quality compensation, direct supply of commercial power, new batteries, cold water energy storage and waste heat utilization.
- In terms of green energy conservation in civil engineering, put forward the guiding concept of greening plants, light pollution prevention, green rainwater, water resources planning and application of renewable materials.

In April 2019, China Unicom Global actively upheld environmental protection and low-carbon operation, and implemented environmental protection innovation technology and green management. With high-standard equipment and innovative green management methods, it won the Hong Kong Awards for Environmental Excellence Merit Award jointly organized by 9 organizations including the Environmental Campaign Committee, the Environmental Protection Department, and the Hong Kong General Chamber of Commerce.



Building a Green Network

Promoting green and low-carbon technologies

China Unicom has made full use of technological innovation, practiced the concept of green development, took the optimal total cost of ownership (TCO) as the goal, actively promoted DC reconstruction of infrastructure, and vigorously promoted green data centers and energy-saving and low-carbon communication rooms. In the newly-built communication system, through the combination of high-efficiency power supply module, intelligent double-circulation air conditioner and self-developed cloud cabin closed channel technology, the overall energy saving rate of infrastructure has reached 50%, and the cloud cabin closed channel technology has won the "utility model patent" awarded by the State Intellectual Property Office.

Energy saving in buildings

In the construction of green computer rooms, thermal insulation roofs, walls, roof greening and hollow heat reflecting glass were adopted to reduce energy consumption. Rock wool and other thermal insulation materials were adopted for exterior walls and roofs according to energy saving calculation, and aerated concrete blocks were adopted for maintenance structures. The lighting source has been gradually replaced by LED energy-saving lamps for fluorescent lamps, and the lighting efficiency has increased by 50% compared with conventional metal halide lamps.

China Unicom Ningxia Zhongwei Data Center is the first fresh air free cooling data center for domestic operators. It organically combines advanced energy-saving technologies such as fresh air, evaporative cooling, wind wall and heat channel closure, and only uses compressor electric refrigeration 8 days a year, with PUE value as low as 1.28.

Energy saving in power transformation and distribution system

Modular Uninterruptible Power System (UPS) was adopted in the newly put into operation computer room building, which could improve the load rate of a single UPS and reduce the loss by about 10% under low load conditions. High voltage direct current technology was adopted, 240V high voltage direct current and direct commercial power supply technology were introduced, and power could be saved by about 15% compared with traditional UPS by turning off the super-distribution module and simplifying the distribution of power supply system. Amorphous alloy dry-type transformer with outstanding energy-saving effect was adopted, and the manufactured materials could be decomposed and recycled, without environmental pollution and with low noise.

The coverage rate of energy-saving technology in the access network computer room was **73%**
 The coverage rate of energy-saving technologies in communication rooms was **71%**
 The overall energy saving rate of newly-built communication infrastructure was **50%**

Energy saving in the air conditioning system

The air conditioning adaptive system was adopted to avoid the competitive operation of the air conditioning, avoid the phenomenon of supercooling and overheating in the computer room, and effectively save energy by more than 10%. The energy-saving automatic control system was used to make the refrigeration system best match with the load, save energy and reduce consumption. Large refrigerating capacity centrifugal chillers and frequency conversion circulating pumps were employed to make full use of climatic conditions for natural cooling, saving about 33.6% of electricity annually.

Exploring clean energy

We actively carried out the photovoltaic energy power supply system pilot, which achieved evident power-saving effect, and the 3.3 kWp solar power generation system built in a single base station saved about 4,253kWh of electricity annually. We actively carried out research on the utilization of clean energy for aluminum-air batteries, and used them instead of lead-acid batteries as communication backup power sources to achieve low carbon and environmental protection.

China Unicom Deqing Data Center Base Project is a leading green cloud database in China. It is the largest data center in China that uses gas-fired cooling, heating and power combined supply technology, and also the first distributed energy project for domestic operators, saving 20,000 tons of standard coal annually.



China Unicom Xinjiang branch company's Urumqi Core Computer Room has built the country's first fully evaporative cooling air conditioning system, with PUE value reduced to 1.17. The project won the Best Energy Savings Project Award for ICT infrastructure energy saving innovation issued by the China Association of Communication Enterprises.



Promoting the optimization and upgrading of production capacity

A large number of old equipment was large in volume, high in noise, low in efficiency and consumes too many social resources. China Unicom took the structural reform on the supply side as the mainline, earnestly implemented the work of cost reduction and efficiency improvement, continuously carried out the streamlining of the 2/3 G network, withdrew the old equipment from the network, realized the energy-saving scenario of base stations, and promoted the continuous improvement of economic and environmental benefits.

- Mobile network: Completed the withdrawal of 2.6 GHz TD-LTE base station on schedule. Compared with 2016, the number of 2G carrier frequencies in the whole network decreased by 1.064 million pieces, down 52%. The proportion of 3G single carrier base stations nationwide reached 83.7%, and the network continued to be streamlined and optimized.
- Core network: Completed the withdrawal of 21 primary long-distance switching center (DC1) switches, completed the withdrawal of 4 fixed-line advanced signaling switching point (HSTP) switches, and replaced 6 old off-service advanced signaling switching point (HSTP) switches.
- Transmission network: Completed withdrawal of 23,000 terminals of equipment from the network.

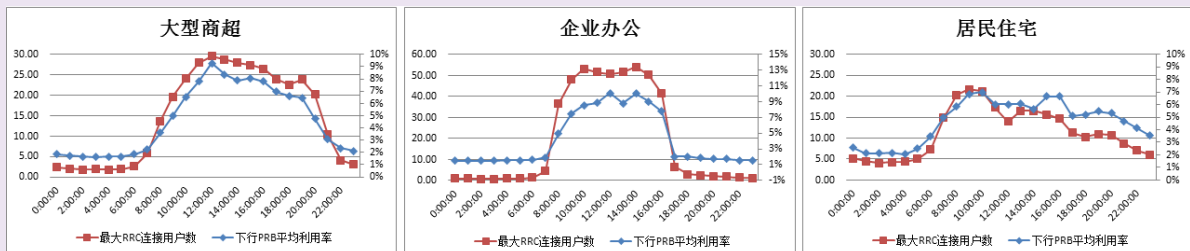
China Unicom Shandong branch company has taken energy conservation, consumption reduction, ecological environment protection and sustainable development of enterprises as its responsibilities, vigorously promoted network streamlining and eliminated old production capacity. In 2019, the company completed network withdrawal of a total of 9,404 sets of 2G independent old equipment and 4,594 WLAN hot spots in the province, saving a total of RMB34.447 million in annual electricity charges, and achieving a win-win situation for the company's operating benefits and social and ecological environmental benefits.

China Unicom Zhejiang Hangzhou branch company has innovated and carried out sub-division contracting for "one reduction and two increases" in electricity charges for IDC computer rooms. It has promoted energy conservation and emission reduction of communication infrastructure with high quality through energy-saving measures such as improving the heat dissipation efficiency of external air conditioners, strictly controlling the energy consumption of office electricity, and improving the lighting efficiency of computer rooms. In the past two years, a total of 6.87 million kWh of electricity has been saved and 6,849 tons of carbon emissions have been reduced, setting a successful example of green operation of network data center computer rooms.



Sub-division contracting of "One Reduction and Two Increases" electricity charge and energy saving for IDC computer rooms

In the face of increasing 4G base stations year by year, soaring energy consumption of base stations and prominent contradiction of energy consumption, China Unicom Suihua branch company formulated a differentiated energy-saving solution based on the application scenarios of base stations so as to reduce the impact of energy conservation on users and determine the time for energy conservation to be turned on by scenarios, thus achieving the purposes of turning off redundant resources and reducing equipment power consumption in idle time.



Utilization rate of network resources in different rooms and scenarios

Strengthening electromagnetic radiation management

In accordance with the regulations of the Ministry of Ecology and Environment and local ecological environment departments, China Unicom has formulated the Regulations on the Protection and Management of Electromagnetic Environment for China Unicom Communications Base Stations (Trial) to strengthen the management of electromagnetic radiation from base stations in the construction of mobile communication base stations to ensure that such electromagnetic radiation meets the requirements of national standards.

In 2019, the Environmental Impact Registration Form of the Construction Project was fully implemented during the construction of the mobile communications base station. After the construction was completed, electromagnetic radiation detection was carried out on the base station, and the detection data was made public through the website and subject to public supervision. In the process of base station construction, electromagnetic radiation knowledge was popularized to the public through SMS, WeChat, distribution of publicity materials and other means.

Creating green solutions

China Unicom has been engaged in the field of "smart + environmental protection", comprehensively utilized the technological advantages of big data, IoT, cloud computing, 5G, AR, etc., continuously innovated green products and applications, launched information-based green solutions and promoted the transformation and upgrading of low-carbon environmental protection industries.

China Unicom Dongguan branch company used big data AR technology to build a visual, full-process and remote platform through real-time monitoring data of pollution sources to realize scientific comprehensive decision-making of ecological environment, accurate supervision and convenience of public services. At present, more than 4,000 radioactive sources in the city have been monitored by patrol inspection. The ecological environment data resource service platform has greatly improved the ability of daily environmental supervision, response to environmental emergencies and major pollution accidents, and effectively reduced the losses caused by environmental pollution to the safety of national and people's lives and property.



Comprehensive display of eco-environment GIS
Data display of eco-environment mobile APP

China Unicom Jiangsu branch company earnestly implemented the provincial government's "green construction" work requirements, provided paperless site environmental supervision for government supervision departments through the Wo Cloud Construction Site Intelligent Supervision Platform, and offered vehicle management, equipment management, green construction and other services for site enterprises. When PM2.5 and PM10 exceeded the standard, dust suppression equipment can be linked to control dust and soil washing for vehicles entering and leaving the site, so as to reduce air and road environmental pollution near the site and ensure the environmental quality of the surrounding people. Such a platform has won the honor of "Tengyun Jiashu Excellent Product" from Jiangsu Economic and Information Commission.



China Unicom Tianjin branch company and Tianjin University jointly developed the "Dolphin 5G Unmanned Ship". It integrates testing equipment such as atmospheric monitoring radar and in-situ water quality analyzer with unmanned boat technology and 5G technology to collect information including seabed topography, ship pollution emission, water quality and other information at one time, transmit images and monitoring data to the monitoring center in real time through 5G network, thus realizing real-time analysis of marine environment dynamic data. This was the first attempt in the industry to conduct multi-parameter intelligent three-dimensional monitoring of the marine environment based on 5G.

China Unicom Jiaxing branch company upholds the concept of "lucid waters and lush mountains are invaluable assets", actively assisted in the construction of Jiaxing River Length System Management Information System, realized static display, dynamic management and normal tracking of river management information, provided effective means for the implementation of target management, task supervision and performance evaluation of river chief work in the whole region, and effectively promoted the modernization of Jiaxing's water ecological environment management system and management capability.



Jiaxing River Chief System Management Platform Workbench



Comprehensive Map of Jiaxing River Chief System Management Platform

Refining Green Operation

Building a green business network

Following the concept of "low carbon emission reduction and green office", China Unicom takes the construction of a green digital business hall and a smart living hall as its starting point to build a green intelligent business network featuring standardized management, reasonable layout, modern equipment, digital operation, comfortable experience and paperless acceptance. We integrated a variety of equipment in the business hall to reduce the use cost and maintenance cost. Meanwhile, we achieved digital operation, paperless acceptance, and electronic publicity, thereby saving work paper and publicity posters.

Strengthening waste reuse

To promote the overall improvement of the management level of energy conservation and ecological environment protection of central enterprises, China Unicom has formulated and issued the Guiding Opinions on the Revitalization of Network Asset Resources to encourage provinces to realize inter-provincial allocation of idle resources, save investment and improve the efficiency of resource use. The Group completed the auction of scrap assets disposal, with a bid transaction of RMB965 million, including RMB620 million for cable scrap disposal, RMB140 million for battery scrap disposal and RMB205 million for comprehensive scrap materials disposal.

The value of assets revitalized and reused was RMB **362** million, and the auction of scrapped assets was RMB **965** million

In the user access protocol, the detailed operating rules for the recycling of users' off-network terminals have been clearly defined, and the recycling of waste fiber optic modem has been further strengthened, including recycling of off-network user terminals, recycling of faulty terminals, and terminals recycling, repair, renovation and reuse in business changes. Besides, by setting up a variety of ways such as recycling bonus and recycling bonus points, maintenance personnel are encouraged to recycle and benefit from the old. About 3 million old fiber optic modems were recycled in 2019, saving about RMB300 million in terminal costs.

Building a green supply system

China Unicom implements the responsibility of energy conservation from the source of procurement and promotes suppliers to fulfill the responsibility of green supply in the whole life cycle of design, production, packaging, transportation and consumption. In the Technical Specification for Bidding and Procurement of Network Equipment, we put forward clear specifications and requirements for equipment power consumption and energy-saving technical parameters. In the future 5G network equipment procurement plan, equipment power consumption will be included in key indicators to continuously drive the green development of the industrial chain.

Green packaging

We continued to optimize the green packaging rules for products, focused on pan-integration products, simplified product packaging and reduced consumption of cartons, wood and other resources with the capabilities of basic communication (broadband, mobile network) + terminals, rights and interests, and joint account payment.

Green transportation

We actively explored the promotion methods of online receipt and off-line business hall acceptance to reduce logistics and transportation costs and avoid the emission of waste gas pollutants. Meanwhile, we improved the acceptance ability of complex businesses in online channels, increased the success rate of business delivery, and improved the company's green operation level.

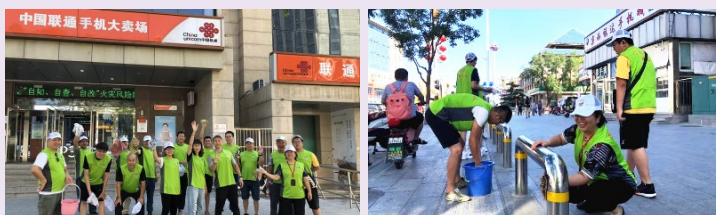
Green consumption

We actively promoted green electronic prepaid cards and reduced paper cards. We vigorously promoted eSIM application to replace physical SIM cards, cut down raw material consumption caused by operators and telecom users in business card printing, transportation, storage and replacement of physical SIM cards, and reduce environmental pollution.

Carrying out green public welfare activities

Focusing on the themes of "Green Development, Energy Saving" and "Low Carbon Action, Defending Blue Sky" and other activities, China Unicom earnestly organized and studied the spirit of the relevant documents on energy conservation and emission reduction jointly issued by the National Development and Reform Commission and other 13 departments, carried out green energy conservation publicity and public welfare activities in combination with the actual production and operation scenes, actively created a good atmosphere, and effectively promoted our green development.

In August 2019, China Unicom Beijing Mentougou branch company organized and carried out a voluntary service activity of "No Littering to Civilized Lifestyle". About 20 cadres, workers and their children took part in the activity. Everyone may benefit from a beautiful urban environment. In the future, the branch company will continue to organize and carry out various voluntary service activities to convey love and spread civilization in society!



From September to December 2019, China Unicom Global, in conjunction with the World Wide Fund for Nature (WWF), successively organized Hong Kong Yuen Chau Tsai · Marine Waste Survey and Beach Cleaning Volunteer Activities and Mai Po Nature Reserve Volunteer Activities-Removal of Invasive Plants and Rattan Plants, etc., strongly advocating the concept of protecting the local natural ecology and strengthening the staff's awareness of environmental protection.



A volunteer activity of China Unicom Global



"Planting Trees to Protect the Environment" activity of Unicom System Integration



"Building a Beautiful Tibet" tree planting activity of China Unicom Tibet branch company



Striving to be an “Aggregator” in Industrial Value Co-creation

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Striving to be an “Aggregator” in Industrial Value Co-creation

Facing the new changes in the Internet of Everything era, cooperation and mutual benefit are not only the results of economic laws but conform to the historical logic of human social development. China Unicom has always regarded cooperation as its basic strategic policy, and adhered to the cooperation concept of “consultation and co-construction for win-win results”. On the basis of integrating core capabilities, China Unicom empowers its partners, realizes complementary industrial ecological advantages and win-win cooperation, and creates a brand-new smart ecological cooperation system, to jointly meet the growing needs of the people for an intelligent life.

Measures adopted in 2019

- Promoted the co-construction and sharing of 5G networks and saved more than RMB3.5 billion in investment.
- Released a smart ecological strategy, launched the “Unicom Empowerment” ecological cooperation brand, and created three ecological systems of smart families, big videos and pan-smart terminals.
- Promoted the coordinated development of equipment suppliers, terminal suppliers, virtual operator and other industrial chain enterprises to fulfill their social responsibilities.
- Strengthened platform-based cooperation in different industries and deepened innovative cooperation.

Actions to be taken in 2020

- To continue to promote high-quality implementation of 5G co-construction and sharing, and strive to build premium 5G networks.
- To grasp the opportunity of 5G marketing, explore new cooperation models based on 5G products with partners, and build the brand of Unicom 5G Internet products.
- To strengthen cross-industry and cross-field cooperation, expand cooperation scenarios, promote in-depth development of cooperation, and build an intelligent ecosystem.
- To further deepen cooperation with strategic investors.

Deepening Cooperation with Fellow Operators

To carry out the strategy of building China into a cyber power, push forward supply side structural reform, achieve high-quality development of the industry, China Unicom, based on the principle of “win-win cooperation and common development”, actively promoted complementary advantages and in-depth cooperation among brother enterprises in the industry in resources, innovation and other fields to form synergy effect of development, continuously improve the level of co-construction and sharing of telecommunications infrastructure resources, assist the company’s network construction, and promote cost reduction and efficiency improvement.

Joining hands with fellow operators to build 5G network

China Unicom has thoroughly practiced the new development philosophy, and cooperated with China Telecom to promote 5G co-construction and sharing as an important political task to implement General Secretary Xi Jinping’s important instructions and the Party Central Committee’s decision-making and deployment. Through the co-construction of a 5G network, we will reduce duplication of construction, speed up 5G network coverage, give full play to the resource advantages of both sides, and maximize user perception and network efficiency.

Strengthening cooperation management

We adhered to the principle of “solving easy, unskilled and urgent tasks first, and promoting rapid progress and rapid improvement”, and made every effort to promote all-round development of various specialties. At present, the 5G NSA Co-construction and Sharing Network Operation Plan and Management Measures of China Telecom and China Unicom have been officially and jointly issued, clarifying the management systems such as division of labor, data opening, operation linkage, etc. and the main production work processes, basically achieving the expected goals of consistent user perception, consistent business experience, consistent network quality and consistent service support.

Optimizing the layout of cooperation

The co-construction and sharing of 5G networks adopted the mode of access network sharing. The core networks shall be built separately, and 5G frequency resources will be shared. The two sides shall be respectively responsible for the construction of 5G networks within the designated areas, and for their construction, investment, maintenance and operating costs of the networks.

Co-construction and sharing results

In 2019, 5G co-construction and sharing achieved remarkable results, with more than 50 city carrier networks interconnected and 31 provinces opening shared base stations. The two sides jointly built and shared a total of about 20,000 base stations, saving China Unicom about RMB3.5 billion in investment costs.

Strengthening the cooperation in network resources

In addition to the 5G network, through the co-construction and sharing of telecommunications infrastructure such as poles, pipelines and indoor distribution systems, more than RMB650 million of project construction investment was saved throughout the year.

- Jointly built and shared 30,400 km of local transmission pole cables, 10,700 km of pipeline cables and 7,099 indoor distribution systems.
- Signed a cooperation agreement with China Telecom on the sharing of domestic optical cables of the China-Pakistan international transmission system and the first-class trunk optical cables of Jinan-Qingdao and Kaifeng-Xuzhou, sharing more than 800 km of optical cables of China Telecom.
- Signed an agreement with China Mobile and China Telecom to jointly build 144-core optical cables along the Lhasa-Nyingchi section of Sichuan-Tibet Railway. The three parties have adopted a combined cable method to build about 443 km of 144-core optical cables.
- Continued to promote in-depth cooperation on 4G base stations with China Telecom in areas with cooperation willingness such as traffic arteries, administrative villages, counties and townships, and indoors.

Responsibility Performance Indicators	2017	2018	2019
Co-construction rate of indoor distribution system (%)	71	79	79
Sharing rate of the indoor distribution system (%)	93	93	86
Co-construction rate of poles (%)	88	91	91
Sharing rate of poles (%)	95	95	97
Co-construction rate of pipelines (%)	92	94	92
Sharing rate of pipelines (%)	98	96	93

Building an Industrial Ecosystem

In the new era when all things are intelligently connected, China Unicom faces the industrial chain with an open mind, builds innovative alliances and business models with all parties, shares high-quality resources, exploits new space for 5G integration and development, and expands cooperation in many fields such as technology, business, resources and capital, to build a benign industrial ecosystem.

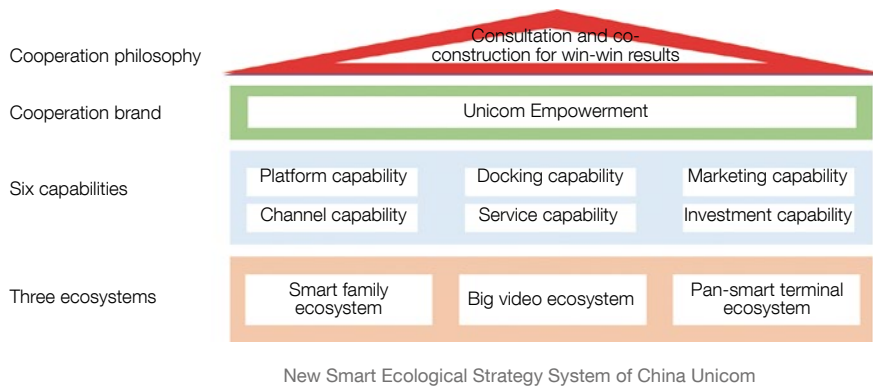
In October 2019, China Unicom held a Smart Ecological Cooperation Conference in Beijing, released a new smart ecological strategy, and officially launched the “Unicom Empowerment” ecological cooperation brand. Meanwhile, a hierarchical, multi-level and echelon cooperation system has also been established to provide convenient and efficient communication channels and cooperation portals to match differentiated resources, project support and cooperation efforts according to partners with different resource endowments.



Chairman Mr. Wang Xiaochu delivered a speech at Smart Ecological Cooperation Conference



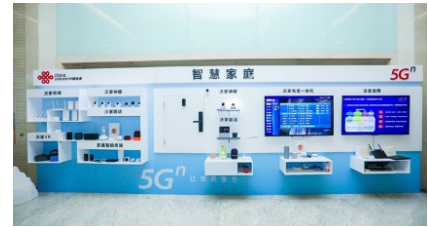
“Unicom Empowerment” new ecological cooperation brand released



“Unicom Empowerment” pools the resource endowments of all parties in the industry to jointly create 3 ecological systems: smart family, big video and pan-smart terminal.

◎ Making an overall arrangement of smart family ecosystem

The year 2019 marked the first year of the company's smart family. A “1+4+X” smart family product system has been established to coordinate the forces of all parties in the industrial chain, empower partners, create a win-win smart ecological cooperation system and lead the future of smart families.



◎ Making an overall arrangement of big video ecosystem

The company and its partners have jointly created a mobile video product in the 5G era – “Wo Video”. Wo Video integrates a variety of new content forms including 4K ultra-high definition video, VR video, AR applications, 5G games and so on, and can provide users with a comprehensive entertainment experience of 5G video new products.

◎ Making an overall arrangement of pan-smart terminal ecosystem

The company has launched 5G pan-smart incubation for a large number of partners, adopting a two-pronged classified operation mode of “open cooperation + independent customization” to create multi-form 5G pan-smart terminals and 2C data terminal products for consumers and the industry respectively, so as to promote the rapid application of 5G to thousands of households.



◎ Strengthening cooperation with equipment suppliers

◎ Strengthening normative management

- “1+2+N”, “1+3+N” and “1+4+N” management systems have been formed in procurement management, mall management and material management.
- Continued to carry out electronic procurement, continuously improved the electronic bidding platform, fully promoted the electronic negotiation room, realized online payment of bidding fees, and continuously improved the ease of use and risk prevention and control capabilities of the system, thus achieving standardization, low price and transparency.
- Comprehensively improved the capacity of electronic shopping malls, put product manager workbench online, enriched purchasing tools, improved the mechanism for quickly putting goods on sales, established a price monitoring system, and achieved more than 240 items of demand throughout the year.

The total number of e-mall suppliers reached **41,000**, with an annual increase of **19,000** suppliers

◎ Promoting equipment suppliers to fulfill their responsibilities

- Relying on the mall's operating rules, the supplier post-evaluation mechanism has been fully realized, suppliers are graded, and iterative optimization of operating rules has been continuously carried out.
- Business constraints were implemented according to the supplier blacklist published by the Group. Through the electronic bidding platform, the IP address and MAC address corresponding to the bidding documents were verified to prevent and control the irregularities in the bidding process, and realize the compliance participation of suppliers.

◎ Deepening the cooperation with terminal suppliers

◎ Establishing a cooperation and sharing mechanism

- Respected terminal suppliers, adopted reasonable opinions of terminal suppliers and actively improved, jointly provided users with rich terminals and good mobile Internet experience, and actively promoted the rapid development of the 5G industry chain.
- Carried out the cooperation model of national and provincial multi-terminal suppliers at 2 levels, establish an open and fair supplier cooperation and sharing mechanism, cooperated with more than 100 upstream and downstream terminal suppliers for mutual benefits, and iteratively optimized the whole chain of terminal supply, to ensure that users enjoy better terminal products and services from Unicom channels.
- The Group Company has introduced 174 cooperative strategic terminals. To meet the needs of the development of the pan-terminal market, it has continuously increased the cooperative introduction of new types of pan-smart terminals, putting 119 terminals on the market throughout the year.

In April 2019, the China Unicom Global Industrial Chain Partner Conference was held in Shanghai and released the brand-new 5G brand logo "5Gⁿ" and the theme slogan "Let the future grow". At the conference, the "5G Application Innovation Alliance" was announced and the "5G International Cooperation Alliance" was jointly launched with many well-known international operators and digital service providers. Also, it announced the first batch of 6 mobile phone terminals, 5 industry terminals and 4 module products with 5G function, and announced to jointly build a "5G Terminal Innovation Research and Development Center" with 9 well-known manufacturers and brand owners to design and manufacture more innovative 5G terminals so that consumers can truly and personally experience the changes 5G may bring to their lives.



◎ Facilitating the development of the 5G terminal industry

- This year is the first year when 5G is putting into commercial use. The company has formulated and improved relevant industry standards for 5G terminals, issued a white paper on 5G terminals and a series of specifications to guide the industry, promoted the rapid maturity of 5G commercial terminal products, established a standard system and warehousing process for 5G all-category terminals, guided products in advance, and strictly controlled the quality of the source, to bring leading terminal and network experience to 5G users.
- According to the personalized needs of users, we actively guided the industrial chain to enrich terminal categories and accelerate the mature commercial use of 5G terminals and eSIM terminals.

◎ Promoting terminal suppliers to fulfill their responsibilities

- Required terminal partners to earnestly fulfill their social responsibilities, carry out strict qualification examinations in accordance with national policies and regulations, quality certification, environmental protection certification, etc., and set up a complete after-sales product service system to protect the interests of customers.
- Paid attention to factors that affect users' direct experience in product testing, such as power consumption, and continued to optimize products with manufacturers. In terms of safety standards, suppliers were required to pass the national security terminal level and relevant tests, and the pre-installed applications of mobile phones must meet relevant national standards to ensure the safety of end-user information.
- Emphasized responsibilities in the legal provisions of the Supplier Cooperation Agreement. Since 1 January 2013, all cooperative manufacturers have signed the Test Commitment. If the cooperative manufacturers violate the relevant national regulations due to their own reasons and cause a negative impact on society, the cooperative manufacturers shall bear full responsibilities.

Innovating platform-based cooperation among different industries

Clarifying the concept of channel cooperation

● Following the guidance of enhancing the Internet operation capability, we continued to innovate cooperation and deepen the transformation of empowerment, and build win-win, sustainable, high-quality development of ecological channel cooperation and operation system among operators, channels, and users through the integration of resources, capacity output, rights and interests cooperation.

Innovating a cooperation method among different industries

● Introduced platform-based partners, created a benchmark model for cooperation with the post, and focused on key partners such as finance, insurance, lottery, gas stations and express delivery to replicate and promote the model so as to realize resource sharing and win-win cooperation.

● Realized rapid handling of businesses, accelerated commission settlement, improved operation capability, and drove the transformation and development of partners through the empowerment of finance, supply chain and platform tools.

In April 2019, China Unicom and China Post signed a strategic cooperation agreement in Beijing to deepen their channel outlets and business cooperation. The two sides reused 54,000 postal channels, 620,000 Ule and Unicom's 18,000 business halls and 37,000 core social channels, and realized channel extension through the mutual promotion of channels and joint promotion of core products. Meanwhile, the joint portrait and typical scenes of the existing users of both sides are drained to enhance the service capability of users of different networks to create a new platform-based cooperation model with different industries.



Promoting channel partners to fulfill their responsibilities

● Improved the cooperation agreement, which further clarifies the responsibilities, rights and obligations to prevent and crack down on communications and information fraud, standardizes business development, and requires honest cooperation and operation.

● Provided lightweight tools, fully applied portrait comparison technology, ID card verification equipment, card writers, etc., and implemented the "real name system" to help partners carry out sales legally and in compliance.

Channel partners reached **200,000**

Expanding cooperation with virtual operators

Expanding the breadth and depth of cooperation

● Adhered to the concept of "activeness, cooperation and openness for win-win results", and actively supported the development of resale enterprises. In 2019, we cooperated with 30 enterprises to carry out resale business, and the scope of the pilot was expanded to nearly 300 cities.

● Promoted the healthy development of mobile resale services, and opened up capabilities and products such as missing call reminders, voice VPN, message billing, and dazzle bell, to help virtual business partners to carry out business innovation. The number of resale users reached 80.93 million by the end of 2019.

Helping VNOs to handle crank calls

China Unicom has implemented the people-centered development idea, established a long-term mechanism covering the whole process before, during and after the event, strengthened the management of problems such as crank calls of VNOs, and maintained the network information security for users.

● Opened the eagle-eye system capability of the network to automatically identify suspected crank calls of VNOs, send them to VNOs for verification and shutdown, and pushed about 1.4 million pieces of eagle-eye early warning data messages, involving more than 500,000 numbers.

● Cooperated with the 12321-complaint reporting platform, organized VNOs to make rapid response and processing, urged VNOs to handle more than 90,000 crank calls and spam messages, effectively safeguarding the rights and interests of users.

● Urged problematic VNOs to make rectification by means of talks and suspension of numbers. In 2019, a total of 5 healthy development supervision and communication meetings were organized, talking with enterprises for more than 90 times and suspending the monthly number allocation of 98 enterprises.

The number of resale users reached **80.93**
million by the end of 2019

Deepening Innovation Cooperation

Strengthening public consumption cooperation

Deep integration of cooperative services

- Relying on the advantages of the operator's network resources and centralized platforms, we deeply worked with partners to solve their concerns, optimize their products, and provide users with safe and convenient services, so as to enhance user experience, and realize win-win results for users, partners and Unicom.
- Continued to dig deeply into the market segments in the cooperation field, and strove for the terminal entrance through product innovation, resource inclination, rights and interests cooperation, etc., to improve the exposure of head contacts, and enhance the contact drainage capability.
- Strictly implemented the cooperation agreement, optimized the support process, improved the product plan, as well as provided personalized services, specific scenario solutions and diversified settlement rules on demand to ensure high-level cooperation and high-quality development.

Promoting partners to fulfill their responsibilities

- Strictly implemented the phone users' real identity information registration system and other relevant requirements, earnestly fulfilled the main responsibility, and investigated responsibilities of cooperative businesses that failed to prevent and crack down on telecommunications network fraud crimes in accordance with the law.
- Strictly examined the qualifications of partners, examined whether the privileged products provided are safe and reliable, paid close attention to the publicity of joint products launched by partners in various channels, did a good job in risk control, and ensure the health and safety of cooperation between the two sides.
- Adhered to the Group's unified management of products and customers to maintain the healthy and orderly development of the market.

Enhancing innovation and cooperation with the government and enterprises

China Unicom gave full play to the advantages in mixed-ownership reform and actively carried out extensive and in-depth business cooperation with strategic investors in cloud computing, big data, IoT, industrial Internet and other fields.

- Continued to deepen public cloud cooperation with Ali and Tencent, and developed a total of 92,000 customers; cooperated with Tencent and Ali to launch IoT safe SIM card product; deepened the IoT connection cooperation with strategic investors, with a total of 9.35 million new connections in 2019; and worked with Tencent to launch a financial anti-fraud big data product.
- Carried out cloud networking cooperation with BAT, Huawei and other cloud providers to jointly provide customers with hybrid cloud networking capabilities.
- Cooperated with JD to launch JD-Unicom Credit Big Data Product based on risk control credit and joint modeling.

Building a capital cooperation ecosystem

China Unicom and BATJ and other mixed-ownership reform strategic investors as well as leading enterprises in the industry have carried out in-depth capital cooperation to promote business cooperation and jointly meet customer needs.



Establishment Ceremony of Yunjing Culture and Tourism



Establishment Ceremony of Smart Culture and Tourism Industry Alliance

- In March 2019, we jointly established Yunjing Culture and Tourism with Tencent to promote the integration and development of science and technology + culture + tourism. Focusing on the 3 major fields of all-for-one tourism, big data and AI, and culture and tourism marketing services, we provide customers with smart, diversified, tasteful and high-quality smart culture and tourism information industry services. At present, 6 products have been introduced and supporting work to key projects has been carried out nationwide. Meanwhile, the China Smart Culture and Tourism Industry Alliance was established, becoming an important platform for China Unicom and its industry partners to jointly serve the travel industry.

- In April 2019, Smart Steps, a joint venture established between China Unicom and Telefonica, introduced JD as a strategic investor, integrated capabilities and resources of JD to carry out businesses, and created 4 major competitive products, namely Jice, Jimu, Jizhi and Jidun, which successfully served many ministries and commissions of the country, some provincial and municipal governments and many of the world's top 500 enterprises.



Signing Ceremony of Strategic Investment between JD and Smart Steps



Founding Ceremony of Yundee

- In August 2019, Yundee was established jointly by China Unicom and Kingdee Group, mainly engaging in the research and development and operation of industrial Internet platforms. Through the deep integration of the Internet and traditional industries, it aims to help China's manufacturing industry to accelerate its expansion in the direction of digitalization, networking and intelligence, and accelerate the high-quality development of China's manufacturing industry. So far, Yundee Industrial Internet Platform of China Unicom has been officially launched.

- In December 2019, iCloudShield Security Technology Co., Ltd. was established jointly by China Unicom and Qianxin, which mainly engages in products and services based on network security. It improves the basic protection level and efficiency of network security around the 3 levels of "website security, situational awareness and security services", and provides customers with a variety of professional information security services, to build a new ecosystem of network information security.



China Unicom and Qianxin signed a strategic cooperation agreement

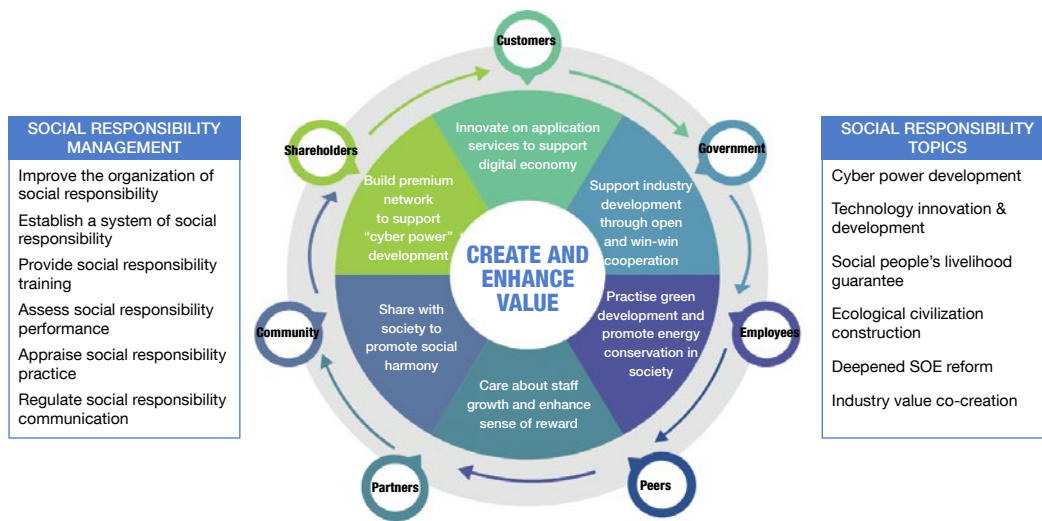


Establishment ceremony of iCloudShield

RESPONSIBILITY MANAGEMENT

Strategy of Responsibility

China Unicom has always been committed to integrating self-development with wider social responsibilities, to harmonize and unite corporate interests and social goals. In 2019, guided by the new development philosophy of “innovation, coordination, greenness, openness, and sharing”, the Company further enhanced the comprehensive leadership of the Party, took practical steps to implement the “cyber power” strategy, the “Belt & Road” initiative, the supply-side structural reform, the three tough battles and other national strategic deployments. The Company kept raising its awareness of social responsibilities, carried out wide communication on social responsibilities, and continuously enhanced its ability to create comprehensive economic, social and environmental values, seeking to make due contribution to China’s economic, social and informatization development.

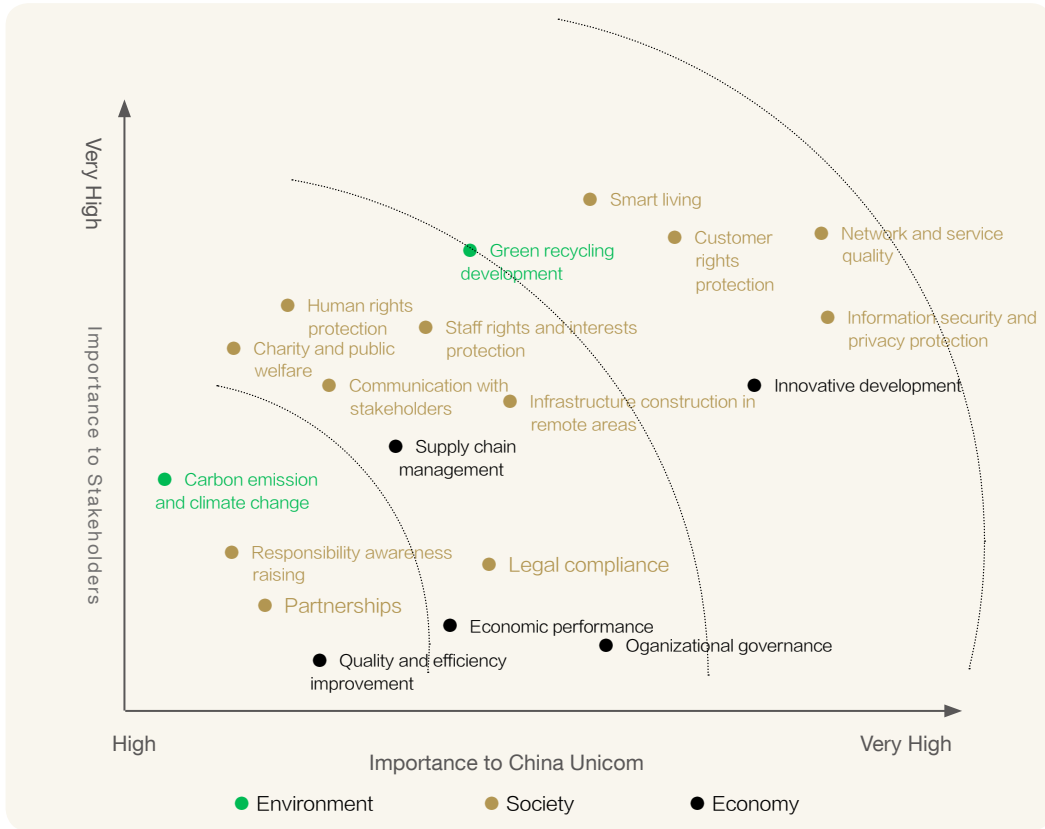


China Unicom's Social Responsibility Strategy System

China Unicom formulated a three-year plan for social responsibilities, established a social responsibility topic selection procedure under the principle of “closely following standards, regularly updating and sustainably improving”, and set six substantive topics. The Company keeps updating and continuously improving social responsibility topics by closely following international changes and domestic trends and taking advanced enterprises as the benchmark, and uses scientifically selected topics to guide corporate responsibility practices so as to ensure the effectiveness, high standard and positive influence of our social responsibility implementation.

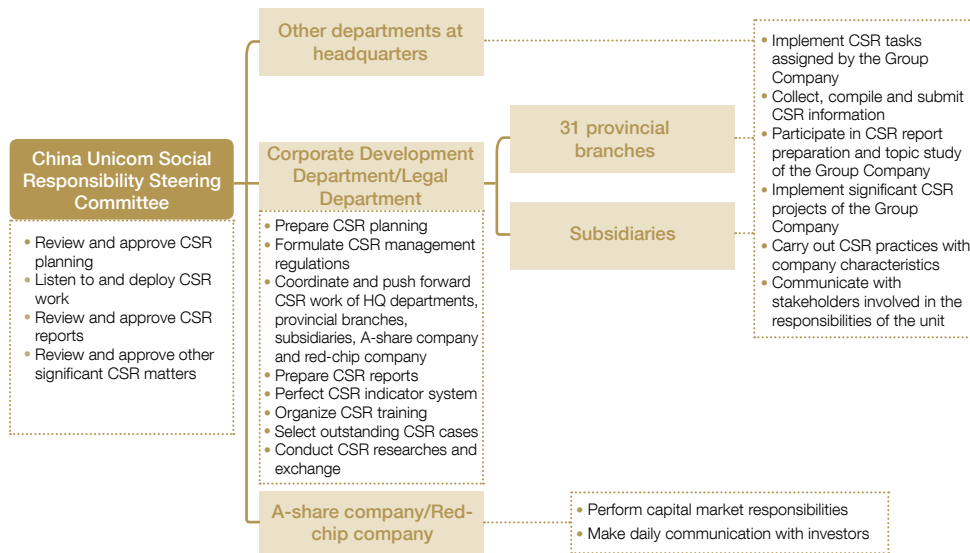
China Unicom's Selection Procedure for Social Responsibility Topics





Organization of Responsibility

China Unicom has formulated “China Unicom Social Responsibility Management Measures” and established a social responsibility organization system with the Company’s Social Responsibility Steering Committee as the core. The Corporate Development Department/Legal Department of the Group takes charge of daily work of the Social Responsibility Steering Committee and coordinates the promotion of CSR in all subordinate units, while the other departments of the Group, provincial branches and subsidiaries of the Group are responsible for the implementation and practice of CSRs in special fields.

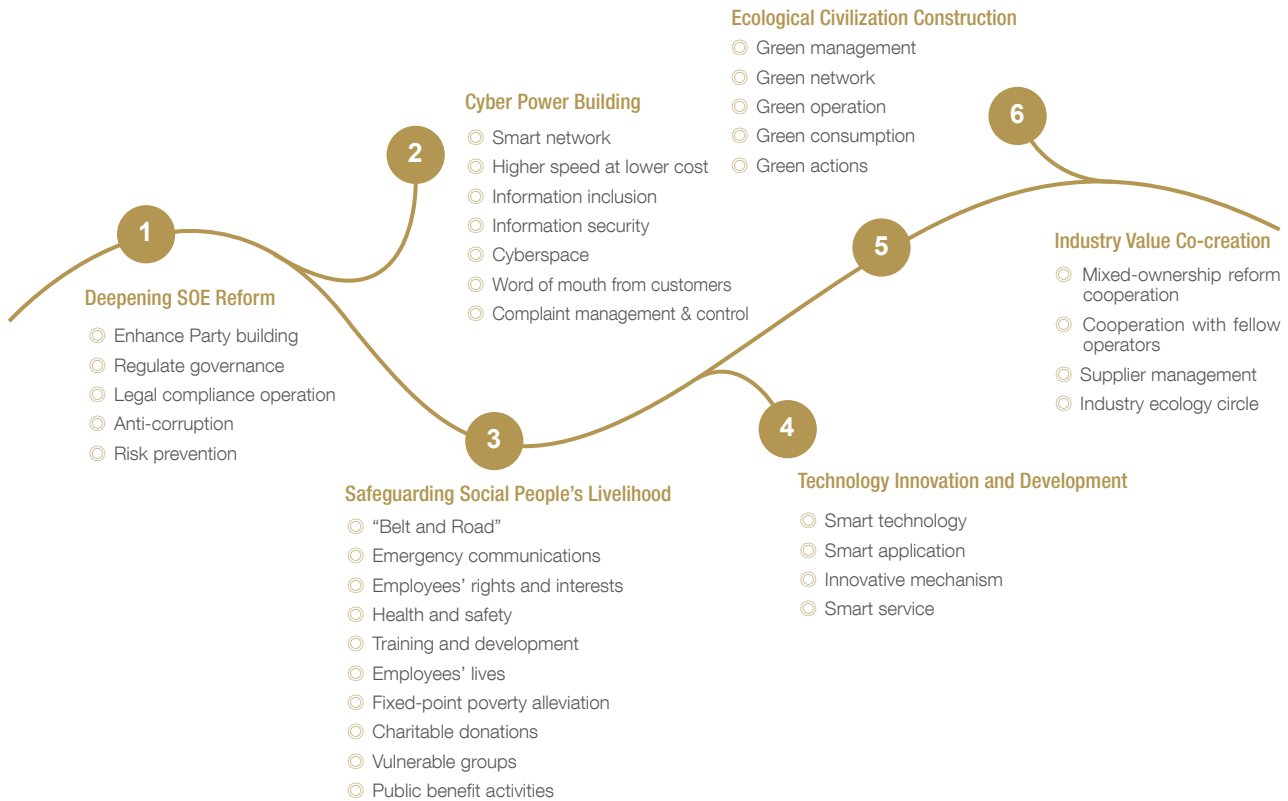


China Unicom’s Social Responsibility Working Organisations and Major Duties

System for Responsibility

The Company's Social Responsibility Management System consists of organizational management, implementation management, communication management and performance management. In practical work, we adhere to the principles of "management first, integrating into operation and top-down linkage", and follow the system to develop responsibility plans, drive the fulfillment of responsibilities and compile CSR reports.

In accordance with international and domestic standards for social responsibility and focusing on 6 substantial topics of the Company, we further optimised "China Unicom's Social Responsibility Indicator System" that comprises 110 indicators in 35 categories, to drive social responsibility to be effectively integrated into enterprise production and operation.



China Unicom's Social Responsibility Indicator System

Capabilities on Responsibility

In 2019, China Unicom actively participated in exchanges, seminars and training organized by the CSR community, kept a watchful eye on responsibility development trend, learned from the experience of outstanding enterprises, and contributed its ideas and opinions to facilitate the continuous and in-depth development of social responsibilities.

Organizer	Event
SASAC	Central enterprises CSR reports centralized publishing ceremony; Topic studies for "Blue Book on Central Enterprises' CSRs (2019)" and "Blue Book on Central Enterprises' Overseas CSRs (2019)"; Two sessions of training on central enterprises' CSR work 2019
UN Global Compact	2019 China Business Summit on Achieving SDGs, won "Best Practice for Enterprises Achieving SDGs 2019"
Global Reporting Initiative (GRI)	2019 GRI Standards Certified Course
HKGFA and CECEP	2018/2019 Corporate ESG Issues Interview
China Sustainability Tribune	CSR progress and development trends in China and around the world discussion under the theme "Reinforce Responsibility, Reshape Value"

◎ Promoting CSR development in the ICT industry

On 5 December 2019, the Annual Conference on Social Responsibility in Information and Communication Industry was held in Beijing, the theme of which was "Fulfill Responsibilities in A New Era and Win a New Future". China United Network Communications Group Co., Ltd., as the Rotating Chair unit, shared its experience and practices on implementing the CSR fulfillment requirements of the Party Central Committee and the State Council and adhering to the sustainable and responsible development path. The Company also expressed its willingness to keep joining hands with the community to drive the CSR work in the ICT industry towards better and faster development, to make greater contributions to the sustainable development of our economy, society and environment.



Vice President Mr. Mai Yanzhou gave a speech on behalf of the Rotating Chair unit



Outstanding CSR practice case awarding ceremony

China Unicom signed the "Initiative for ICT Enterprises on Fulfilling CSRs" initiated by the Annual Conference, and participated in the production of two industry standards "Corporate Social Responsibility Management System of Information and Communications Industry in China" and "Corporate Social Responsibility Evaluation System of China's Information and Communications Industry" as a member of the draft team.

Participation of Responsibility

China Unicom has set up a social responsibility communication mechanism to continuously carry out targeted communication according to the expectations of stakeholders and based on the substantial topics of social responsibilities.

Substantive Topics	Stakeholders	Communication Ways	Expectations for China Unicom
Deepening SOE Reform	Shareholders	<ul style="list-style-type: none"> Shareholders' meeting Investors communication meeting 	<ul style="list-style-type: none"> Timely and transparent information acquisition Long-term and stable investment returns Corporate governance and risk control Legal compliance and clean operations
	Government	<ul style="list-style-type: none"> Face-to-face communication Meetings 	<ul style="list-style-type: none"> Fair market competition order Efficiency increase and costs reduction Party organization building enhancement Governance capability and system modernization
	Public and media	<ul style="list-style-type: none"> Phone communication and forums Internet-based communication 	<ul style="list-style-type: none"> Timely learning about Company information Interactive communication with the Company
Cyber power building	Customers	<ul style="list-style-type: none"> Meetings Service hotline Weibo/WeChat NPS (net promoter score) survey 	<ul style="list-style-type: none"> High-speed and smooth networks Innovative smart network services High-quality networks in remote areas Preferential and transparent tariff policies Convenient and highly-efficient service guarantees Network information security protection
Safeguarding social people's livelihood	Community	<ul style="list-style-type: none"> Meetings Forums Village assistance 	<ul style="list-style-type: none"> Sustainable and effective donation Enhanced poverty aid and relief Voluntary activities for public welfare
	Employees	<ul style="list-style-type: none"> Staff forums Staff representative assemblies Democratic informal meetings Online communication with the General Manager 	<ul style="list-style-type: none"> Protection of lawful rights and interests Training and career development opportunities Opportunities for participation in democratic management Support in adversity Safe and comfortable work environment

Substantive Topics	Stakeholders	Communication Ways	Expectations for China Unicom
Technology innovation and development	All stakeholders	<ul style="list-style-type: none"> • Meetings • Interview • Weibo/WeChat 	<ul style="list-style-type: none"> • Smart products that improve the quality of living • Innovative and forward-looking communications technologies • Internet-oriented management systems
Ecological civilization construction	Ecological environment	<ul style="list-style-type: none"> • -- 	<ul style="list-style-type: none"> • Green and eco-friendly operations • Reduction of pollution through recycling
Industry value co-creation	Partners	<ul style="list-style-type: none"> • Partners' conference • Meetings and visits • Self-service portals of partners 	<ul style="list-style-type: none"> • Wide cooperation scope • Fair and open cooperation opportunities • Rich and convenient support services
	Peers	<ul style="list-style-type: none"> • Face-to-face communication • Meetings 	<ul style="list-style-type: none"> • Stronger ability for complementary use of resources • Cost savings and higher efficiency
	Customers	<ul style="list-style-type: none"> • Interviews and hotline 	<ul style="list-style-type: none"> • Driving partners to honour obligations

In 2019, the Company firmly controlled the political direction of news and public opinions, was engaged in extensive publicity and public opinion guiding, did practical work in publicity of major themes, enhanced communication with the public and the press, and vigorously developed a new ecology of corporate communication with internal as well as external parties, presenting China Unicom's open approach to communication. In the year, we published 205 news releases and conducted 38 special publicity activities.

- Improved the working mechanism and system, and strengthened the building of the publicity front. We completed the building of a press and publicity center, set up press and publicity working stations nationwide, and held press and publicity training. We also well managed and used the owned publicity fronts such as internal network, official website, Weibo and WeChat to drive the integrated development of the media.
- Made a four-full-page special reporting of China Unicom in People's Posts and Telecommunications; deepened the publicity on mixed-ownership reform, vigorously made a series of publicity on the "Belt and Road", poverty alleviation, higher speed at lower cost, and number portability; and advanced in order the publicity of China Unicom's 5G development by grasping the pace of 5G R&D and commercial use correctly, tapping main services in depth, and creating hot topics and phenomenal reporting.
- Established a mechanism covering the monitoring and reporting of public opinions and the provision of feedback and response, which greatly improved the public opinion judging and handling capacities. The 7*24 public opinion monitoring has been implemented continuously and 228 public opinion reports were produced and distributed.
- We have nearly 200 million followers on new media such as Weibo and WeChat with an annual viewership above 1.5 billion views. We have won the title of the most influential new media account among Chinese enterprises and central enterprises for 6 years in a row, ranked No.1 among Chinese enterprises in terms of the influence of new media account for 5 consecutive years, and won awards such as the Most Influential Short Video Account of Central Enterprises, the New Media Communication Power Award, the Annual Responsible Enterprise Award of Central Enterprises in Poverty Alleviation, and was listed in the TOP10 of Dandelion National Corporate New Media Index.

© Honors and Recognitions

In 2019, China Unicom sturdily performed social responsibilities, disclosed its responsibility performance promptly, gained positive progress in social responsibility communication, and was recognized by society.

- The 12 social responsibility practice cases submitted were awarded as the "Best Corporate Practice Cases 2018" by China Association of Communication Enterprises.
- China Unicom was awarded "Best Practice for Enterprises Achieving SDGs 2019" by UN Global Compact Network China.

APPENDIX

Key Performance

Type	Indicator	Unit	2017	2018	2019
Operations and development	Total assets	RMB billion	619.39	580.36	602.36
	Operating income	RMB billion	276.15	292.30	291.96
	Revenue from main services	RMB billion	247.42	262.08	262.89
	Total profit	RMB billion	1.13	8.13	10.19
	Mobiling subscribers	Million	284.16	315.04	318.48
	Of which: 4G subscribers	Million	174.88	219.93	253.77
	Fixed-line local access subscribers	Million	60.00	55.90	54.22
	Fixed-line broadband subscribers	Million	76.54	80.88	83.48
	Online 2I users	Million	42.48	53.81	54.74
	Labor productivity	RMB thousand/Person • Year	921.2	1,004.1	1,168.0
Network capability	Number of 4G base stations	Thousand	852	987	1,410
	4G coverage rate of the population	%	83	90	93
	Number of fixed network broadband access ports	Million	202	215	221
	Broadband coverage rate in administrative villages in ten northern provinces	%	95	96	95
	Coverage rate of broadband network at a speed ≥ 100Mbps in urban areas	%	52	77.7	86.3
	Coverage rate of network at a speed ≥ 20Mbps in urban areas	%	93	97	96
	Coverage rate of network at a speed ≥ 4Mbps in rural areas	%	100	100	100
	Coverage rate of mobile network in township	%	100	100	100
	Coverage rate of mobile network in administrative villages	%	89	89	90
	Number of administrative villages where broadband construction has been completed		274,000	282,000	299,000
	Co-construction rate of indoor distribution system	%	71	79	79
	Sharing rate of indoor distribution system	%	93	93	86
	Co-construction rate of poles	%	88	91	91
	Sharing rate of poles	%	95	95	97
	Co-construction rate of pipelines	%	92	94	92
	Sharing rate of pipelines	%	98	96	93
	International interconnection bandwidth	G	2,072	2,427	2,460
	4G network access rate	%	99.72	99.77	99.74
	4G network call drop rate	%	0.1	0.09	0.06
	5G commercial use city		--	--	50
5G base station	Thousand	--	--	62	
IoT connection	Million	72	109	187	
Number of channels in rural and remote poverty-stricken areas		200,000	200,000	184,000	
Commitment in major assurance initiatives	Total number of emergency communications guarantee participated	Time	361	407	578
	Emergency communications vehicles called out	Vehicle-time	137,000	133,000	152,000
	Emergency communications equipment input	Set-time	109,000	94,000	119,000
	Personnel used	Person-time	471,000	482,000	641,000
Independent innovation	Technological innovation input	RMB billion	5.81	11.5	10.26
	Number of personnel in technological activities	Person	4,195	7,703	9,155
	Contributions on international standards	Article	649	545	500
	Industry standards	Item	228	285	280
	Patents applied	Item	648	1,121	1,439
	Patents granted	Item	346	441	658

Type	Indicator	Unit	2017	2018	2019
Customer service	Monthly average complaint rate in the year	Person-time/Million users	2.73	2.96	18.26
	Overall satisfaction rate	Point	77.9	80.42	81.11
	Including: Fixed line user satisfaction rate	Point	82.45	85.73	87.9
	Mobile phone user satisfaction rate	Point	79.13	81.94	82.02
	Fixed broadband user satisfaction rate	Point	74.62	76.17	81.51
	Mobile Internet user satisfaction rate	Point	75.05	77.83	78.49
People-oriented	Gender proportion of staff	Male : Female	1.48:1	1.50:1	1.53:1
	Proportion of minority staff	%	6.89	6.77	7.33
	Proportion of females in senior management	%	10.6	11	11.9
	Input in staff training	RMB million	321.57	422.99	374.36
	Training length per capita in average	Hour	62	66	63
	Network college online learning person-time	Thousand person-time	15,333	11,250	18,078
	Network college total online learning hours	Thousand credit hours	13,096	7,040	9,163
	Proportion of contracted employees in labor union	%	100	100	100
	Input to help employees in difficulty	RMB million	9.37	30.22	79.00
	Condolence fund input	RMB million	28.38	28.53	28.75
	Employee turnover rate	%	2.07	2.16	1.85
	Special investment in energy conservation and emission reduction	RMB million	100	100	104
	Low-carbon development	Unit information flow energy consumption	Kg ce/TB	7.5	3.14
Petrol consumption		Tons	29,100	28,600	41,750
Diesel consumption		Tons	24,500	8,100	13,740
Natural gas consumption		Million m ³	7.08	10.15	5.14
Electricity consumption		Billion KWH	13.99	14.19	15.81
Water resource consumption		Million tons	22.21	18.57	18.10
Water consumption density		Tons/RMB1 million	80.62	63.85	62.27
Coal consumption		Tons	72,700	58,000	77,000
Energy saved		Tce	169,200	163,200	172,800
Energy-saving technology coverage rate		%	61%	66%	70%
Greenhouse gas emission		Million tons	5.19	13.13	13.20
Total direct GHG emissions (category 1)		Million tons	--	0.37	0.39
Total indirect energy GHG emissions (category 2)		Million tons	--	12.76	12.81
Carbon intensity		Tons/RMB1 million	18.88	45.13	45.40
SO ₂ emission		Tons	8,900	2,400	1,800
Chemical oxygen demand (COD)		Tons	25,400	21,100	26,100
Recycling upon scrappage and disposal		RMB million	1,242	621	965
Disposal of scrapped cables	Tons	--	--	155,000	
Disposal of scrapped storage batteries	Tons	--	--	10,200	
Disposal of general scrapped materials	Tons	--	--	10,900	
Disposal of waste and used terminals	Tons	--	--	1,800	
Compliance management	Legal compliance training organized	Time	1,576	1,920	2,514
	Legal compliance trainees	Person	254,000	248,000	245,000
	Safe production training	Time	37	40	87
	Coverage rate of safe production training	%	100	100	100
Community responsibility	Registered volunteers	Person	23,998	43,873	47,930
	Participants in volunteer activities	Person-time	39,966	50,412	55,004
	Credit rating	Grade	AAA	AAA	AAA
	Total tax paid	RMB billion	7.58	8.55	4.49
	Jobs created	Person	10,780	10,954	10,296
	Total donation	RMB million	72.96	191.96	236.72

Company Honors

- China Unicom ranked 251st in “The Forbes Global 2000” for the year 2019.
- China Unicom ranked 262nd by revenue in “Fortune Global 500” for the year 2019.
- China Unicom won “The Best Level (A level) in Information Disclosure Work Evaluation 2018-2019” from Shanghai Stock Exchange.
- China Unicom won the “Best Information Disclosure” award at the Third IR voting.
- China Unicom was awarded “Best in Communications Sector” and “Best IR by a senior management team” by IR Magazine.
- China Unicom was voted four years in a row as “Asia’s No.1 Most Honored Telecom Company” in “2019 All-Asia Executive Team” ranking organised by Institutional Investor, and was honored to rank No.1 in all categories in the telecommunications sector, including: “Asia’s No. 1 Most Honored Telecom Company”, “Asia’s Best CEO (Telecoms) - 1st”, “Asia’s Best CFO (Telecoms) - 1st”, “Asia’s Best Corporate Governance (Telecoms) - 1st”, “Asia’s Best ESG SRI Metrics (Telecoms) - 1st”, and “Asia’s Best Investor Relations Company (Telecoms) - 1st”.
- China Unicom was awarded “The Best of Asia – Icon on Corporate Governance” by Corporate Governance Asia.
- China Unicom was accredited with “Gold Award - Excellence in Corporate Governance, Social Responsibility & Investor Relations” in “The Asset ESG Corporate Awards 2019”.
- China Unicom was voted again by professional investors and analysts as “Asia’s No.1 Best Managed Telecommunications Company” in “Asia’s Best Managed Companies Poll 2019” organised by FinanceAsia, an authoritative financial magazine, and was honoured with the award of “No. 1 Best Growth Strategy in China”.
- China Unicom was awarded as “Outstanding Contribution Enterprise in Science and Technology Innovation” by SASAC in 2016-2018.
- China Unicom ranked the 4th China Influential Brand in “China Influential Brands Report (2019)” of CASS.
- China Unicom’s website (www.chinaunicom.com.hk) has won the Grand award of best website respectively by three international institutions iNova Awards, Mercury Awards 2018/2019 and Astrid Awards 2019.
- China Unicom Global won the award of “Best Data Center Service Provider” of the year in the service provider group at the 22nd Telecom Asia Awards 2019.
- China Unicom Global won the “Information Technology Progress Award in the Guangdong-Hong Kong-Macao Greater Bay Area” from Hong Kong Innovative Technology Development Association (HKITDA), including “The First Prize of Application Benefit” and “The First Prize of Technology Innovation”.
- China Unicom Global won three awards at the 15th “Global Carrier Awards 2019”, including: “Best Asian Wholesale Carrier”, “Best Subsea Innovation” and “Best 5G Deployment”.
- China Unicom Global was awarded “the Best Cross-border Awards” at “Asia’s Best E-Tailing Awards” 2019 organized by the Office of the Government Chief Information Officer (OGCIO), the Hong Kong Management Association, ACCA, and the Invest Hong Kong.
- Unicom Big Data won several awards, such as “The Most Valuable Big Data Enterprise 2018-2019”, “Industry Intelligent Upgrade Guiding Award”, “2019 Digital China Construction Big Data Leading Enterprise Award”, “Outstanding Enterprise Award”, “2019 China Big Data Industry - Best Growing Competence Enterprise Award”, and “2019 Innovation Excellent Enterprises”.
- CUSU was awarded the “Promote China’ Influential Brand Growth Contribution Award”

Institutions and Organizations

Major Organizations Newly Joined by China Unicom in 2019

No.	Name of Organization	Post
1	OIDAA	Vice President
2	CFLP IOT Expert Committee	Rotating Chairman
3	Digital China Industry Alliance	Vice President Unit
4	Xiongan Intelligent City Innovation Federation	Vice President Unit
5	5G Application Innovation Alliance	Founding Unit
6	5G Cloud Gaming Alliance	Council Member Unit
7	Internet Society of China	Member Unit
8	Edge Computing Consortium (ECC)	Member Unit
9	Citizen Science Group Four Alliance	Member Unit
10	ORAN	Member Unit

No.	Name of Organization	Post
11	China Association Of Travel Services	Member Unit
12	Fintech Industry Development Alliance	Vice President Unit
13	China Electric Power Big Data Collaborative Innovation Alliance	Member Unit
14	Beijing Information & Telecommunication Association	Council Member Unit
15	AI Industry Innovation Alliance	Member Unit
16	China Tourist Attractions Association	Member Unit
17	Association of Communications Across the Taiwan Straits	President Unit
18	BRICS Business Council Chinese Digital Economy Working Group	Group Leader Unit
19	Hebei Xiongan New Area Weixun International Communication and Cooperation Center	Council Member Unit

Description of the Report

Reporting Period	From 1 January 2019 to 31 December 2019, some sections exceeding aforesaid period.
Release frequency	The CSR report of China United Network Communications Group Company Limited is an annual report.
Organizational coverage	The report covers China United Network Communications Group Co., Ltd. and its subordinate institutions. For the convenience of expression, "China Unicom", "the Group", "the Company" and "We" are used respectively in the report.
References	Guiding Opinions on State-owned Enterprises to Better Perform Social Responsibilities, SASAC; Guidelines for preparation of Report on Performance of Corporate Social Responsibility, Shanghai Stock Exchange; Guidance on Environment, Society and Governance Report, HKEX; Social Responsibility Report Preparation Guidance, AQSIQ and SAC; Guide on Preparation of China Corporate Social Responsibility Report (CASS-CSR 4.0), Chinese Academy of Social Sciences; Guide on Sustainable Development Report, Global Reporting Initiative (GRI) (G4 Edition); Social Responsibility Management System for China Information and Communications Companies, China Association of Communications Enterprises.
Clarification about the data	The 2019 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.
Report 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 CSR Report of the Company is issued in Chinese and English in forms of paper and electronic editions. For the online Chinese report, please visit the website of China Unicom: http://www.chinaunicom.com.cn . For the online English report, please visit the website of Global Compact: http://unglobalcompact.org .
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Note:

- For detailed data about 102-24, 102-25 and 201-4, please refer to the annual report of China United Network Communications Limited, at <http://www.chinaunicom-a.com/>.
- The ozone depleting substance (ODS), nitrogen oxide (NOX), sulfur oxide (SOX) and other major gases mentioned in 305-6 and 305-7 are not the main emissions of the Company.
- The relevant system or process referred to in 102-28 and 102-56 will be established gradually.

 CASS-CSR 4.0

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A2.2	P73	B2.2	—	B6	P22-26, 57	B8.2	P18-20, 28-44, 57, 73
A2.3	P54-58	B2.3	P37, 41	B6.1	N/A		

Note:

1. As China Unicom is large in size and its services have a wide coverage, the total of the waste (including hazardous and non-hazardous waste) referred to in A1.3 and 1.4 has not been counted in classification comprehensively. Through substantive topic identification, we mainly reported the recycling and reuse of the main resources used by the Company in operation such as cables, rechargeable batteries, terminals and general materials. In future, the Company will further complete relevant data statistical system.

2. Since the main business of the Company is telecom service, the packaging material used for finished products referred to in A2.5 is not applicable to the Company's practical business condition.

Feedback

Dear reader,

Thank you very much for reading this China United Network Communications Group Co., Ltd. Corporate Responsibility Report 2019, which is our 13th social responsibility report publicly released to the society. In order to better provide valuable information to you and other stakeholders, facilitate supervision of our work in the field of social responsibility, as well as improve our capability in fulfilling social responsibilities, we sincerely invite you to offer us your opinions and suggestions to this report.

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● **You're from:**

A. Customer B. Shareholder C. Government D. Community E. Partner F. Media G. Social group H. Others (please specify) _____

● **Your overall evaluation of China Unicom CSR Report is:**

A. Excellent B. Good C. Average D. Bad E. Very bad

● **What do you think about China Unicom in fulfilling its economic, social and environmental responsibilities:**

Economic responsibility A. Excellent B. Good C. Average D. Bad E. Very bad

Social responsibility A. Excellent B. Good C. Average D. Bad E. Very bad

Environmental responsibility A. Excellent B. Good C. Average D. Bad E. Very bad

● **What do you think about the response to and disclosure of the concerns of stakeholders?**

A. Excellent B. Good C. Average D. Bad E. Very bad

● **What do you think about the information, data and indicators released in this report in terms of clarity, accuracy and completeness?**

Clarity A. Excellent B. Good C. Average D. Bad E. Very bad

Accuracy A. Excellent B. Good C. Average D. Bad E. Very bad

Completeness A. Excellent B. Good C. Average D. Bad E. Very bad

● **Is this report easy to read in terms of content arrangement and format design?**

Content arrangement A. Easy B. Average C. Not easy

Format design A. Easy B. Average C. Not easy

● **Other opinions and suggestions on China Unicom's CSR work and this report:**

Thank you for your feedback and time!



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