

2020 CSR REPORT



REPORT SPECIFICATION

Time Frame

This is the 2020 CSR Report of China Telecommunications Corporation Limited. It covers the whole year of 2020 with some sections beyond this time frame.

Scope of Organization

Organizations covered in this report include China Telecommunications Corporation Limited, its branches and subsidiaries held by it. In the report, China Telecommunications Corporation Limited is also referred to as “China Telecom (CT)”, the “Group Company”, “the Company”, “we”, etc.

Release Cycle

This is an annual report that is released every year.

Content Description

This report responds to the major topics concerned by China Telecom’s stakeholders to the greatest extent, including regular topics and annual highlights. Data and stories are mainly collected internally with some references to public media news. Amounts of money herein are all in RMB unless otherwise stated.

Reference Standards

This report was compiled by taking references from the “Guidelines for Central SOEs to Fulfill Corporate Social Responsibilities” and the “Guidelines for SOEs to Better Fulfill Corporate Social Responsibilities” issued by the State Owned Assets Supervision and Administration Commission of the State Council (SASAC), the “Guidelines for Preparation of CSR Reports in China” (GB/T 36001-2015) issued by the former General Administration of

Quality Supervision, Inspection and Quarantine of China and the Standardization Administration of China, the “CSR Management Scheme for ICT Industry in China” (2016 version) issued by China Association of Communication Enterprises, the “Guidelines for Preparation of CSR Reports in China” (CASS-CSR4.0) issued by Chinese Academy of Social Sciences, as well as the “Sustainability Reporting Guidelines” (G4) by the Global Reporting Initiative (GRI).

Guarantee of Reliability

Information disclosed in this report is true and aims to reflect CT’s market, social and environment performance in an objective and comprehensive manner.

Access to Report and Extended Reading

Our CSR report is available in Chinese and English, in print and online. The online version can be downloaded from our website (<http://www.chinatelecom.com.cn>).

China Telecom has been publishing CSR reports for 11 years consecutively. For more information on the Company’s fulfillment of its CSRs, please visit our website for inquiry or download and read previous CSR reports.

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DIALOGUE WITH THE MANAGEMENT



KE Ruiwen
Chairman & Party Secretary,
China Telecommunications Corporation Limited

Q: China has entered a new development stage and embarked on a new journey to build a modern socialist country in all respects. How does China Telecom view the responsibilities on its shoulders?

KE Ruiwen: The Fifth Plenary Session of the 19th CPC Central Committee proposed that China, having accomplished the First Centenary Goal of building a moderately prosperous society in all respects, would build on this achievement to embark on a new journey toward the Second Centenary Goal to fully build a modern socialist country thus signifying China's entry into a new stage of development.

General Secretary Xi Jinping pointed out that “entering a new stage of development, the profound changes in the domestic and international environment have brought a series of new opportunities and challenges. But the opportunities generally outweigh the challenges.” In this new stage of development, China Telecom must not only seize the new opportunities brought about by the profound changes in the domestic and global environment, but also get prepared to rise to a series of new challenges to set the stage for the 14th Five-Year Plan.

Making it through tough times is what manifests courage and perseverance. Looking back on the extraordinary year of 2020, China Telecom has stood up to challenges brought about by the sudden outbreak of the COVID-19 epidemic, the arduous tasks of reform and development as well as complicated external environment. Under the strong leadership of the CPC Central Committee, China Telecom is united, determined to forge ahead against all difficulties. It has withstood the big test of the epidemic and succeeded in completing all targets set for the 13th Five-Year Plan period with a satisfactory answer sheet.

The first is new ICT infrastructure to lay a solid foundation for new development. We've accelerated the roll-out of 5G networks and created a national cloud-network infrastructure featuring lean and agile network, ubiquitous and differentiated computing power, organic security and integration, independent control over core capabilities, smart intelligence, greenness and reliability. We've also promoted ICT innovation and coordinated efforts in facilitating network availability and universal services in the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Guangdong-Hong Kong-Macao area and other major regions

and remote areas, striving to contribute to the socialist modernization drive with high-quality networks and secure and reliable services.

The second is digital transformation to build new development dynamics. As the main contributor in building national cyber strength and the digital China, it is our mission and due responsibility to facilitate the digital transformation. We've continued to consolidate the foundation of cloud-network digitalization, build digital platforms, foster ecosystem partnerships, empower various industries, help improve people's livelihood and boost service capabilities so as to contribute to our country's digital development.

The third is promoting civilization and progress to create a better life together. We've always taken people's aspiration for a better life as our vision through active practices in green development, rural revitalization activities, passions for social welfare, care for employees, fulfillment of responsibilities overseas and stringent compliance requirements to join hands with all stakeholders on a new journey toward harmony and happiness.

The journey is long and the only way out is to endeavor with faith. The year 2021 is a year of special importance in the process of China's modernization drive and also a key year for China Telecom to fully implement the strategy of cloudification and digital transformation to usher in a new business landscape. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, China Telecom will implement the guiding principles of the Party's 19th National Congress and the second, third, fourth and fifth plenary sessions of its 19th Central Committee in full to clearly position itself as a central SOE in a new era and firmly stick to the decisions and deployments made by the CPC Central Committee and the State Council. We will apply the new development philosophy in a full, accurate and comprehensive manner, coordinate the relationship between development and security, stay true to the original mission of building national cyber strength and the digital China as well as maintaining cyber security, improve the quality of party building, and fully implement the strategy of cloudification and digital transformation with its aim to continue to sharpen competitive edge and grow into a world-class enterprise.



LI Zhengmao
President & Deputy Party Secretary,
China Telecommunications Corporation Limited

Q: Entering a new stage of development, what specific actions did China Telecom take in fulfilling its CSR in 2020 and what results have you achieved?

LI Zhengmao: In 2020, under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we conscientiously implemented the spirit of the important instructions of General Secretary Xi Jinping and the major decisions and deployment made by the CPC Central Committee, and adhered to the overarching philosophy of party leadership, integrity, innovation, endeavoring efforts and commitment to responsibilities. We actively implemented the strategy of cloudification and digital transformation, coordinated efforts in epidemic prevention and control and production and operation, and secured stable corporate development and the realization of main goals during the 13th Five-Year Plan period, laying a good foundation for moving towards a new development stage.

In terms of new ICT infrastructure to lay a solid foundation for new development, we accelerated the roll-out of 5G networks, actively promoted co-building and sharing, prioritized SA architecture and became the first to build the world's largest 5G SA network and put it into commercialization. We made steady efforts in promoting the construction of cloud-network infrastructure with the “2+4+31+X+O” overall layout, facilitated ICT innovation and strengthened our control over key and core technologies. We implemented the deployment of the national strategy of coordinated regional development and advanced major programs for the Beijing-Tianjin-Hebei region, the Guangdong-Hong Kong-Macao Greater Bay Area, the Yangtze River Delta, the Chengdu-Chongqing area and other places. We continued to expand the availability of communications networks in remote areas, improve the level of rural ICT adoption and accelerated the universal service projects in remote and poor villages. We also satisfied national requirements on network and information security, worked with government departments to fight cybercrimes, build clean cyberspace, expand security products and services, and improve capabilities in cyber security governance and assurance. Besides, we made efforts to ensure emergency communications in Wuhan, Hubei and other areas severely hit by the epidemic, assist in emergency rescue and disaster relief including in earthquakes, floods and typhoons, and successfully secured communications guarantee for major events throughout the year.

In terms of digital transformation to build new development dynamics, we promoted comprehensive digital transformation, nurtured an

internal service ecosystem to improve smart operation, management and service capabilities and created an external service ecosystem for vertical industries to build data-driven application capabilities. We were active in enhancing communication with partners from all walks of life, carrying out multi-faceted cooperation at multiple levels in various forms, supporting governments to deepen the “Internet + government services”, helping localities to promote smart education, build smart communities and develop smart elderly services, and innovating to provide smart home products and services for the purpose of boosting the quality and efficiency of efforts related to people's livelihood. We stuck to the principle of “providing services wherever there is need from the customer” and continued the digital transformation of services to enhance smart service capabilities.

In terms of promoting civilization and progress to create a better life together, we made active practice in green development, promoted energy conservation and emission reduction through more energy-efficient and environmentally friendly networks, green offices, leveraged ICT applications to assist our customers' green development. We took actions to fully promote poverty alleviation, especially through in-depth network-enabled activities, and innovatively created a sustainable poverty alleviation model featuring “industry + employment + consumption”. The 1,438 designated villages for poverty alleviation in 6 counties assisted by our branches at all levels were all lifted out of poverty, winning us the 2020 Innovative Organization Award for National Poverty Alleviation. We also strengthened employee training for targeted empowerment and organized different forms of competitions for employees to demonstrate their value and help them grow. We were vigorous in advocating the spirit of model workers, with 27 employees awarded the honorary title of “National Model Workers” in 2020.

In 2021, China Telecom will resolutely abide by the decisions and deployment of the CPC Central Committee, do our best to fulfill the responsibilities of a central SOE, earnestly implement the strategy of cloudification and digital transformation, and comprehensively deepen corporate reform. By doing so, we can promote solid and high-quality development, consolidate the foundation for new ICT infrastructure, and actively empower thousands of industries to help boost the digital transformation of the economy and society and make our utmost efforts to become the main contributor to national cyber strength, the digital China initiative and cyber security, so as to make new and greater contributions to the comprehensive efforts in building a modern socialist country.

TOP MANAGEMENT



KE Ruiwen
Chairman, Secretary of
Party Leadership Group



LI Zhengmao
Director, President, Deputy Secretary
of Party Leadership Group



SHAO Guanglu
Director, Deputy Secretary
of Party Leadership Group



FU Yongzhong
Head of Discipline Inspection
and Supervision Team, Member
of Party Leadership Group



ZHANG Zhiyong
Vice President, Member of Party
Leadership Group



LIU Guiqing
Vice President, Member of
Party Leadership Group



ZHU Min
Chief Accountant, Member
of Party Leadership Group



TANG Ke
Vice President, Member of Party
Leadership Group

TOWARD A NEW DEVELOPMENT STAGE

The Fifth Plenary Session of the 19th CPC Central Committee proposed that China, having accomplished the First Centenary Goal of building a moderately prosperous society in all respects, would build on this achievement to embark on a new journey toward the Second Centenary Goal to fully build a modern socialist country thus signifying China’s entry into a new stage of development.

Gather Strength to Forge Ahead at the New Development Stage

General Secretary Xi Jinping emphasized that “entering the new stage of development is a great leap in the historic process of the rejuvenation of the Chinese nation.”

From a historical standpoint, this new stage will see our Party lead the people in completing the historic transformation from standing up and becoming prosperous to growing strong. After its founding, the CPC united with and led the people in fighting bloody battles with unyielding determination to make the historic transition from new-democratic revolution to socialist revolution. After the founding of the PRC, our Party led the people in endeavoring to build a stronger China with a spirit of self-reliance and completed the historic transition from socialist revolution to socialist development. On entering a new historical period, it led the people in freeing the mind and forging ahead and took yet another huge leap forward along the course of socialist modernization. Building on the development of the past, our Party is now leading the people through a spirit of self-confidence, self-reliance and independent innovation to write the new chapter of building China into a modern socialist country in all respects.

From the perspective of practical development, by the end of the 13th Five-Year Plan period, China has reached new levels in economic strength, scientific and technological capability and composite national strength, the victory of building a moderately prosperous society in all respects is in sight and a new big step has been taken toward the rejuvenation of the Chinese nation. All these have provided solid guarantee for starting a new journey of building a modern socialist country in all respects.

Only in hard times can courage and perseverance be manifested. Only after polishing can a piece of jade be finer. 2020 is the year in which the 13th Five-Year Plan was accomplished in full. In spite of the raging COVID-19 epidemic and the global economic downturn this year, China’s development has burst out with strong momentum, the economy and society have maintained rapid growth, the building of a moderately prosperous society in all respects has made historical achievements, and the fight against poverty has secured a decisive victory.

Examples of China’s Achievements in the 13th Five-Year Plan Period

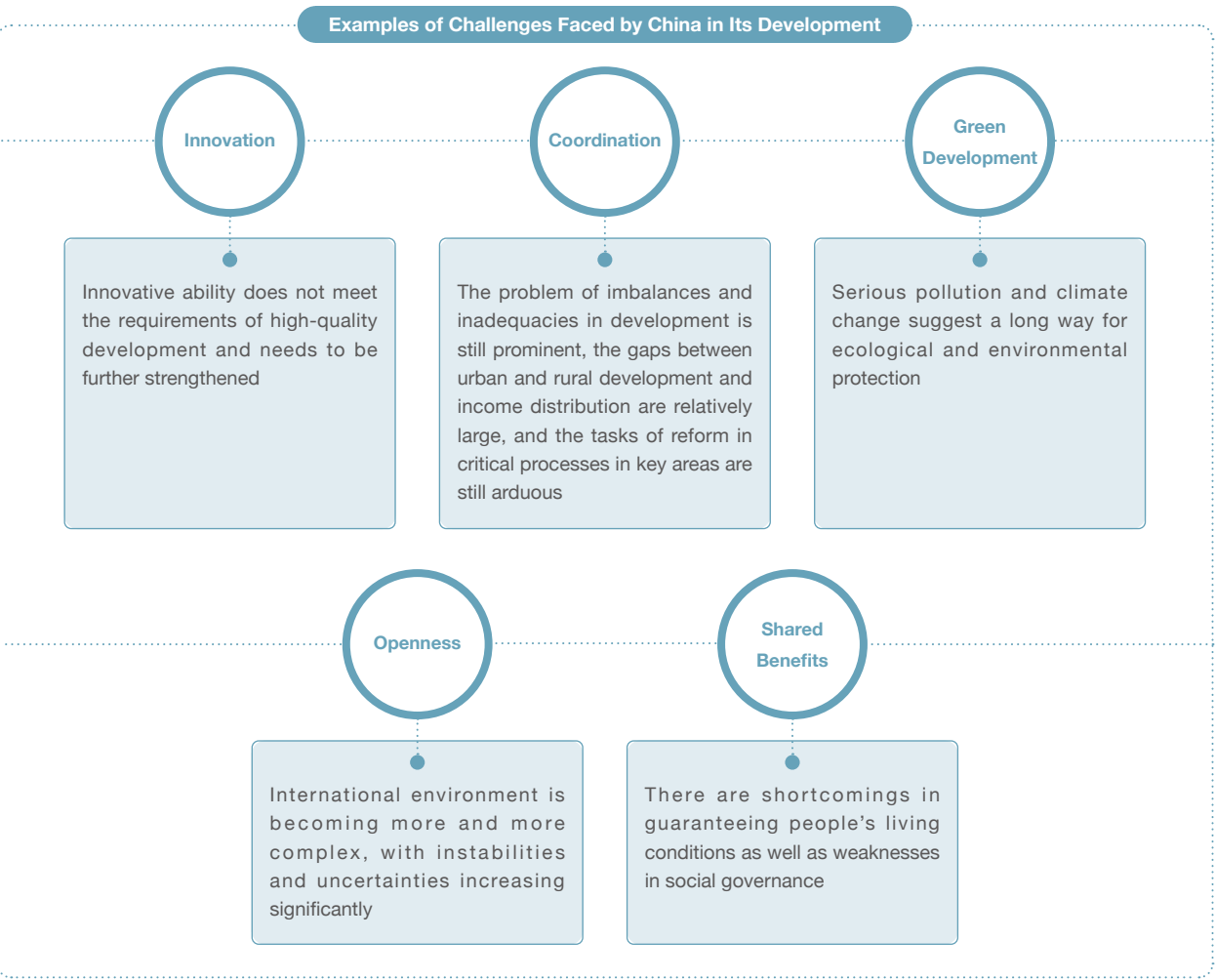
- The economy performed stably overall and its structure was continuously improved. GDP increased from less than 70 trillion yuan to over 100 trillion yuan
- Much was accomplished toward making China a country of innovators, with major advances in manned spaceflight, lunar exploration, deep-sea engineering, supercomputing, quantum information, and other areas
- China’s success in poverty alleviation has been recognized by the international community. Its entire rural poor population, 55.75 million in number, was lifted out of poverty, including more than 9.6 million registered poor people who were relocated from inhospitable areas; and regional poverty was successfully eradicated. The daunting task we set ourselves to eliminate absolute poverty has thus been successfully accomplished
- Agricultural modernization was steadily advanced, and good harvests were recorded for five years running
- The goal of granting urban residency to 100 million people from rural areas and other permanent residents without local household registration was met. More than 21 million housing units in run-down urban areas were rebuilt
- Solid steps were taken to implement major regional development strategies
- Pollution prevention and control efforts were intensified, resources and energy were used more efficiently, and there was a notable improvement in the environment
- Important progress was made in addressing financial risks in this period

Source: Achievements in the 13th Five-Year Plan period introduced by Li Keqiang in the Report on the Work of the Government

“The strong pass and forts are like a wall of iron, yet with firm strides, we are conquering its summit.” Entering the new stage of development, we need to have a deep understanding of the significance of this new stage in the rejuvenation of the Chinese nation, where we are in the historical undertakings for the development of our Party and our country, and what new opportunities and challenges we'll face in the new development stage. We must do our best and take on new missions and responsibilities to make even greater contributions in the new journey of building a modern socialist country in all respects.

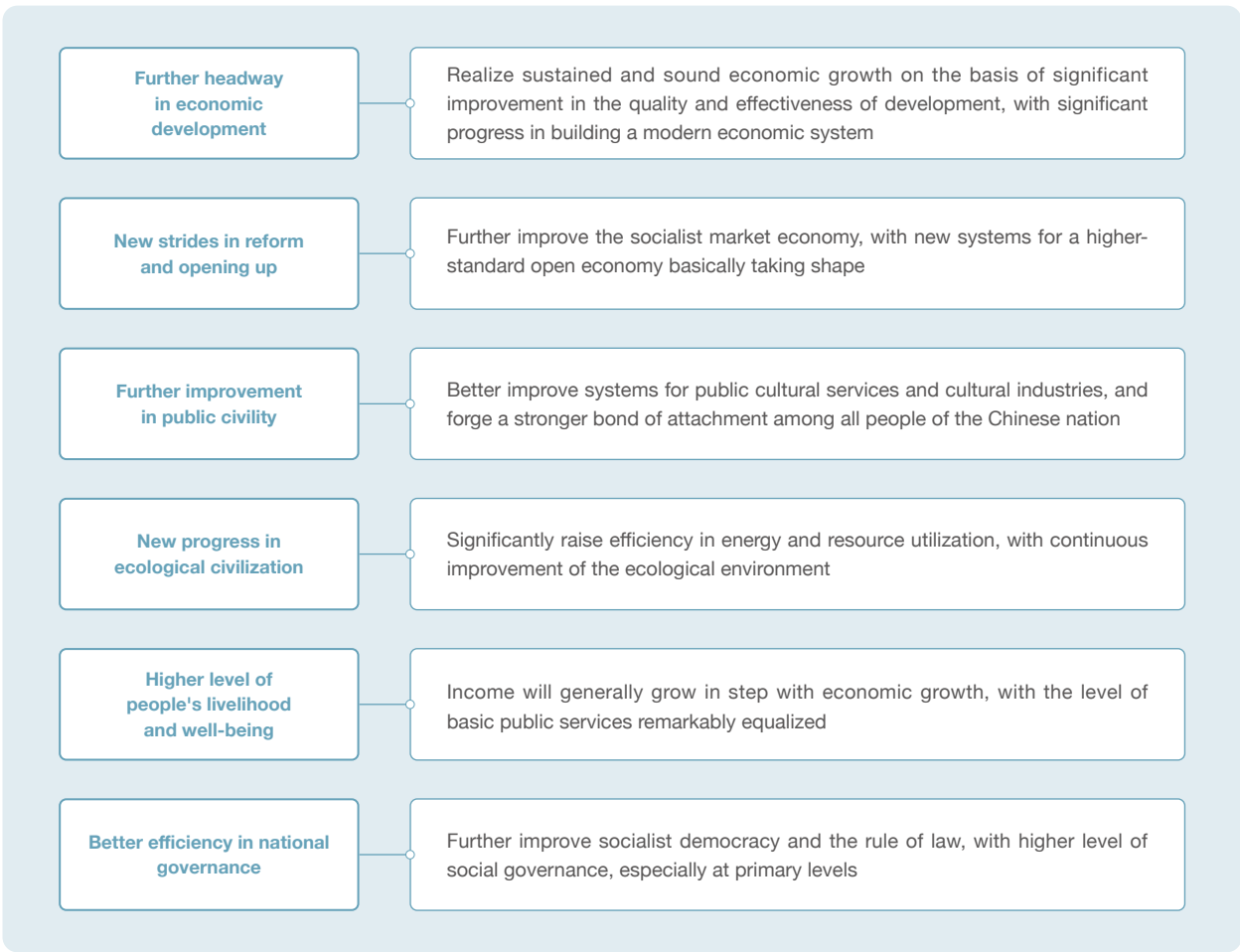
New Development Missions: Surge Forward with the Tide of the Times

In 2021, on the occasion of the 100th anniversary of the founding of the Party, it was declared that through the continued efforts of the whole Party and the entire nation, we have realized the First Centenary Goal of building a moderately prosperous society in all respects. This means that we have brought about a historic resolution to the problem of absolute poverty in China, and we are now marching in confident strides toward the Second Centenary Goal of building China into a great modern socialist country in all respects. The CPC Central Committee with General Secretary Xi Jinping at the core has deeply analyzed the profound and complex changes in China's development environment, and believes that China remains in an important period of strategic opportunity for development and will remain so for some time to come. The opportunities and challenges we face are changing. Though both are unprecedented in their extent, the opportunities generally outweigh the challenges.



Facing the new stage of development, the communiqué of the Fifth Plenary Session of the 19th CPC Central Committee put forward “six new objectives”, clarified the direction of economic and social development during the 14th Five-Year Plan period, and pointed out the goals, tasks and strategic deployments for China's development in this period. With such chartered course, we will ground our efforts in the new development stage, apply the new development philosophy, and create a new pattern of development to build on past achievements and make a good start for the 14th Five-Year Plan, contributing even more greatly to the building of a modern socialist country in all respects.

Main Objectives of China's Economic and Social Development Set in the 14th Five-Year Plan



The new journey entails new missions, calling for greater efforts from a new starting point. The Fifth Plenary Session of the 19th CPC Central Committee proposed to unswervingly build our national strength in manufacturing, product and service quality, cyberspace and digitalization, advance industrial foundations, develop emerging industries of strategic importance, and accelerate digital development.

As a central SOE and basic telecom operator, China Telecom will continue to forge ahead and work hard to deepen reform and innovation, accelerate transformation, create a new landscape of high-quality corporate development, and strive to write a new chapter of building national cyber strength and a digital China as well as maintaining network and information security in a new era.

Lay a solid foundation for new development through new ICT infrastructure. China Telecom has accelerated the roll-out of 5G networks and created a national cloud-network infrastructure featuring lean and agile network, ubiquitous and differentiated computing power, organic security and integration, independent control over core capabilities, smart intelligence, greenness and reliability. We've also promoted ICT innovation and coordinated efforts in facilitating network availability and universal services in the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Guangdong-Hong Kong-Macao area and other major regions and remote areas, striving to contribute to the socialist modernization drive with high-quality networks and secure and reliable services.

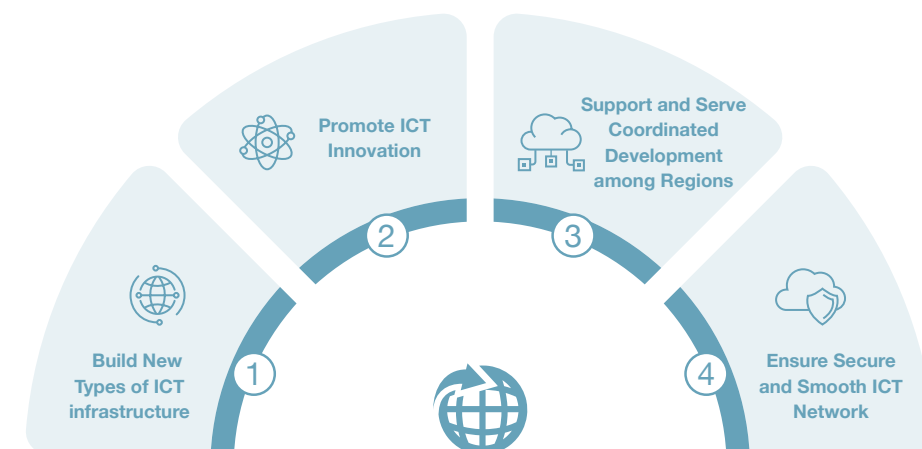
Build new development dynamics through digital transformation. As the main contributor in building national cyber strength and the digital China, it is our mission and due responsibility to facilitate the digital transformation. We've continued to consolidate the foundation of cloud-network digitalization, build digital platforms, foster ecosystem partnerships, empower various industries, help improve people's livelihood and boost service capabilities so as to contribute to our country's digital development.

Promote civilization and progress to create a better life together. We've always take people's aspiration for a better life as our vision through active practices in green development, rural revitalization activities, passions for social welfare, care for employees, fulfillment of responsibilities overseas and stringent compliance requirements to join hands with all stakeholders on a new journey toward harmony and happiness.



NEW ICT INFRASTRUCTURE TO LAY A SOLID FOUNDATION FOR NEW DEVELOPMENT

China Telecom has accelerated the roll-out of 5G networks and created new national ICT infrastructure featuring cloud-network integration, lean and agile network, ubiquitous and differentiated computing power, organic security and integration, independent control over core capabilities, smart intelligence, greenness and reliability. We've also promoted ICT innovation and coordinated efforts in facilitating network availability and universal services in the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Guangdong-Hong Kong-Macao area and other major regions and remote areas, striving to contribute to the socialist modernization drive with high-quality networks and secure and reliable services.



Build New Types of ICT infrastructure

Promote 5G Network Roll-out

China Telecom thoroughly applies the new development philosophy and adheres to the 5G development strategy with SA (Stand Alone) as the target architecture. It is the first to realize smooth evolution to SA-based sharing for three application scenarios - enhanced mobile broadband (eMBB), ultra-reliable low latency communication (URLLC) and massive machine-type communication (mMTC), based on which a fully customizable, deeply integrated, secure and reliable 5G network has been built. In terms of co-building and sharing, it has partnered with China Unicom in accelerating 5G network capacity building, activating a total of 380,000 5G base stations for continuous outdoor coverage in urban areas of all cities across the country by the world's largest 5G network under a model of co-building and sharing.

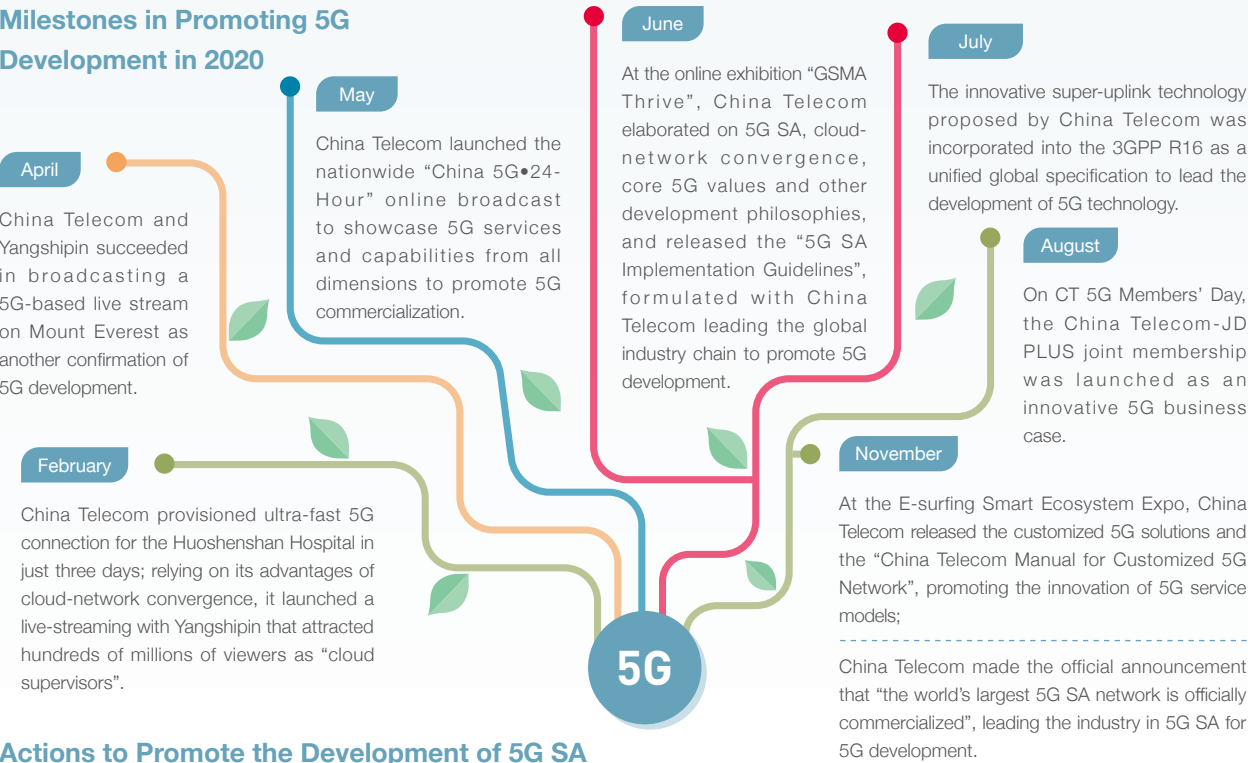


On November 26, 2020, Ke Ruiwen, Chairman and Secretary of Party Leadership Group of China Telecom Group, delivered a speech titled "Empowering the Future with 5G for New Digital Life by All and New Opportunities in the Digital Economy for All" at the 2020 World 5G Convention (Guangzhou)

China Telecom will actively join hands with all players to seize the opportunity brought by the booming digital economy, give full play to the enabling role of 5G in new business forms, accelerate 5G empowerment for the future and share the new way of digital life for win-win in the digital economy.

— Ke Ruiwen, Chairman and Secretary of Party Leadership Group,
China Telecommunications Corporation Limited

Milestones in Promoting 5G Development in 2020



Actions to Promote the Development of 5G SA

Area	Main Measures
Active engagement to lead international standardization related to 5G SA	<ul style="list-style-type: none">Developed and published the "5G SA Implementation Guidelines". Promoted China Telecom's 5G SA practices to the world, significantly raising China Telecom's global influenceAdvanced 5G technological innovation and the evolution of international standards. Led and completed the formulation of 10 technical standards in 5G R16 (first evolutionary version of 5G); led the standardization efforts for the super uplink in R17The "Co-building and Sharing Standard for Large Bandwidth 5G" project jointly established with China Unicom achieved breakthroughs in a number of key technologies, continuously improving the competitiveness of co-built and shared 5G networks
Fostering the 5G SA ecosystem	<ul style="list-style-type: none">Established and developed China Telecom 5G Industry Innovation Alliance, with an aim to pool 5G industry partners, explore innovative 5G applications, create 5G ecosystem and actively expand new 5G applicationsFacilitated SA network testing. Organized chip manufacturers as well as mainstream terminal and equipment vendors to carry out SA network tests under different network combinations, and promoted the launch of 5G SA terminals made by Apple, Huawei, etc.
Readiness of network capabilities for commercial 5G SA on schedule	<ul style="list-style-type: none">In 2018, China Telecom built the world's first SA/NSA hybrid network, with SA as the main architecture, for large-scale trials across different provinces and regionsIn 2019, China Telecom launched commercial 5G SA service in ShenzhenIn 2020, China Telecom achieved large-scale commercial use of 5G SA across its entire network

Tips: 5G SA vs 5G NSA: What are the differences?

According to the standardization organization 3GPP, there are two 5G deployment ways: Non-Stand Alone (NSA) and Stand Alone (SA).

Under 5G NSA, 5G base stations are not stand-alone but connected to the 4G core network. The mobile terminal is connected to both 4G and 5G base stations at the same time for service provision, thus enjoying much higher transmission rate than that of pure 4G connection. However, this NSA architecture can only support improvement in network speed.

Under 5G SA, 5G base stations are stand-alone and no longer rely on 4G base stations, enabling an independent 5G network from base station to core network. In addition to providing users with faster data rate, it also allows private and customized services such as network slicing and edge computing, supporting "faster, better and stronger" connection.

5G Customized Network

On November 7, 2020, during the Summit Forum at the 12th E-surfing Smart Ecosystem Expo, China Telecom officially released the customized 5G network together with a new solution featuring "customizable network, intelligent edge, collaborative cloud and application-on-demand" as well as the "China Telecom Manual for Customized 5G Network", supporting three types of customized service models - "Zhiyuan", "Bilin" and "Ruyi".

Wide Area Access, Cloud-Network Integration – “Zhiyuan” Model

This model is for wide-area mobile scenarios and provides enterprises with customized, end-to-end, differentiated and dedicated connection based on public networks through technologies such as slicing.

【Support to 5G-based Smart Healthcare Project of Guangdong Second Provincial General Hospital】

Project requirements	Leverage 5G, Wi-Fi 6 and other technologies to change the existing network architecture for greatly improved stability of network bandwidth, reduced latency and better network capacity and quality.
Results	The customized 5G network was deeply integrated with medical scenarios to meet the needs of AI-based ultrasound imaging, high-definition video teaching for surgery, AR-based guided surgery, etc., improving healthcare efficiency with lower operating cost.
Significance	China Telecom's private network supported the Guangdong Second Provincial General Hospital to improve its medical service procedures, enhance its management level and promote the establishment of Internet-empowered hospitals and the exploration of "5G + healthcare" applications. CT's private 5G network will continue to facilitate the evolution of the Guangdong Second Provincial General Hospital from an Internet-empowered hospital to a smart hospital and then toward full-scenario smart ICT capacities.

Local Processing, Cloud-Edge Collaboration – “Bilin” Model

This model is for open-area scenarios and locates latency-sensitive computing on the edge through localized deployment of computing resources, thereby comprehensively improving corporate data security and processing efficiency with lower end-to-end latency.

【Support to 5G Smart Plant Project of Jiangxi Xinghuo Organic Silicone】

 Project requirements	 Results	 Significance
Construct a dedicated network through network slicing, etc. for wireless intranet interconnection as well as data connection and distribution across the whole park.	Park data security was guaranteed with reduced network latency and improved core business performance and experience; 5G capabilities were integrated into local business systems for ICT-based management to support intelligent and automated upgrades of business systems.	China Telecom's private 5G network effectively guaranteed production safety in the chemical industry, reduced production cost and improved the level of intelligent process, providing valuable experience for the transformation and upgrading of the chemical industry toward unmanned, lean and intelligent production.

Exclusive Area, Secure and Reliable – “Ruyi” Model

This model is for closed-area scenarios and provides enterprises with an exclusive access network featuring strong isolation and high-performance through customized dedicated base stations under exclusive planning, construction, optimization and maintenance, comprehensively enabling independent security guarantee for production and business data.

【Support to End-Edge-Cloud Collaboration Project in JD’s 5G Smart Unmanned Warehouse】

Project requirements

Build dedicated network and base stations in a closed area for complete separation between the intranet and the public network to ensure stable and secure data transmission.

Results

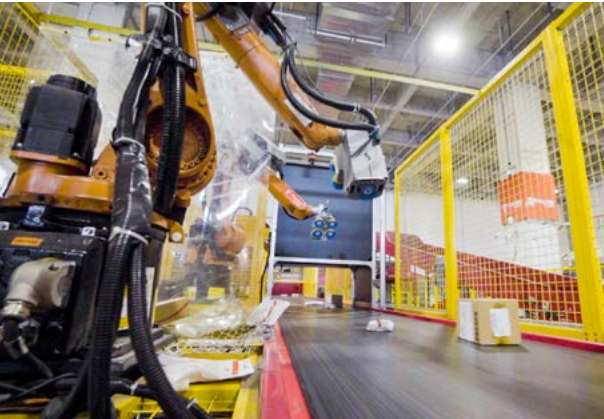
The customized 5G network was integrated in-depth with industry terminal modules for full 5G connection of transportation equipment in the warehouse and the vision system of the unmanned warehouse to achieve reliable connection, deployment and maintenance in the warehouse; 5G technologies were integrated into control systems for unmanned management and operation of all logistics operations including goods entry, picking, movement and sorting with high level of automation and intelligence.

Significance

Incorporating AI, IoT, autonomous driving and other technical capabilities, China Telecom's private 5G network solution promoted the development of unmanned warehousing, redefined traditional industrial warehousing and nurtured talent development systems at different levels, expediting the transformation and upgrading of domestic logistics and warehousing industry toward smart intelligence, automated decision-making and integration.



Large-scale, coordinated AGV operation supported by China Telecom's private 5G network. The picture shows AGVs in operation



Organic connection between the vision system and mechanical tools in JD's logistics warehouse supported by China Telecom's private 5G network. The picture shows the vision system and mechanical tools in operation

Industry-specific dedicated network is the rigid demand for the digital transformation of traditional sectors. China Telecom's customized private 5G network enables the in-depth integration of connectivity, computing and intelligence with flexible customization. It meets the differentiated needs from various industries and effectively reduces the cost of private network for industry customers.

— Liu Guiqing, Vice President and Member of Party Leadership Group, China Telecommunications Co., Ltd.

Cloud-Network Infrastructure

China Telecom is firmly committed to the strategy that regards “network as the foundation and cloud as the core and that allows network functions to be adaptive to the cloud under cloud-network integration”. It aims to build national new ICT infrastructure with cloud-network convergence, featuring lean and agile network, ubiquitous and differentiated computing power, organic security and integration, independent control over core capabilities, smart intelligence, greenness and reliability. It also supports a new paradigm in terms of independent R&D of critical technologies, physical capability layout and customer experience of cloud-network collaboration to comprehensively enhance its capabilities of cloud, network, edge, end, security and application, to lay a solid foundation for high-quality development.

Main Actions to Promote Cloud-Network Infrastructure

Area	Main Measures	Progress and Result
Data center	<ul style="list-style-type: none">Implemented national requirements on strategic deployment of new infrastructure and leveraged e Cloud and IDC business as the tractor to create new types of ICT infrastructure with clear positioning, well-defined hierarchy, extensive functions, greenness and efficiencyFurther promoted the data center design standards and the EPC construction model while facilitating the “double reduction” in the cost and duration of new infrastructure construction projects on a large scale	<ul style="list-style-type: none">Formed a data center layout featuring cloud-network-edge collaboration (2+4+31+X+O) nationwideShortened the implementation cycle through standardized civil engineering, supportive mechanical and electrical design, configuration and procurement, strictly controlled construction cost, and effectively improved the management level of the big data center projects across the country
Cloud	<ul style="list-style-type: none">Provided public cloud, dedicated cloud, edge cloud, overseas cloud and other services to meet the needs of different customersFurther integrated the computing, storage and security capabilities of the central cloud with local, secure and differentiated MEC services to achieve cloud-network and cloud-edge collaborationCoordinated the layout of cloud resources for optimization and accelerated the building of cloud resource pools under independent, outsourced or joint construction models	<ul style="list-style-type: none">Formed a data center layout featuring cloud-network-edge collaboration (2+4+31+X+O) nationwideFacilitated end-to-end trials of MEC commercial complex and cloud-network convergence, completed the deployment of 15 MEC nodes in 8 provinces and explored models of edge capacity buildingProvided effective guarantee for the business development of e Cloud, efficient support to cloud migration by the Huoshenshan Hospital, the Leishenshan Hospital and the Wuhan Health Commission, and support to cloud applications in education, healthcare and office work
IPv6	<ul style="list-style-type: none">Continued to promote the quality improvement of IPv6 networksCarried out remote upgrade of old home gateways to support IPv6Promoted the transformation of self-operated applications toward IPv6 for wider adoptionPerformed 5G SA IPv6 single stack technology research and verification	<ul style="list-style-type: none">Completed all possible remote equipment upgrades for home gateways, achieving a 72% allocation rate of IPv6 addresses among home broadband usersOver 85% of TOP10 APPs could support IPv6Carried out IPv6 single stack technology verification based on NAT64+DNS64 in Jiangsu and Sichuan

Tips

Resource layout of cloud-network convergence featuring cloud-network-edge collaboration (2+4+31+X+O)

“2” refers to the two central data centers providing global service, namely, the two large-scale data centers in Inner Mongolia and Guizhou;

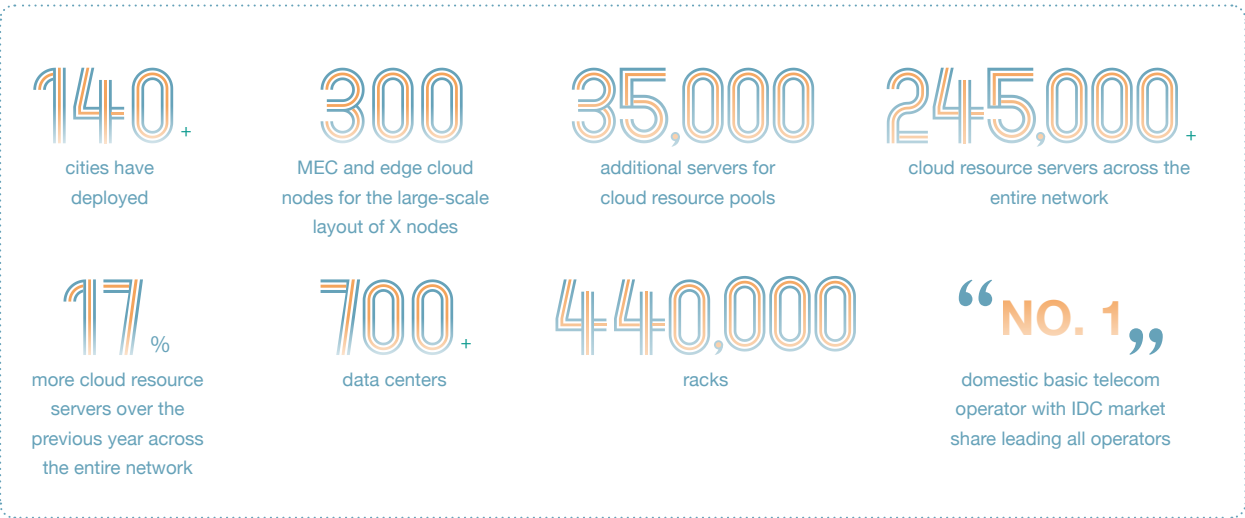
“4” refers to four key regional nodes in the Beijing-Tianjin-Hebei area, the Yangtze River Delta, the Guangdong-Hong Kong-Macao area and the Shaanxi-Sichuan-Chongqing area;

“31” means that each province has a data center to bear the data structure across the entire network;

“X” refers to the widely distributed edge nodes, which are deployed closest to the user to achieve adaptive network functions to the cloud, convenient cloud access and uninterrupted connectivity between the cloud and to satisfy the needs of users on-demand with low latency;

“O” refers to overseas nodes.

Overview of Improvement of Cloud-Network Infrastructure



Promote ICT Innovation

China Telecom clearly puts forward the goal of building itself into a technology enterprise with independent control over key and core technologies to be among the first camp of technologically innovative enterprises in China. It has formulated a three-year action plan for scientific and technological innovation with clarified overall goals and implementation roadmap and has strengthened its efforts in core technologies in key areas such as 5G, cloud-network convergence, cyber security, artificial intelligence and digitalization to enhance scientific and technological innovation capabilities.

Technology Innovation

Area	Progress
Promote research on cutting-edge technologies	<ul style="list-style-type: none">In 2020, CT led 3 key national R&D projects while leading 2 and participating in 3 of the 10 national key 6G research projects launched by the Ministry of Science and Technology
Promote independent control over core technologies	<ul style="list-style-type: none">Based on the self-developed full-stack e Cloud IaaS + PaaS + big data and AI capabilities, CT launched the e Public Cloud IaaS and PaaS full-stack products as well as many other self-developed products and platforms including e Private Cloud, Dedicated Cloud, Hybrid Cloud, e Cloud Desktop, cloud mobile phone, content distribution network (CDN) and “Zhuge AI”CT self-developed the 5G frequency shift MIMO for indoor distribution, expandable small cell, lightweight UPF and other equipment as well as the MEC cloud platform, IoT-based enabling platform, smart home platform, etc.
Promote the application of technology advances	<ul style="list-style-type: none">Strengthened the management of the application of scientific and technological advances with all key advances applied in 2020
Facilitate technology partnership	<ul style="list-style-type: none">Enhanced business cooperation and enterprise-university partnerships and worked with Tsinghua University and the Purple Mountain Laboratories respectively to promote key technology research and application/service innovation in the fields of next-generation Internet, mobile communications, future networks, etc.
Promote international standardization	<ul style="list-style-type: none">In 2020, CT completed 40 international standardization projects, led/co-led 21 ITU international standards and 6 3GPP international standards; over 550 contributions were accepted by International Standardization Organization; a total of 34 people held management positions in various international organizations

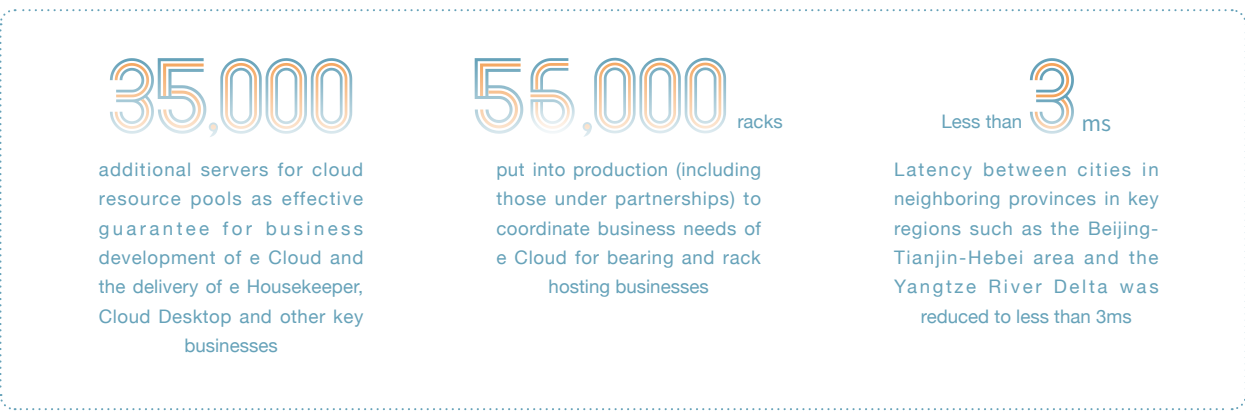
Cloud-Network Infrastructure Innovation

China Telecom strengthens the deployment, research and testing of key technologies in cloud computing, big data, artificial intelligence and other fields and expedites the cloud-network convergence to build smarter networks.

Overview of Efforts to Promote Cloud-Network Convergence in 2020

Area	Action and Progress	Significance
Scaled deployment	<ul style="list-style-type: none">Clarified the overall planning goal of cloud-network convergence with “cloud as the core and network as the foundation to allow network functions to be adaptive to the cloud under cloud-network convergence”, and formed an overall planning philosophy to optimize the layout of cloud resources, adapt network functions to the cloud and integrate cloud in a secure mannerDriven by customer-oriented pilots, CT carried out end-to-end trials and deployments of cloud-network convergence in Jiangsu, Guangdong, Sichuan and Zhejiang provinces, completing 23 technical scenarios and 12 end-to-end business scenario pilotsAchieved optical network coverage in almost all 21 southern provinces and deployed Gigabit networks in 280 cities across ChinaCompleted the connection of all e Cloud resource pools with CN2-DCI and government-enterprise OTN networks, linking cities in neighboring provinces in the Beijing-Tianjin-Hebei area, the Yangtze River Delta and other regions with the shortest optical cables and transmission systems	<ul style="list-style-type: none">Clarified the mid- and long-term development plan, goals and roadmap for cloud-network convergencePromoted the implementation of cloud-network convergence and created the end-to-end solution to clouds, networks, edges, ends and securityResponded to the transformation strategy toward “cloudification and digital transformation” to follow industry trends and continue to optimize network performance and bearing efficiency
Product R&D and promotion	<ul style="list-style-type: none">Independently developed 20 core technologies including the “e Cloud 3.0” and distributed database, capable of supporting millions and hundreds of millions of concurrent usersBased on self-developed core technologies, CT self-developed virtualization software, distributed storage system and other application-layer software with large-scale commercial useBuilt the next-generation cloud-network operation system with self-developed core capabilities such as intelligent service orchestrator to support network slicing, 5G dedicated lines and other new servicesBuilt multi-cloud management platform, capable of multi-cloud integration and automated inter-cloud delivery within minutes	<ul style="list-style-type: none">Performed technology research and innovation, improved service-oriented and intelligent network capabilities, promoted open industry cooperation and created a ubiquitous, flexible, efficient, open and secure fundamental network

Overview of Improved Capability of Cloud-Network Convergence in 2020



Support and Serve Coordinated Development among Regions

Key Regions

China Telecom implements the national strategy for coordinated regional development with keen attention and steadily promotes major development projects in the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Guangdong-Hong Kong-Macao Greater Bay Area, the Chengdu-Chongqing economic zone and other regions.

Actions Taken by China Telecom to Support Regional Development in 2020

Area	Action
Coordinated development of the Beijing-Tianjin-Hebei region	<ul style="list-style-type: none">Steadily advanced the “Beijing-Tianjin-Hebei Data Center” project in Tianjin Wuqing Development Area to improve the service capabilities through cloud-network convergence in the Beijing-Tianjin-Hebei regionPromoted the development of three China Telecom smart cloud bases in Gaoyang (Baoding city), Huailai (Zhangjiakou city) and Zhangbei (Zhangjiakou city). Once completed, these bases are expected to accommodate over 50,000 installed racks, boosting the coordinated development of Beijing, Tianjin and HebeiAccelerated the development of the Xiong'an Urban Computing (Supercomputing Cloud) Center with integrated deployment of “edge, cloud, supercomputing and network” to facilitate the ICT adoption by the Xiong'an government and local enterprises
Integrated development of the Yangtze River Delta	<ul style="list-style-type: none">Worked with partners to promote the development of the backbone network of quantum communications in the Yangtze River Delta, expand the application of quantum communications in e-government, finance, big data, cloud computing, etc. and foster the quantum communications ecosystemAligned with the Zhejiang government and various high-tech, specialized champion enterprises to promote 5G network development, explore industrial applications, help build the Yangtze River Delta ecosystem demonstration zone for green and integrated development, and complete a number of demonstration projects such as the Yangtze River Delta bus fleet interconnection under intelligent dispatchingSupported the development of the quantum-secure backbone network in the Yangtze River Delta and the quantum-secure metropolitan area networks in provincial capital cities, coordinated the layout and planned the construction of the quantum-secure backbone networks, and realized seamless connection with the national wide-area quantum-secure communications backbone
Development of the Guangdong-Hong Kong-Macao Greater Bay Area	<ul style="list-style-type: none">Prepared to build an innovation incubation (southern) base in Guangzhou to support the demands for digital economy and ICT development in the Guangdong-Hong Kong-Macao Greater Bay AreaCo-launched the “5G Cloud Computing Center of the Guangdong-Hong Kong-Macao Greater Bay Area” with the Guangzhou government to cover the entire Greater Bay Area and further to the Southeast Asian market for efficient and smooth domestic and international communications
Chengdu-Chongqing Economic Circle	<ul style="list-style-type: none">Promoted the development of 5G network and other infrastructure for full 5G coverage in major urban areas and key regions in Sichuan and Chongqing; built an optical network in the Chengdu-Chongqing Economic Circle featuring low-latency, ultra-high-speed and one-hop direct connectionPromoted the “2+5+X” big data center layout and created the “Chengdu on the Cloud” big data brand to improve transmission network accessibility and disaster recovery capabilities of the big data centers in Chengdu and Chongqing

【Support to Big Data Projects in the Beijing-Tianjin-Hebei Region】

China Telecom’s Beijing-Tianjin-Hebei Big Data Base project is located in Gaocun Science and Technology Innovation Park, Wuqing District, Tianjin. It accommodates 12 data centers, 3 power centers and 1 production commanding and scheduling center to support up to 42,000 racks with 10.2 billion yuan of direct investment. Being the data center with the largest investment intensity in the country, it plays an important role in promoting the development of regional communication networks and infrastructure.

Since the start of construction on February 26, 2020, the Tianjin Branch has overcome difficulties brought by the COVID-19 epidemic, effectively deployed resources and scheduled a reasonable timetable for construction under routine prevention and control mechanisms. As a result, the first phase of the Beijing-Tianjin-Hebei Big Data Base project was completed on schedule with guaranteed quality and quantity.



Rendering of the Xiong'an Urban Computing (Supercomputing Cloud) Center jointly built by China Telecom and Digital City Tech of China Xiong'an Group



In Xitang Ancient Town, the Zhejiang Branch cooperated with local government to build the first 5G smart health house in the Yangtze River Delta to provide diverse medical services such as telemedicine, remote consultation and health monitoring based on 5G and other advanced technologies



On November 7, 2020, the Anhui Branch officially launched the “Quantum Shield Program” to provide customized quantum security services based on different customer needs

Remote Area

Following the strategy of building national cyber strength with keen attention, China Telecom continues to develop communications networks in remote areas and bridge network gaps where necessary for effective improvement of rural ICT application, giving strong push to rural revitalization. The Company has also accelerated the universal service projects in remote and impoverished villages to improve local broadband access. Within the year, the fifth batch of about 7,400 4G base stations for universal services was already constructed; the goal of enabling broadband access for more than 90% of registered poor villages in the severely poverty-stricken areas of “Three Regions and Three Prefectures” designated by the Ministry of Industry and Information Technology was completed ahead of schedule.

Overview of China Telecom Network Coverage in 2020



【Surmount Difficulties to Advance Universal Service】

The Guangxi Branch was active in carrying out universal service pilots and built 2,224 4G base stations, 18,375 kilometers of optical cables and 45,296 optical broadband ports in 2020. With the success in activating the 4G base station for Shanlintou Hamlet, Hongxing Village, Langping Town, Tianlin County of Baise City in Guangxi Zhuang Autonomous Region, the universal service pilots in Guangxi Province were all completed. This project addressed the lack of 4G network coverage in 5,347 natural villages/hamlets and the lack of optical broadband service in 3,770 natural villages/hamlets, benefiting 690,000 villagers in remote mountainous areas with 98% of CT's 4G coverage and 96.8% of optical network accessibility in natural villages with more than 50 households.

The Gansu Branch took the initiative to roll out universal service pilots to greatly improve 4G network coverage in rural areas. In 2020, 181 4G base stations were built to cover an additional 3,600 square kilometers previously without 4G as well as a total of additional 283 administrative villages in 7 cities and prefectures including Tianshui, Baiyin, Jiuquan, Zhangye, Dingxi, Longnan and Linxia. By the end of 2020, 306,000 optical network ports were built across the province, bridging the gap in optical broadband service in 2,057 administrative villages and 2,179 natural villages in Jiuquan, Pingliang, Linxia and Gannan. As a result, 4G coverage in administrative villages in the province reached 94% while the optical network coverage in natural villages reached 68%, benefiting 120,000 farmers and herdsmen in remote mountainous areas.



On May 28, 2020, CT staff set up the optical fiber communication lines to connect the 4G base station in Kenqiao Hamlet, Danxing Village, Jian'ai Township, Luocheng County, Hechi City, Guangxi Zhuang Autonomous Region



On November 20, 2020, 4G and optical network coverage were accomplished in Henglugou Village, Mati Township, Sunan Yugu Autonomous County, Zhangye City, Gansu Province

【Satellite Communications Service for Special Purposes】

China Telecom Satellite Communications gives full play to the advantage of integrated networks covering sea, land, air and space. In the special-purpose communications field, the Tiantong Satellite is well positioned with no geographical restriction, no communications blind spot and always-on-line network, effectively guaranteeing communications service for special purposes. In the field of communications for civil aviation, as of the end of 2020, CT has provided service to 2 million passengers on 199 aircrafts from Air China, China Eastern Airlines, China Southern Airlines, Xiamen Airlines and Shanghai Juneyao Airlines.



On March 25, 2020, the third batch of China's medical experts and anti-epidemic materials set off to Milan, Italy and China Telecom Satellite Communications promptly activated the on-board Wi-Fi service to ensure smooth communications for medical experts



On November 29, 2020, the 11th Round Hainan Regatta was kicked off in Sanya, during which China Telecom Satellite Communications provided data and voice services based on the Tiantong satellite to Wu Liang, a sailor from the Whitewave Sailing Center sailing team.

Ensure Secure and Smooth ICT Network

Network and Information Security

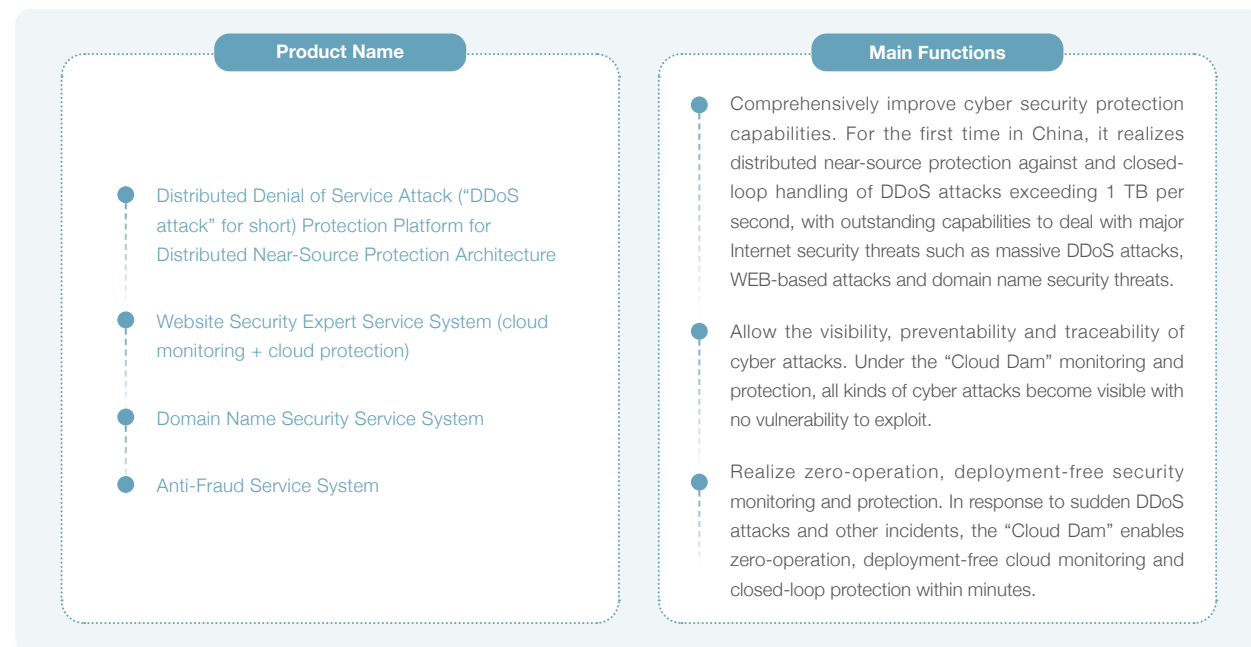
China Telecom fully applies the Cyber Security Law of the People's Republic of China and other laws and regulations and strictly follows relevant requirements of the Ministry of Industry and Information Technology, the Ministry of Public Security and other ministries and commissions regarding network and information security. It has improved and strengthened its security governance systems and capabilities, deployed and expanded security portfolios and services, and made every effort to ensure network and information security during key epidemic prevention periods and major events to promote the sound development of ICT applications in economy and society.

Main Actions to Guard Network and Information Security in 2020

Area	Main Measures	Examples of Results
Organizational and institutional development	<ul style="list-style-type: none">Units at all levels designated their own Chief Cyber Security Officers and initially established an expert team to maintain network and information securityContinued to strengthen the development of the two-level dispatching and response system in headquarters and provincial branches to promptly respond to and deal with illegal and improper informationEstablished an all-weather duty shift arrangement for important units	<ul style="list-style-type: none">Shortly after the outbreak of the epidemic, CT provided free cyber security testing and protection services for over 10,000 ICT infrastructures of nearly 2,000 government, healthcare and educational bodies across the country, providing strong security guarantee for epidemic prevention and control as well as the resumption of work and production
Capacity building	<ul style="list-style-type: none">Launched a batch of new products including Trusted Call, Security Keeper, Privacy Guard and encrypted 5G callsFacilitated secure cloud integration, benchmarked the e Cloud and CT Group IT Cloud against classified protection of cyber security and achieved security capability at the edge nodes of content distribution network (CDN)Promoted 5G in parallel with security development, accelerated the nurturing of security capabilities and enabled basic security on demand	<ul style="list-style-type: none">Sent 810 million anti-epidemic short messages to create favorable network environment for epidemic prevention
Hidden risk prevention and active service	<ul style="list-style-type: none">Strengthened personal information protection with regular inspections of the special campaign to address the collection and use of users' personal information by APP in violation of laws and regulations	<ul style="list-style-type: none">Well recognized by higher-level organizations as the executing agency for network and information security assurance during the World Health Assembly
Guarantee for major events	<ul style="list-style-type: none">Achieved secure and smooth guarantee for network and information security during major events throughout the year	

【“Cloud Dam (Yundi)” for Customers’ Cyber Security】

The “Cloud Dam (Yundi)” is an operator-level cyber security product and service brand launched by China Telecom in 2015. It provides customers with various security products and services such as cloud-network security, data security and information security. Certified at Level-III according to the national classified protection of cyber security, the “Cloud Dam” has provided cyber security protection services for around 10,000 customers and has been regarded as the most preferred cyber security protection platform for security guarantee in major national events.



The "Cloud Dam" fully unleashes the strength of China Telecom in network resources and portfolios and provides governments, enterprises and individuals with a series of highly intensive and customizable Internet-side security risk and threat protection services, further enhancing and consolidating cyber security protection capabilities. As of the end of December 2020, a cumulative of over 100 million website attacks and suspected attacks have been detected and more than 380,000 times of security monitoring services have been provided to thousands of customers in 12 industries including governance, finance and education with approximately 220 million times of security protection, effectively guaranteeing the network and information security of government and business customers.

【Cyber Fraud Prevention】

In the First West Lake Cyber Security Cloud Exhibition, the Zhejiang Branch demonstrated four smart applications - Internet anti-fraud platform, value-added security operation platform, smart cloud-based security and the Cloud Dam - via 720° panoramic view in the 3D exhibition hall under the theme of "National Team for Cyber Security to Guard New Infrastructure".

In the themed exhibition, the Zhejiang Branch launched a special live streaming related to cyber fraud prevention for netizens and industry users in response to hot issues in people's daily lives and invited cyber security experts to provide on-site guidance and introduce the types and methods of telecom frauds with an aim to raise users' awareness of cyber fraud prevention. In 2020, the Zhejiang Branch prevented 45,500 cyber fraud cases and helped recover 3.144 million yuan in losses.



Anti-Fraud Tips:

It is not difficult to prevent cyber fraud, as long as you don't be penny wise and pound foolish.

Always keep personal information confidential and be cautious of unknown calls.

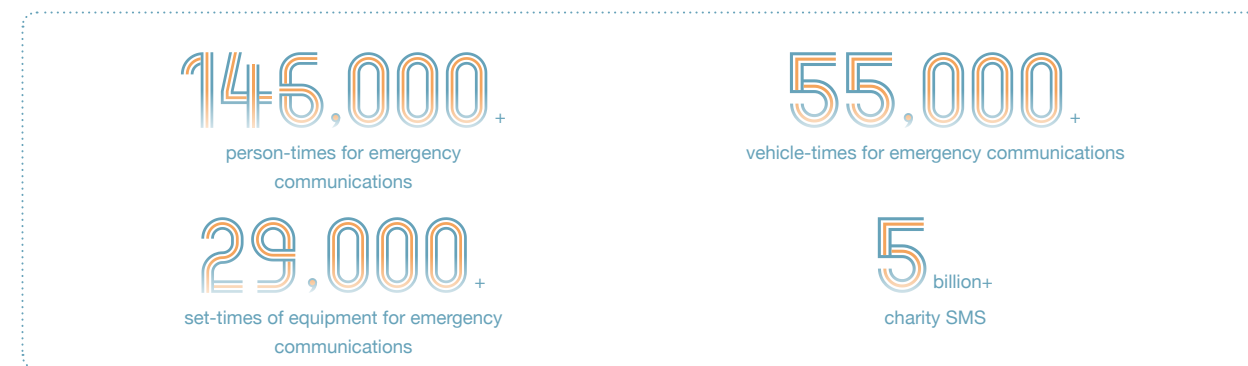


On September 14, 2020, police officer Luo Yongci, an outstanding advocator from the Public Security Bureau of Hangzhou, Zhejiang Province, together with Lou Jing from the Department of Network and Information Security of the Zhejiang Branch, gave a lecture using real-life cases to educate the majority of Internet users on approaches to preventing telecom frauds

Emergency Communications

China Telecom is committed to its mission of guaranteeing secure and smooth communications and has made utmost efforts to fight against earthquakes, typhoons, floods, landslides and other natural disasters to secure communications for major events. In 2020, it made every effort to ensure emergency communications in areas severely hit by the epidemic including Wuhan and Hubei and guaranteed communications for flood and typhoon prevention and disaster relief in Hubei, Jiangxi, Anhui, Yunnan, Chongqing, Sichuan, Zhejiang and other provinces. Moreover, it successfully completed communications guarantee services for major events including the Third China International Import Expo, the 128th China Import and Export Fair (Canton Fair Online), the World Internet Conference and the 5G+ Industrial Internet Conference.

Overview of Emergency Communications in 2020



【Full Guarantee for Smooth Communications】

Since July 2020, the water level of 49 observation stations on 23 rivers in Jiangxi Province has been above the alert level, with 16 stations reporting record-high water levels. Numbered floods and above-alert-level floods repeatedly occurred in the Poyang Lake area and the Raohe, Xiuhe, Xinjiang and other river basins. Among them, the water level of the Poyang Lake exceeded historical high recorded in 1998 and stayed above alarm level for 37 days, severely affecting multiple places and damaging communications facilities by a cumulative direct economic loss over 200 million yuan.

The Jiangxi Branch fully engaged in communications guarantee for flood prevention and disaster relief, dispatching a total of 19,157 person-times of emergency repair personnel, 8,430 unit-times of emergency repair vehicles and 1,024 set-times of emergency repair equipment to ensure smooth communications.



On July 16, 2020, staff of the Hukou division of the Jiujiang Municipal Bureau in Jiangxi Province checked and examined under-river optical cables near the Majianqiao River in Duchang to ensure the safety of the trunk line



In August 2020, a sudden rainstorm caused floods in Zhouqu, Gansu. The Gansu Branch immediately dispatched its emergency communications team for service guarantee



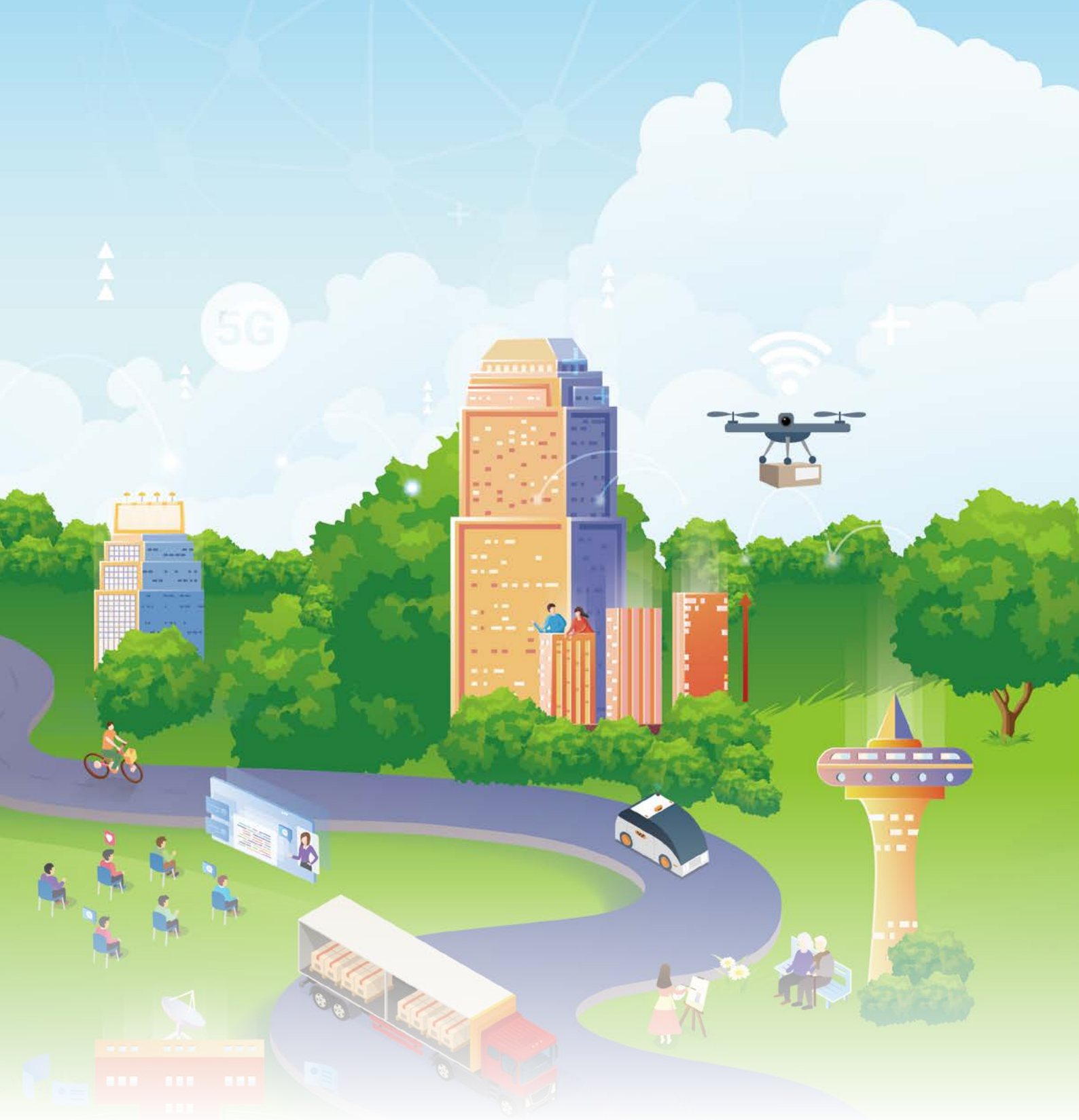
Starting from November 18, 2020, affected by extreme weather such as freezing rain and sleet, some areas in Jilin Province suffered form power outages, water and heat supply cuts and transportation interruptions. The Jilin Branch made prompt response in resuming communications services in the disaster-stricken areas

【Helping the Cloud-based Opening of the Canton Fair】

With the COVID-19 pandemic sprawling, the 128th Canton Fair was held online for the first time. Premier Li Keqiang attended the "virtual opening ceremony" of the Fair via 5G video connection in the Great Hall of the People and made virtual visits to exhibitors. China Telecom attached great importance to the communications guarantee for this Canton Fair and mobilized high-quality resources extensively across the country with a well-designed, detailed, rigorous and secure professional solution to service guarantee to enable high-definition 5G video connections with no choppy frame and low latency, successfully guaranteeing communications for the "virtual opening" and "cloud tour" of the Canton Fair.

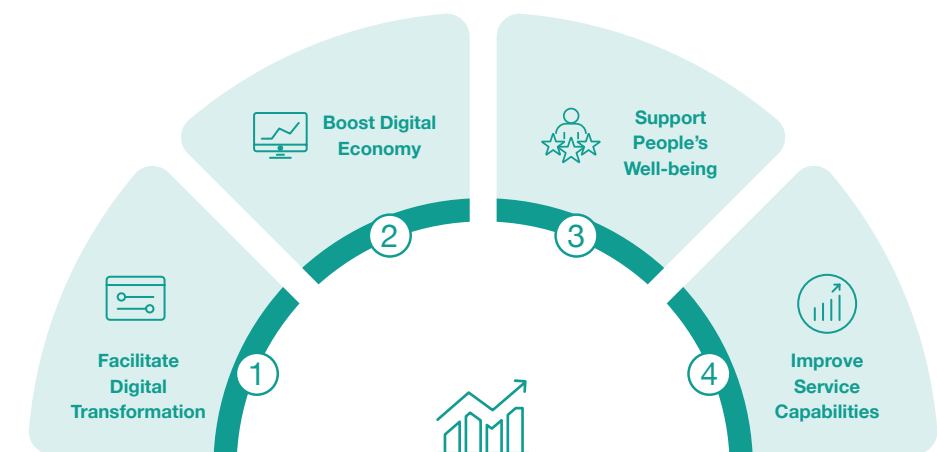


On June 15, 2020, Dong Mingzhu, Chairwoman of Gree Group, participated in the opening ceremony of the Canton Fair via cloud video conference + VR exhibition hall



DIGITAL TRANSFORMATION TO BUILD NEW DEVELOPMENT DYNAMICS

As the main contributor in building national cyber strength and the digital China, it is our mission and due responsibility to facilitate the digital transformation. We've continued to consolidate the foundation of cloud-network digitalization, build digital platforms, foster ecosystem partnerships, empower various industries, help improve people's livelihood and boost service capabilities so as to contribute to our country's digital development.



Facilitate Digital Transformation

At present, the digital transformation of the economy and society has entered a new stage, especially since the beginning of this year, when the sudden epidemic outbreak has further accelerated the process of such transformation. As the main contributor in building the digital China, China Telecom continues to accelerate digital transformation. Internally, we've made comprehensive efforts to improve the level of digitalized operation and management for more digitalized marketing services, cloud-network operation and management capabilities; externally, we've created the service ecosystem for vertical industries to build data-driven application capabilities.

Digital Transformation

Relying on big data, artificial intelligence and other technologies, China Telecom has improved its comprehensive operation and management level to provide more efficient service to customers and meet customers' increasing demand for personalized services. In 2020, the project titled "AI for Comprehensive Empowerment to Enhance Service Capabilities" won the first prize of the 16th Enterprise Management Modernization Innovation Achievement Award by the China Association of Communication Enterprises; CT's WeChat and Weibo public accounts for customer service were selected by the Press Center of the State-owned Assets Supervision and Administration Commission under the State Council as "The Most Influential New Media Secondary Accounts of Central SOEs in 2020"; the project "Exploration of MSS in Smart Operation" was selected as Best Case of "Typical Cases of ICT Application by Central SOEs in 2020" by the State-owned Assets Supervision and Administration Commission under the State Council.

Area	Main Measures	Results
Precision marketing	<ul style="list-style-type: none">Refined marketing scenarios and built a big data-enabled smart marketing system that runs through the entire life cycle of customersLeveraged big data to support 5G precision marketing, number portability and other business activities	<ul style="list-style-type: none">Achieved seamless penetration of big data-based marketing planning to the front line, empowering 31 provincesProvided accurate support to the implementation of key activities such as 5G commercialization and number portability

Area	Main Measures	Results
Sophisticated service	<ul style="list-style-type: none">Used AI, big data and other technologies to continue the development of smart hotline 10000 to deepen AI-based operation and increase the proportion of intelligent interactive servicesLaunched Smart Business Outlet pilotsEnhanced the smart service capabilities of new media channels	<ul style="list-style-type: none">The “10000” hotline centers of 31 provincial branches realized AI-based interaction, with 40% intelligent voice directory service, over 90% satisfaction rate and 6.5% less manual servicThe scale of new media users and service volume continued to increase, with users of new media customer service increasing to 160 million and 2.38 billion times of services
Lean network operation	<ul style="list-style-type: none">Relied on big data to support the optimal configuration of network resources and continued the capacity building of the wireless big data platform for integrated construction, maintenance and optimization	<ul style="list-style-type: none">Optimized analysis models for precision planning, poor quality areas, poor experience users and network monitoring of six scenarios with high traffic density, while adding new analysis models related to indoor coverage, tunnel coverage, scenic spot perception and VOLTE services to provide accurate support to mobile network roll-out and network quality optimization
Precise management	<ul style="list-style-type: none">Carried out special programs to improve the efficiency of investment and operating costs based on big dataDeveloped and promoted AI applications to handle large quantity of repetitive operationsApplied big data technology to support the construction, operation and management of marketing channelsCreated the “Work Assistant” APP for front-line small CEOs at the grassroots level to assist in operation and management	<ul style="list-style-type: none">Further optimized investment, marketing expenses and operating costs of access networkRealized multiple applications including smart contract, smart legal support, automatic generation of financial credentials, automatic project establishment and automatic analysis of CVs, effectively reducing tedious manual workOperation analysis at all levels of channels was significantly improved, allowing for more accurate decision making related to store location and terminal selectionThe “Work Assistant” APP helped grassroots small CEOs quickly obtain support and professional guidance to improve management capabilities

Ecosystem Partnership for Digitalized Industrial Chain

【Create 5G Industry Innovation Alliance】

The 5G Industry Innovation Alliance is jointly initiated by China Telecom and its industry partners including mainstream communication equipment vendors, terminal and module vendors, application/service providers, system integrators as well as investment and research institutions. It is a mutually beneficial community based on the principle of “voluntary participation, equality, cooperation and win-win results”. The Alliance aims to gather 5G industry partners, explore innovative 5G applications, nurture 5G ecosystem, promote the mature development of 5G, deeply aggregate core technologies, empower core industries, create a service ecosystem for vertical industry and build data-driven application capabilities.

5G Ecosystem Driven by “1+1+1” Innovation Model

With the “1+1+1” model - China Telecom's 5G Industry Innovation Alliance, 5G Open Lab and 5G Joint Innovation Center - as the core for ecosystem development, CT actively expanded the alliance ecosystem, built open alliance platform and enhanced the Alliance's collaborative innovation capabilities. Work was carried out around core content such as ecosystem development and operation, research of industrial technology development, testing and verification of typical businesses and industry application benchmarking.

Actively Expand Alliance Partners

Partners of the Innovation Alliance involve all links of the 5G industry chain, spanning from industrial Internet, transportation and logistics, healthcare, education, media to energy and other fields. By of the end of 2020, nearly one thousand ecosystem partners were gathered with more than 200 additional member organizations, of which 44 were members of the executive council.

Build Digital Platform for Cloud-Network Integration to Promote Prosperous Application Ecosystem

China Telecom strengthens open cooperation, fosters industrial ecosystem and builds a digital platform for cloud-network integration to pool advantages in connectivity, cloud, security, payment, video streaming, big data and AI, and empower external ecosystems and partner customers. In 2020, the 5G MEC edge computing platform self-developed by the China Telecom Research Institute introduced more than 40 external partners and 51 application loading tests, forming a diversified Platform + Application ecosystem.



On November 7, 2020, China Telecom 5G Industry Innovation Alliance held the second meeting of its first Executive Council

Boost Digital Economy

As the main contributor in building the digital China, China Telecom gives full play to its advantages in 5G and cloud-network infrastructure and actively enhances communication with various industries to deeply understand the needs of customers for the next generation of ICTs and applications and carry out multi-faceted cooperation at multiple levels in various forms to boost the digital economy.

Smart Manufacturing

China Telecom fully unleashes its technological strength to promote the development of “5G + Industrial Internet”, accelerating the transformation toward “smart manufacturing” through 5G empowerment.

【Support to “Unmanned Mining”】

The Anhui Branch made the best out of its 5G and IoT technological advantages to address pain points from complex mining environment, great safety risk and high operating cost and cooperated with ZTE Corporation and Nanshan Mining Company of Baowu Masteel in deploying Anhui's first underground 5G MEC in Nanshan Mine. The deployment provides strong support to the online operation of 5G unmanned mining vehicles in open pits, realizing unmanned and manned mining trucks working together in a metallurgical open-pit mine for the first time in China. 5G MEC enables the automatic operation of the whole process from trucks loading, transportation to unloading as an approach to secure personal safety and health of traditional mine workers and effectively reduces labor costs while improving production efficiency; at the same time, it cuts the fuel consumption by unmanned mining trucks, reduced tire wear and effectively prevents resource waste to support ecological environment protection.

Working Scenarios at the Nanshan Mine of Masteel Where “You Sit Indoor and Watch Mining Trucks Operating on Themselves”

5G + Intelligent Dispatch

With the help of the advanced radar system, satellite navigation system and image recognition system on board, the unmanned mining trucks transmit their route, video, dispatch, safety and other information in real time to the 5G intelligent dispatch system for analysis, achieving better refined management of mining processes, more efficient mixed truck operations and more cost-effective dispatch and business operation.

5G + Drone Patrol

Built on the advantages of large bandwidth and low latency 5G network, mining drones realize real-time monitoring of a wider range of mines, railway lines, tailings pipelines and high-voltage lines with real-time video backhaul, enable prompt risk investigation, and have greatly reduced patrol cost and achieved higher patrol efficiency.

5G + VR-based Live Monitoring

Supported by 5G, VR technology and a 360-degree camera mounted in the pit, real-time transmission of live images from under the pit can be realized with remote immersive observation, avoiding safety challenges of manual observation in the harsh environment in the pit.

5G + Wireless HD Video Surveillance

5G, cloud, artificial intelligence and other technologies are applied to develop a 5G + wireless HD video surveillance solution to functions such as face and vehicle recognition, warning against dangerous behaviors, equipment inspection and fault diagnosis.

【Support to Improved Production Safety for Enterprises】

To address the pain points of Jinchuan Group caused by large number of underground mining operations, high level of risks and difficulties in on-site monitoring, the Gansu Branch gave full play to its own technological advantages and launched the “5G + Autonomous Driving System of Electric Trams” at the Longshou Mine. Upon its activation, the system enables visualization throughout production process and unmanned production line, which greatly reduces manual workload and hidden safety threats. The number of operators per shift in each position was cut from 15 or 17 to 3 or 5, a great increase in production efficiency and substantial reduction in production cost.



In August 2020, at the Nanshan Mine and Shangqiao Iron Mine of Masteel, dispatchers used the emergency takeover system for 5G + unmanned vehicles to remotely control the routes of unmanned mining vehicles in operation



On August 24, 2020, 14 locomotives on 5 electric trams were tested at the Longshou Mine 1703 in Gansu. Unmanned driving based on 5G wireless communications is realized on all electric locomotives

In the past, you wore a dust mask to avoid taking in too much dust while at work. When a day was off, only your eyeballs were white. Now, you sit in the operating room with remote control. The pictures are clear and the operation is simple. Human intervention is only needed in the loading stage and the rest can all be done automatically.

— Cheng Wei, operator of the Transportation Zone at Longshou Mine, Jinchuan District, Jinchang City, Gansu Province

Smart Agriculture

【Support to Smart Eco-Vineyards】

The Jiangsu Branch fully unleashed its technological advantages for active promotion of smart agriculture pilots and took the lead in launching the smart eco-vineyard project in Feizhuang Village, Liangcha Township, Lianshui County, Huai'an City, Jiangsu Province. It leveraged cloud and IoT technologies for accurate profiling of crop growth, timely risk warnings and greatly improved production efficiency. The area of the vineyard was expanded from the original tens of mus to 300 mus, increasing the yield while raising farmers' income.



A full set of IoT equipment was installed for the smart vineyard to monitor real-time data such as illuminance, temperature, humidity and soil PH value via sensors, upload the data for growth analysis and build a cloud-based backend management system for quality traceability of the whole process from grape seeds planting to harvesting, together with the establishment of a remote guidance platform.

— Zhou Lacheng, deputy director of New Business Center, Government and Enterprise Customer Department, Lianshui Branch, Huai'an City, Jiangsu Province

On September 10, 2020, the Shine Muscat grapes went ripe in the 100-mu vineyard in Feizhuang Village, Liangcha Township, Lianshui County, Huai'an City, Jiangsu Province. Zhou Lacheng, First Village Secretary and member of the Jiangsu Branch's poverty alleviation team, helped the growers harvest fresh grapes for packing and shipping

Smart Transportation and Logistics

【Support to Smart Parking System】

In response to parking difficulties in urban areas including “insufficient parking space, challenging exits and inconvenient payment”, the Fujian Branch took the initiative to develop the urban brain for smart parking system in Fuzhou, Fujian Province. Relying on the China Telecom's IoT platform, the system deeply integrated cloud computing, big data, AI, convenient payment and other industry-leading technologies to consolidate all parking data resources within the city, form a unified map of parking information so as to improve the level of comprehensive ICT-based parking management and effectively relieve the pressure of urban parking.

Develop Standards for Data Sharing

Established a unified access standard for parking data, formulated parking data sharing standards, and improved the parking data sharing system.

1

Diversified Access for Data Integration

Provided different access methods for parking lots, communities, government agencies, commercial complexes, etc. based on the PAAS cloud platform to create an urban-level parking data resource aggregation and integration platform.

2

Connected Information for Worry-Free Parking

Published the driver service system through multiple channels to gather real-time dynamic information about parking lot resources within the city, and provided one-stop-shop mobility services ranging from parking lot navigation, dynamic car locating, parking forecast, dynamic reminder to parking reservation.

3

Convenient Payment for Better Efficiency

Connected multiple payment channels and established a parking procedure featuring “exit first, pay later” and “contactless payment” for simplified public parking procedures and improved mobility efficiency.

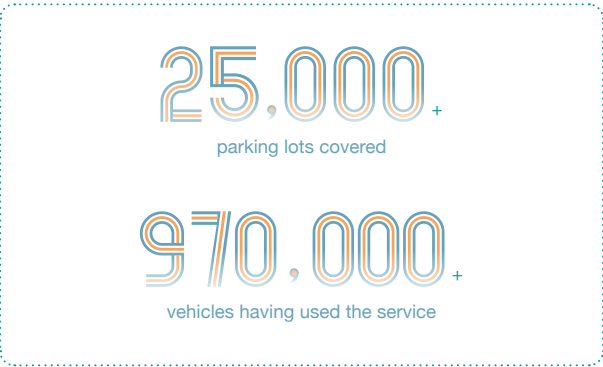
4

Operational Analysis to Support Decision-Making

Realized inter-region, multi-level centralized monitoring and management for various parking lots, and provided related departments and operators with services such as remote monitoring, decision-making support, statistical analysis and data presentation.

5

By end of December 2020



On June 14, 2020, on East Qunzhong Road, Taijiang District in Fuzhou, Fujian Province, members of the smart parking team went to roadside parking places to help front-line toll collectors use the system

Smart Finance

【Support to Financial Inclusion】

China Telecom leverages its advantages in “communications + payment” and “payment + wealth management” to continue the promotion of “BestPay”, “Orange Installment” and other Orange Finance products. In 2020, “Orange Installment” covered more than 260,000 stores nationwide and served over 21 million users with an annual transaction at 8.1 billion yuan, acting as a strong boost to inclusive financial services.

As an installment product, Orange Installment focuses on 3C product purchase scenarios and integrates telecommunications packages and broadband services. It adopts an innovative service model with “finance + communications” as the core, and meets diverse consumer needs for smartphones and communications tariffs while relieving users of payment pressures with convenience and affordability.



In Tibet alone, “Orange Installment” covered 760 stores, with 16,000 transactions throughout the year with the transaction amount reaching 12 million yuan. The picture shows staff from BestPay Operation Center assisting staff at the Shannan Business Outlet to apply for “Orange Installment” at the user’s home on October 19, 2020

Smart Commerce

【Support to Commercial Complex】

Commercial complex is the new layout of modern urban commerce and an important part in connecting the domestic circulation, promoting new ICT consumption and popularizing 5G consumer-level applications.

With the help of 5G, cloud, high-precision point cloud mapping and Internet-based 3D spatial reconstruction, China Telecom has independently developed a 5G+MEC digital twin platform for smart commerce (e Cloud Map) to provide integrated smart commerce solutions.



The 5G+MEC digital twin platform for smart commerce vigorously promotes the recovery of visits to physical shops, expands new ways of consumption with better quality, and explores a multi-win business model for commercial complex operators, retailers and consumers, with readiness for full-scale replication and promotion.

As of the end of December 2020, the platform has been launched to empower over 100 leading commercial complexes, commercial pedestrian streets and free trade zones including Hefei MixC, Xidan Joy City in Beijing, Shanghai Super Brand Mall, Guangzhou Yue City, Wushang Plaza in Wuhan, Suzhou Wuyue Plaza, Hangzhou Yintai Plaza, Chongqing MixC, Kuanzhai Alley in Chengdu and Fuzhou Suning Plaza, benefiting more than 20,000 retailers with over 10,000 daily views.



On June 24, 2020, a tourist visited the AR-based ocean landscape in Hefei MixC - the first 5G+MEC smart complex in China built by China Telecom to fully upgrade digitalized customer acquisition and the immersive experience of entertainment and consumption



On June 18, 2020, China Telecom Sichuan Branch and the Kuanzhai Alley Scenic Area jointly launched the 5G interaction activity – “5G for Fun at Kuanzhai Alley”

Support People’s Well-being

Taking the initiative to improve people’s livelihood in the new stage of development, China Telecom strives to improve the level of digital government, promote the adoption of “Internet + education”, support smart healthcare, develop smart elderly care, build smart communities, innovate smart home products and services, and promote “cloud tourism” to create a beautiful new life that is smart, convenient, digitally efficient, safe and harmonious.

Smart Government

【Enable “No-Face-to-Face Approval”】

Built on its own technological advantages, the Beijing Branch actively assisted the Beijing Fangshan District Government Service Center to launch an integrated online government service platform including the e Government Cloud, Online Service Hall, “All About Fangshan” APP and “Quanshitong Video Conference”. During the epidemic, “contactless” services were provided to further develop the “no-face-to-face approval” service in a comprehensive manner. As of the end of December 2020, the Service Center had received a total of 21,812 service applications, of which 9,215 were made via online channels, accounting for 42.25% of all applications, improving the efficiency of government service management.

The package of ICT solutions provided by CT Beijing Branch allowed government bodies to adopt remote ICT approaches to real “no-face-to-face approval” throughout the entire process, greatly reducing the risk of COVID-19 spreading.

— Liu Lei, Deputy Chief of Beijing Fangshan District Government Service Administration



On February 12, 2020, the comprehensive window staff of Beijing Fangshan District Government Service Center used China Telecom’s 5G network and Quanshitong Video Conference to provide customers with video-based consultation and remote assistance services

Smart Education

【Support to Smooth Operation of “Cloud-based Classroom”】

During the epidemic, China Telecom made every effort to ensure smooth communications for cloud-based classrooms in primary and secondary schools across the country. It set up a special steering group and overcame difficulties from lack of logistics services and shortage of construction personnel during the epidemic to coordinate the formulation of guarantee plans and deploy and commission resources. As a result, it succeeded in capacity expansion and service guarantee for smooth launch and stable operation of the platform, effectively ensuring the network connectivity of online classrooms for 180 million primary and middle school students across the country.

In response to difficulties in summer vacation study among children of farmers and herders in Altay, the Xinjiang Branch adopted CT's IPTV cloud hosting model in setting up the summer “cloud classroom”, an online learning platform for 44 primary and middle school students to spend their summer vacation in a “safe, healthy, helpful, proper, fulfilling and happy” manner.

The summer “cloud classroom” has rich content and I like online classes and activities like this very much. In the “Epidemic Prevention by All” section, I learned some basic knowledge about the epidemic; in the “Stories Behind Set Phrases” section, I learned the stories about idioms such as the brave man cutting off a venom-poisoned hand to save his own life and the nirvana and rebirth of phoenix and there were also experts explaining functions...

— Blimubek, primary school student in Botamoying Village



Bulimbek, a primary school student in Botamoying Village, Jieta'arele Town, Fuhai County, Altay Region, Xinjiang Uygur Autonomous Region was learning through the “Cloud Classroom” on August 13, 2020

【Advance 5G+VR Safety Education】

The Jiangxi Branch used 5G+VR technology in safety education in the Jinxian Special Education School in Nanchang City. The program was designed for intellectually, hearing or speech impaired children and other “children with special needs” and leveraged VR-based simulation experience to create a targeted classroom environment. It greatly inspired the children's interest in learning, enhanced the children's safety awareness and prepared the children with self-aid skills.

This teaching activity broadened the children's horizons and allowed them to feel the power of technology. In particular, the highly interactive VR-based teaching was quite helpful for the mentally, hearing and language impaired children and stimulated their interest in learning.

— Wu Xifeng, Principal of Jinxian Special Education School



On September 29, 2020, the Jinxian Special Education School in Nanchang, Jiangxi Province launched a VR teaching trial for safety education

Smart Healthcare

【Popularize 5G-based Remote Consultation】

The Sichuan Branch took full advantage of the all-fiber networks and 5G and succeeded in building China's first 5G + coronavirus-related remote consultation system in West China Hospital. With WCH as the central node, the system covered 27 designated hospitals in the first batch, with multiple access via large TV screens, mobile phones, etc. to realize remote consultation. By the end of 2020, all of the first batch of 27 designated hospitals have been covered by dual 5G gigabit networks; the second batch of 194 designated medical institutions at county (city, district) level were 100% covered by fiber optic networks, with 23 having 5G coverage.

Leveraging 5G, cloud computing and other technological advantages, the Jiangxi Branch assisted the Jiangxi Provincial Cancer Hospital in establishing the province's first telemedicine platform for oncology, capable of providing over 10 telemedicine services including remote outpatient care, remote imaging-based diagnosis, remote ECG diagnosis, remote pathological diagnosis and mobile medicine to greatly improve patient experience. At present, the first phase of the platform has been connected with 60 member organizations of the Jiangxi Provincial Cancer Prevention and Treatment Alliance, initially realizing the interconnection of audios, videos and medical data among medical and health institutions in the province.



On December 29, 2020, an anesthesiologist from Jiangxi Provincial Cancer Hospital gave a remote lecture on “New Thoughts on Anesthesia Brought by New Concept of Heart Dysfunction” to the Department of Anesthesiology of the People's Hospital of Aktao County in Xinjiang Uygur Autonomous Region through the 5G Remote Consultation Center



On February 2, 2020, Professor Peng Chengzhong, Deputy Director of the Ultrasound Department of Zhejiang Provincial People's Hospital, used an ultrasound robot operating on China Telecom 5G network to make out the first remote ultrasound diagnosis in China

At present, there is a shortage of CT operators. Using 5G to remotely control CT to examine patients can alleviate the pressure on Huangzhou General Hospital. Cooperating with China Telecom and Siemens, we brought WCH experience to the mobile cabin hospitals.

— Li Zhenlin, Dean of the Department of Imaging Technology and Deputy Director of the Radiology Department of the West China School of Medicine, Sichuan University

In the past, the time and transportation cost for local residents to see a doctor was very high, thus they often missed the “golden window” for treatment. Nowadays, with 5G smart healthcare, people in mountain villages can enjoy remote consultation, remote medical image reading, remote B-mode ultrasound imaging, etc. at local clinics or county-level hospitals, realizing the sharing of developed medical resources.

— Liu Guoping, Deputy Head of Muli County, Liangshan Yi Autonomous Prefecture, Sichuan Province

Smart Elderly Care

Facing the increasing demand for elderly care services, China Telecom has given full play to its ICT advantages and actively cooperated with local governments and communities to build the intelligent “residential care platform” to help develop smart elderly care services.

【Support to Smart Elderly Care】

Leveraging cloud, big data, IoT and other technologies, the Tianjin Branch assisted the Civil Affairs Bureau of Hebei District in Tianjin in building a “comprehensive ICT service platform for smart elderly care” covering 118 communities in the district to provide real-time alerts, two-way calls and other prompt services to nearly one thousand elderly families with special difficulties such as empty nesters, disabilities, loss of only child and assisted living. At the same time, the platform was deeply integrated with grid-based community services to foster a 24-hour residential safety service guarantee system with government administrations, grid-based community workers, relatives of the elderly at home and civil service agencies to provide multi-level, diversified and sophisticated elderly care.

The establishment of the ICT service platform for smart elderly care is comprehensive and systematized, which not only realizes the management of the safety of the elderly at home, but also reduces the burden of grid-based staff in visiting the elderly people, unleashing community service efficiency to the greatest extent possible.

— Huang Jiyang, Head of Grid-based Service Center, Hebei District, Tianjin



On September 28, 2020, staff from the installation and maintenance team of the Tianjin Branch taught the elderly with patience how to use the push-to-talk function of CT's smart terminal to make SOS calls and contact his guardian or grid-based workers

Smart Community

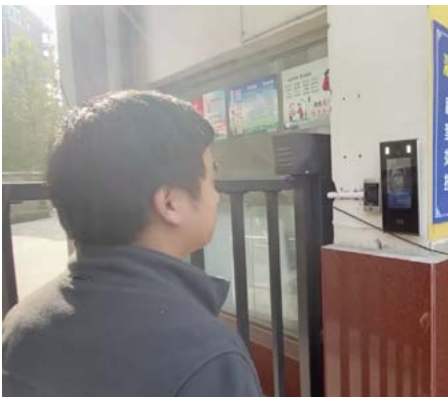
Focusing on community management, service and daily life, China Telecom works with partners in promoting smart ICT applications to help create a safe, convenient, mutually beneficial, harmonious and shared community life.

【Build Smart Community】

Tianyi IoT Technology and China Telecom Fufu Information Technology actively responded to the requirements of the Public Service Bureau of the Xiong'an New Area and gave full play to their advantages in "IoT, cloud, network, digitalization and smart intelligence" to facilitate the intelligent transformation of more than 10 communities in three counties (Rongcheng, Anxin and Xiongxian) of the New Area. Together, they have supported epidemic prevention and control, assisted community management and integrated service channels to provide community administrators with more convenient ICT tools and community residents with information channels, improving community-wide ICT adoption in Xiong'an.

Applications Related to Pilots & Demonstration Projects for Development

- Built the "Comprehensive Management Platform for Smart Community Service in Xiong'an New Area" to improve community work efficiency and provided residents with considerate services.
- Provided convenient services to community workers and residents via corporate WeChat account and mini programs, getting rid of difficulties in home visits and slow services in traditional communities.
- With the deployment of access control system with body temperature sensing at the community entrance, the residents could enjoy contactless checks and remote registration of visitors, getting rid of the need to bring access control cards.
- In key areas to fire prevention such as in-building corridors, smart smoke detectors were deployed for intelligent monitoring and analysis to identify fire risks in a timely manner.
- Deployed the e Speaker System so that cell broadcast was no longer restricted to broadcasting stations, enabling push-to-broadcast at anytime, anywhere.
- Deployed smart charging sockets for electric bicycles in the community for on-demand charging, and used the built-in arc extinguishing device to prevent hidden fire risks for safe charging.



On November 10, 2020, residents in the Xiong'an New Area passed the community entrance equipped with smart temperature sensing in pilot smart communities

【Support to Improve Community Governance】

The Zhejiang Branch relied on 5G network to build smart community platform. The staff could view the whole community and the dynamic operation of smart devices in real time with only one electronic map to enable clear community information for management under dynamic monitoring; this also promoted the community autonomy. During the epidemic, the platform played a major role in community-based epidemic prevention in Wuzhen, Tongxiang City, Zhejiang Province:

- Contactless detection equipment for AI-enabled access control enabled quick passage of residents at the entrance
- Monitoring system realized intelligent identification of strangers with early warning
- Intelligent license plate recognition provided timely alerts on the entry and exit of visitor vehicles
- Community command center interacted promptly with sub-district office workers to deal with emergencies



On November 22, 2020, the Smart Community Cloud Platform was unveiled at the 7th World Internet Conference 2020

Smart Home

China Telecom explores the needs of households for daily ICT services at greater depth and continues to build and improve its smart home products and service system.

New Products and Services Launched by China Telecom in 2020

Smart Locks, Door/Window Contacts, Smart Surveillance Cameras

Smart household security devices. They provide SMS/voice alerts, 7x24 cloud playback, face recognition and other services to realize early risk prevention, real-time playback and timely response to safety threats at home to ensure a safe and secure household.

Whole-Home WiFi (Smart Networking)

Service product for indoor Wi-Fi coverage. It is designed to provide Wi-Fi 6, FTTR and other high-performance networking terminals, professional installation services and smart control applications based on the Xiaoyi Butler app, focusing on solving the difficulties in home Wi-Fi installation, usage and maintenance.

IPTV

Interactive web TV product for residential ICT services. It provides live TV programs, UHD video-on-demand, cloud gaming, cloud computer, online education, remote office and other ICT applications on TV screen via smart set-top boxes.

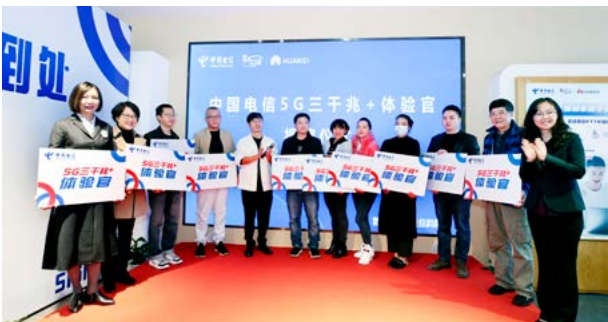
e Home Cloud

Shared cloud storage service for families. It is a cloud data center designed for households, providing cloud storage services such as mobile phone album backup, multi-terminal file sharing, family album sharing and cloud-based video playback.

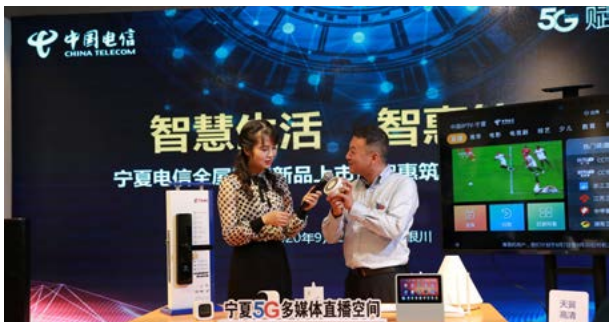
Security Guard

Home security protection service. It provides smart terminal security detection, network risk prevention, privacy data protection, etc. based on the Tianyi gateway and CT's network security capabilities. Users can check home security situation through the Xiaoyi Butler app with multiple application scenarios for anti-fraud, anti-intrusion and anti-information leakage purposes.

【Foster Smart Home Ecosystem】



On October 12, 2020, China Telecom launched the smart home all-fiber networking service during the "Whole-Home Fiber Connection for a Smart, Shared Future" event. 11 Chengdu citizens became the first batch of users to experience the happy life brought by the smart home all-fiber networking service



On September 28, 2020, the Ningxia Branch held a whole-home smart product launch titled "Smart Life Powered by Smart Home", during which technicians demonstrated the latest security products including the smart gas and smoke detectors



On June 23-27, 2020, the Hunan Branch set up a pavilion for 5G smart home experience at the exhibition site of the 2020 Changde Real Estate Exhibition and Trade Fair in Hunan Province to bring smart home experience to the general public

Smart home is really convenient. You can use mobile phone to set the air-conditioning temperature in advance on the way home from office; you can unlock the door with your fingerprint and once you enter the house, the lights go on automatically; you can turn on the TV sitting back on the sofa, saying "Turn on the TV". Nothing is better than this to "lazy bones" like me.

— Wang Yuelai, citizen visiting the smart home experience pavilion in Hunan Province



On September 6, 2020, the Zhoushan Branch held a press conference titled "5G for Better Home CT • Interior Constructors Alliance Inauguration Ceremony and Service for Excellence". The picture shows the signing ceremony between CT Zhoushan Branch and representatives of various interior construction companies

This is a helpful attempt by CT Zhoushan Branch with the interior construction industry in the field of smart home. It echoes to the trend of consumption upgrading and meets the needs of Zhoushan people for a better life. The establishment of the alliance will provide Zhoushan consumers with more smart home products, diversified 5G application scenarios and better post-sales services, thereby comprehensively improving and enhancing the quality of life for consumers.

— Chen Hui, from Secretariat of the Zhoushan Committee of Consumer Rights Protection

Smart Cultural and Tourism Service

【Support to Tourism Recovery】

China Telecom makes full use of its technological strength in blockchain, IoT, big data, cloud computing and AI to assist the Gansu Provincial Office of Culture and Tourism in building the "Gansu Tour on Your Phone" platform. The platform connects various types of data related to transportation, UnionPay, weather, environmental protection, scenic spots, etc. for diverse application scenarios ranging from catering, accommodation, transportation, touring, shopping to entertainment activities, providing convenient ICT services to tourists.

The "Gansu Tour on Your Phone" platform served more than 6.9 million tourists throughout the year in 2020, covering 100% of 113 scenic spots in Gansu at 4A level and above including the Jiayuguan cultural relics, the Maiji Mountain Scenic Area, the Zhangye Colorful Danxia Scenic Spot, as well as national key scenic spots such as the Kongtong Mountain and Dunhuang Mingsha Mountain • Crescent Spring Scenic Area, while connecting tourism-related data from 784 travel agencies, 814 agritainment providers, 9,695 tour guides and other sources.



The picture shows the client page on the "Gansu Tour on Your Phone" platform



The picture shows citizens using the "Gansu Tour on Your Phone" software

【Support to Digital Hotel】

During the epidemic, China Telecom has actively followed national efforts in epidemic prevention and control to fulfill its responsibilities as a central SOE. In response to the needs of designated quarantine hotels for guaranteed communications, China Telecom has provided 24-hour connectivity guarantee services and sent epidemic prevention information to 1.76 million guest rooms in such hotels across China.

Improve Service Capabilities

China Telecom dives deep to identify customer needs based on the principle of "providing services wherever there is need from the customer". It continues to facilitate the digital transformation of services, strengthen service awareness, improve service capabilities and protect customer rights and interests in accordance with applicable laws as a comprehensive approach to building its reputation that "China Telecom is your trusted operator".

Facilitate Service Digitization

【AI Support to 10000 Hotline Service Upgrade】

The Liaoning Branch leveraged AI to launch the 7×24 smart voice service of the 10000 hotline to quickly respond to users' service needs, greatly shorten the duration of service interaction, effectively offload the handling pressure of agents, and promote the transition of front-line staff to business experts, trainers, customer service managers and other higher-skilled positions. In 2020, there were more than 200 scenarios of smart voice directory service, with an average of 1.1 million services per month, more than 60% of which were done via smart voice directory. The three core indicators - voice accuracy, semantic accuracy and directory accuracy - were all above 98% with 99% user satisfaction.

China Telecom's smart voice directory for the 10000 hotline adopts advanced AI technologies such as speech recognition, speech synthesis, semantic understanding, neural network and deep learning, and replaces the traditional key-input mode of service hierarchy with human voice interaction.

— China Telecom Smart Voice Directory



On June 10, 2020, members of the smart customer service operation team of the Liaoning Branch had a discussion on processes of the smart voice directory scenario at work site



On September 20, 2020, the AI Assistant for Customer Service of the Guangdong Branch had served customers for 20 million times

The Guangdong Branch relies on cutting-edge technologies to create the "AI Assistant for Customer Service" to realize rapid trouble-shooting through data integration across multiple systems; it focuses on common customer difficulties in combination with smart voice input for intelligent recommendation; it has also achieved intelligent tracking of customer service history via fully digitalized processes to support the service design and iteration of the "AI Assistant for Customer Service", which provided nearly 20 million times of customer service throughout the year, with an industry-leading customer satisfaction rate of 98.6%.

The AI Assistant for Customer Service relieves the burden of front-line service agents and wins good reputation among customers for the company. There is no end to our service. The collaboration between human and AI will make the 10000 hotline service even better.

— Zhao Juan, Assistant Manager of Line I in the Guangzhou Regional Center of 10000 Hotline of the Guangdong Branch

【Establish New Media Matrix for Customer Service】

Centering on its mission to "provide services wherever there is need from the customer", China Telecom has established a new media matrix for customer service operation. It listens to customer voice via digital means, addresses customer difficulties and provides guidance to the general public as a continued approach to the digital transformation of services. By the end of 2020, its followers on WeChat, Weibo, TikTok and other new media reached 167 million, providing 200 million times of self-services per month and awarded the honorary title of "The Most Influential New Media Secondary Accounts of Central SOEs in 2020" by the SASAC under the State Council.

Establish New Media-based Customer Service System for Convenient Services

New media accounts for customer service have been opened successively on Weibo, WeChat, TikTok and other channels and focus on widely used functions such as “balance inquiry, payment and top-up, broadband fault reporting and e-invoice” for convenient services online. As of the end of 2020, the number of users has exceeded 168 million, with an annual service volume exceeding 2.45 billion.



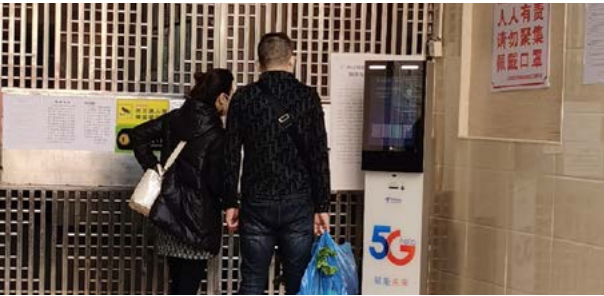
China Telecom has created a dedicated interface to listen to users' voice and standardized the closed-loop process of complaint handling to address online complaints with 7×24 service. In 2020, 67,000 complaints were handled, with response timeliness rate of 98.1%; digitalized evaluation was carried out based on the principle of "letting customers decide", collecting 1.595 million suggestions from user feedback for product and service improvement; instruction to Internet products was enhanced, publishing 4,869 posts via Internet-based channels in 2020 with a total of 144 million times of viewing.

【Create Unattended Business Outlet】



On October 27, 2020, Shanghai citizens visited the 3D-printed customized "miniature business outlet" on the commercial street of Huaihai Road

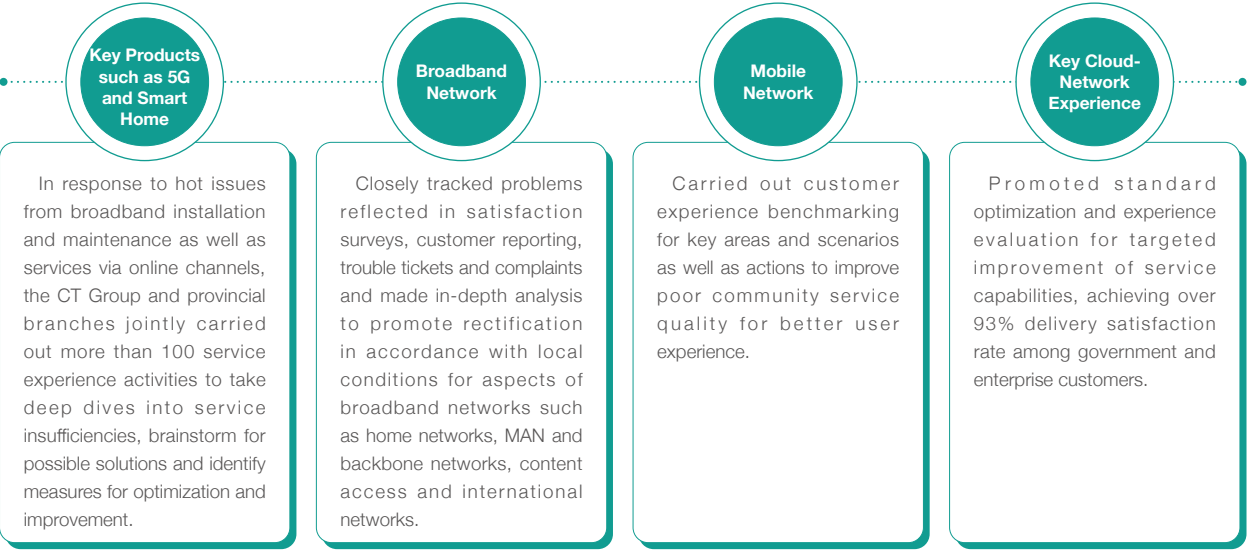
Improve Standards and Norms for New Media Service



On February 18, 2020, residents of Yide Garden in Guangzhou applied for service through the AI-enabled unattended business outlet. These "smart robots" deployed in communities provided community residents with services on their doorstep, reducing the level of contact for infection prevention

Improve Customer Perception

In 2020, China Telecom set up an evaluation system to “let the users decide on service quality” and assessed services against reputation among customers based on user satisfaction, net scores of product recommendation, service satisfaction at contact points and other indicators to enhance service quality. It made active attempts to ensure smooth feedback channels for user appeals and listened to users’ opinions through the 10000 hotline, online and physical business outlets, etc. Moreover, it continued activities including “Consumer Rights Day”, “GM-on-Duty Day” and “Voice from the 10000 Hotline” to enhance communication and interaction with users.



【Listen to Customer Voice】

China Telecom continues to carry out the “All In Action for In-depth Service for Two Groups in Two Areas” program. General managers from 31 provincial branches and 393 prefecture branches personally took charge in service improvement campaigns. Roughly 50,000 managers followed up efforts made by installation and maintenance staff as well as front-line agents of customer service to coordinate and handle service issues.



On July 24, 2020, the Chongqing Branch kicked off the “Secretary-in-Service Day”, where managers received on-site users one by one and face to face to learn about users’ concerns and problems, and respond to suggestions from users regarding mobile network signals, package upgrading and invoice delivery.



The Guangxi Branch has improved its service quality through open-air publicity campaigns, strengthened training, dedicated seats and other measures. The picture shows a staff on the dedicated seat for number portability at the Liubei Business Outlet, Liujiang District, Liuzhou City, Guangxi Zhuang Autonomous Region helping customers to apply for number portability service on March 13, 2020

Service to “Belt and Road” Customers

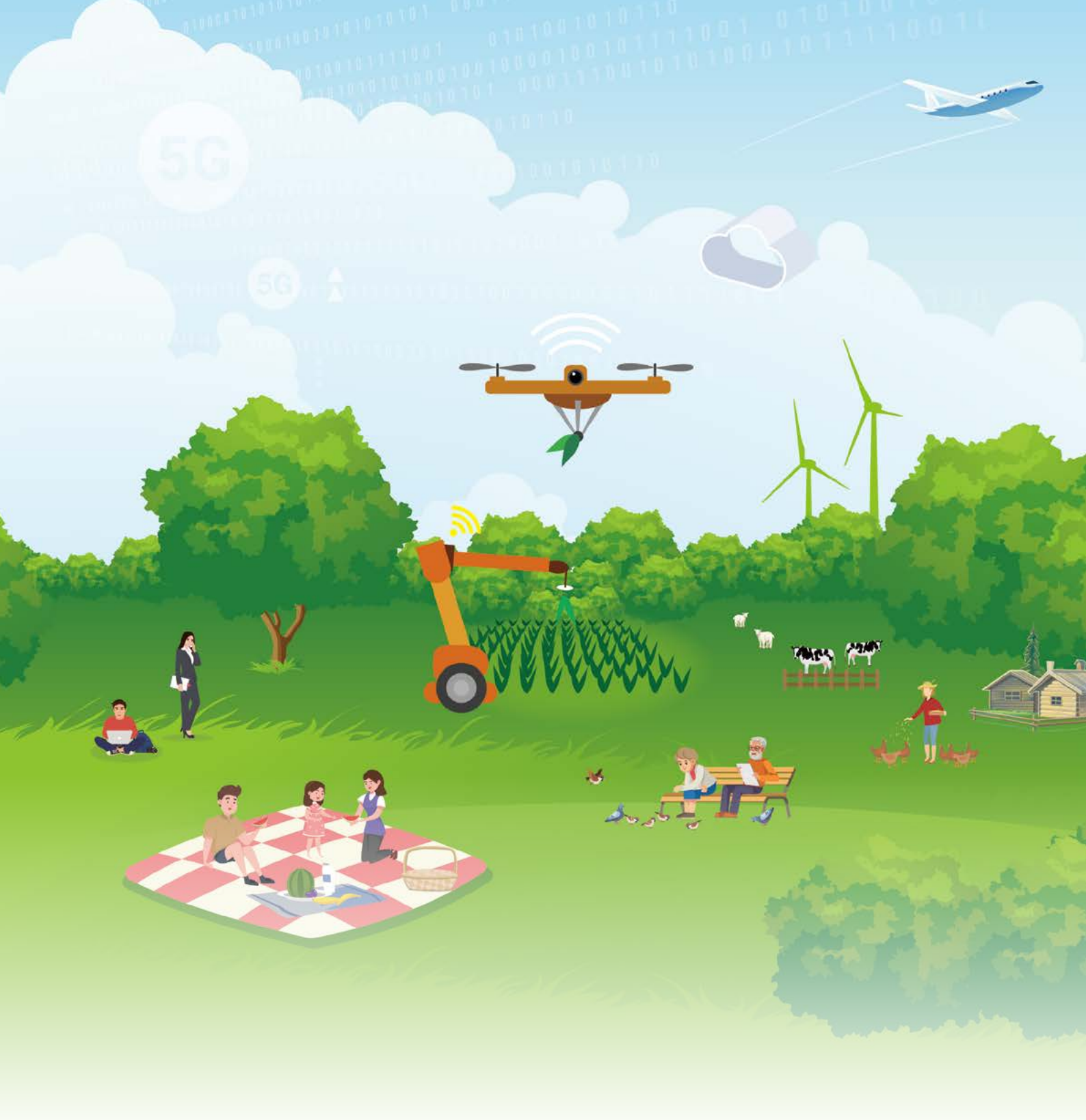
China Telecom is committed to satisfying the needs of countries (regions) along the “Belt and Road” to develop communications and ICT and establishes extensive partnerships for local construction of communications infrastructure to promote industrial ICT applications and services, assist in training local professionals and advance local ICT development.

【Guarantee Overseas Customer Needs】

On August 29, 2020, the Africa and Middle East division of China Telecom Global received an urgent demand from Maroc Telecom for voice connection to ensure the smooth call between Heads of States of the two countries. Facing such important tasks, China Telecom Global took prompt actions in urgent mobilization of competent resources and carried out efficient cooperation with Maroc Telecom to enable a series of communications guarantee including voice interconnection, testing and routing adjustment within two days, which was highly appreciated by Maroc Telecom. This not only guaranteed the needs of overseas customers, but also deepened mutual understanding and mutual trust, creating great opportunities for future cooperation.

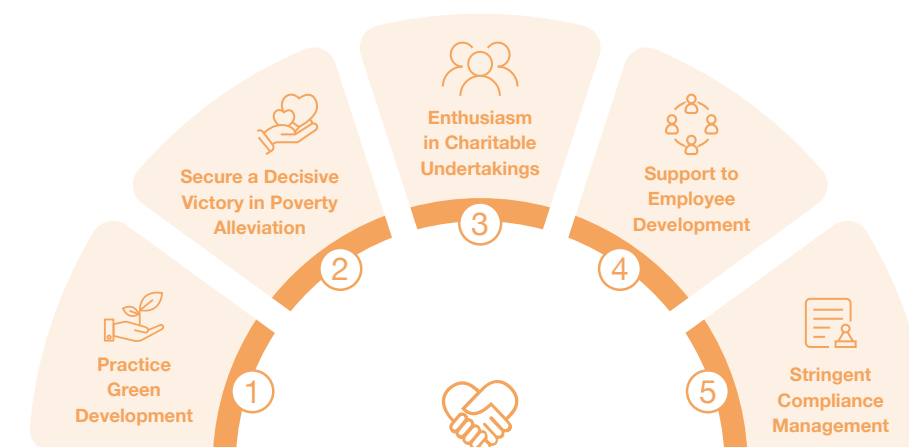


The picture shows a group photo of the UAE team of the Africa and Middle East division of China Telecom Global



PROMOTE CIVILIZATION AND PROGRESS TO CREATE A BETTER LIFE TOGETHER

New stage raises new hope. China Telecom has always taken people's aspiration for a better life as our vision through active practices in green development, rural revitalization activities, passions for social welfare, care for employees, fulfillment of responsibilities overseas and stringent compliance requirements to join hands with all stakeholders on a new journey toward harmony and happiness.



Practice Green Development

China Telecom actively responds to the national requirements of "peak carbon dioxide emissions and carbon neutrality", practices the green development philosophy, promotes green networks, green supply, green projects, green office and green application, and actively participates in the development of ecological civilization.

Build Green Networks

In 2020, China Telecom enhanced the overall planning of energy conservation and emission reduction, and further advanced the energy-saving transformation of equipment, to reduce energy consumption, and build more energy-efficient and environmentally friendly networks.

Main Achievements in Promoting Energy Efficiency and Emission Reduction in 2020

4.51 kg standard coal/TB
Comprehensive energy consumption
per unit of information flow in 2020

5.1 %
Decrease compared
with the previous year

5.5 million kWh
Power saved

Main Actions to Promote Energy Efficiency and Emission Reduction in 2020

Category	Main Actions and Progress
Management on energy efficiency and emission reduction	<ul style="list-style-type: none">• Compiled a three-year rolling plan for energy conservation and emission reduction, and clarified the goals and key measures for “dual control” of total energy consumption and energy intensity• Detailed the assessment, reward and punishment system, and strictly controlled the growth of total energy consumption, and the power usage effectiveness (PUE) value of large and super large data centers• Established and improved the statistical monitoring system of energy consumption, organized training and exchange on energy conservation and emission reduction to improve the professional level of grassroots staff, and continuously promoted innovation in energy conservation and emission reduction management
Eliminate outdated production capacity	<ul style="list-style-type: none">• Continued the withdrawal of inefficient equipment and computer rooms from the network, and advanced configuration optimization and redundancy removal of supporting facilities in computer rooms, to reduce power consumption and improve power efficiency
Promote renovation for energy efficiency	<ul style="list-style-type: none">• Vigorously promoted energy-saving experience and best practices of intelligent shutdown technology for large 4G base stations, improved the energy consumption efficiency of 4G radio base stations, and actively explored energy-saving measures for 5G base stations• Continued to use the contract energy management model to introduce social capital and technology to carry out energy-saving and emission reduction transformations while using our own special funds to support the orderly implementation of those work

【Build Smart Systems for Energy Conservation】

In response to the problems of IDCs of traditional 4G/5G base stations, such as high energy consumption and low energy-saving efficiency, China Telecom has enhanced its independent R&D, and built a smart energy-saving system for base stations and an energy-saving system for computer rooms based on cloud-edge collaboration and on the strength of AI, big data and automatic control technologies, enabling fine portrait of equipment, business and network, and effectively promoting accurate decision-making in multiple scenarios. By the end of 2020, the systems had been promoted for nationwide application, and deployed in 350,000 4G sectors and 104,000 5G sectors, increasing the daily comprehensive energy-saving efficiency to more than 12.5% on average, saving 95.3 million kWh of power that is equivalent to 61.94 million yuan, and reducing the carbon dioxide emission of 95,000 tons. The remarkable effect in cost reduction and efficiency increase helps improve the efficiency of social resources.

Promote Green Supply

The Company insists on giving preference to resource-saving and environment-friendly products, and working with suppliers to deal with climate change. We have applied green procurement indicators to the procurement process, included environmental impact factors into procurement project grading, and introduced environment assessment standards such as ISO14000 environmental management system, government environment impact assessment report and the list of “green factories” of the Ministry of Industry and Information Technology (MIIT) to identify and control products that may have environmental risks in the production process, and drive suppliers to improve their awareness and ability of environmental protection. In terms of supplier inspection, we have included green treatment and standard discharge of production waste, environmental assessment report, and environmental monitoring report into the inspection scope. In terms of supplier evaluation, corporate social responsibility (including energy conservation and emission reduction) has been included in the evaluation index system. And in terms of management of suppliers’ misconducts, adverse impacts of supplier incurred by environmental protection problems has been included in the “serious misconduct” for management, against which disciplinary measures such as demotion, share reduction and cancellation, procurement restriction and even prohibition may be taken as the case may be.

Waste Recycled and Disposed of by Third Parties in 2020

Category	Weight (ton)	Value (10,000 yuan)
Battery cell	18,364.93	12,521.21
Communications device	14,614.45	5,091.19
Cable	38,133.45	96,820.82
Terminal	1,254.56	2,410.52
Others	17,890.45	10,429.43

【Green Procurement for Energy Conservation and Consumption Reduction】

In 2020, the Anhui Branch actively implemented the concept of “Lucid waters and lush mountains are invaluable assets” by setting key evaluation indicators of environmental protection in the procurement process, and introducing reference evaluation indicators such as Environmental Management System Certificate, and Occupational Health and Safety Management Systems Certificate to guide bidders to provide green products.

Take the procurement of air-cooled chilled water air conditioning system for the computer room of Tiandulu Data Center as an example. It introduced new environment-friendly technologies such as natural cold source refrigeration technology and chilled water air conditioning, which saved 20% energy compared with conventional refrigeration equipment and 3.26 million yuan of electricity in the whole year. In the centralized procurement of micro modules in the computer room, new technologies such as micro modularization of large computer room and in-row refrigeration have been introduced, raising the refrigeration efficiency by 12% compared with the traditional computer room and greatly reducing the additional loss of electric energy.

Technology leads us to green procurement. We adhere to the idea of green and low carbon procurement, take into full consideration green and environment-friendly factors in setting procurement evaluation indicators, and give preference to environment-friendly products and services that save energy, water and materials, striving to achieve benefits for both the enterprise and society.

— Gan Caizhi, employee of the Procurement Department of the Anhui Branch



Installation site of the air-cooled chiller for the computer room of Tiandulu Data Center of the Anhui Branch in January 2020

【Special Training to Improve Employees’ Awareness of Environmental Protection】



On October 12, 2020, the Guangdong Branch held training on waste disposal for environmental protection and legal education

According to the unified requirements of the provincial branch, the Guangzhou Branch overcame the impact of the COVID-19 epidemic and other objective factors, and did a good job in the on-site disposal and delivery of waste batteries in strict accordance with environmental protection laws and regulations, which has vigorously supported the development of 5G communications in Guangzhou, practiced the philosophy of environmental protection and helped the construction of ecological civilization.

— Zhu Huihao, Manager of the Office of Logistics and Inventory Management of the Procurement and Supply Center of the Guangzhou Branch

Promote Green Projects

China Telecom earnestly implemented the “Implementation Opinions on Promoting the Co-construction and Sharing of Telecom Infrastructure” by the Ministry of Industry and Information Technology and the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council, and cooperated with telecom operators and China Tower Corporation to actively promote the development of base stations, pipelines and poles, effectively reduce redundant construction, cut down the consumption of land, energy and raw materials, and protect our green home.

China Telecom Environmental Protection Measures for Network Construction

Cultivated land protection

- Give preference to the original premises and wasteland in selecting the site of the base station, and do not occupy additional farmland in principle

Equipment contamination

- Give preference to equipment with no noise, no electromagnetic radiation, and no pollutants

Construction impact

- Field communications route survey actively avoids mineral deposits, forests, grasslands, wildlife, natural relics, cultural relics, nature reserves, scenic spots and other areas
- Try to avoid changing the surrounding environment when laying fiber optic cables

Electromagnetic radiation

- Monitor and evaluate the electromagnetic environment around the base station, strengthen communication with the community, and accept public supervision
- Strictly control the quality of networked equipment and strictly control from the source
- Actively adopt advanced technologies and refine the layout of base stations to ensure that electromagnetic radiation indicators are better than national standards

Infrastructure Co-building and Sharing in 2020

Category	Unit	Co-built	Shared
Pole lines	Kilometer of lines	5,217	11,946
Conduit	Kilometer of lines	8,901	1,399

【Wire Redesigning】

In response to the initiative of building a civilized city, the Jinchang Branch of Gansu Province took actions to clean up the spider web-like wires. In 2020, it finished the cleanup work for over 480 buildings in 27 housing estates, relocated 12 optical splitter boxes, and removed 6.8 kilometers of pole lines.



Comparison before and after wire cleanup in No. 15 housing estate of Jinchuan District, Jinchang City, Gansu Province in March 2020

Promote Green Office

China Telecom persists in green office, advocates water conservation, continuously strengthens the use and management of water resources, carries out sewage discharge treatment, promotes the recycling of production water, and actively uses reclaimed water to replace tap water on the premise of meeting water requirements. We promote and popularize water-saving appliances, post water-saving tips at water facilities and appliances, and regularly inspect and repair all links of the water supply system to prevent continuous water running, water dripping and leaks. Compared with the previous year, the total water consumption decreased by 5.66 million tons or 13.6% in 2020, and the water consumption per unit of operating income reduced by 17.5%.

The Company promotes paperless office by minimizing paper use in operation and office, and promoting paper consumption statistics to generate a portrait of paper consumption. We advocate saving paper, and take measures to reduce the use of paper both technically and systematically, such as promoting electronic management of accounting archives, electronic VAT invoices, electronic reimbursement filing of e-invoices and paperless operation, and advancing the direct online connection between the tax authority and the enterprise for tax declaration to reduce the use of paper documents.

【Promote Green Ledger】

The Guangdong Branch explored electronic management of accounting archives by making full use of the low investment and high storage capacities of cloud services, and building a file transmission cloud platform. In 2020, it successfully separated massive electronic accounting archives (13.6 million documents and 32TB data) from the production environment, and realized data storage, retention and use in the offline state with the help of cloud storage. After repeated verification, the data can be traced back to 7 years ago, and the quality of offline data is as high as 99.9% and above, comprehensively improving the security, stability and convenience of electronic archives storage.

In implementing the strategy of cloudification and digital transformation, the Guangdong Branch realized accounting archives management in electronic, automated and cloud ways, which is an important measure to respond to the national requirement of environmental protection and fully enter the digital era of accounting archives!

— Li Shaowu, General Manager of the Finance Department and the Shared Finance Service Center of the Guangdong Branch



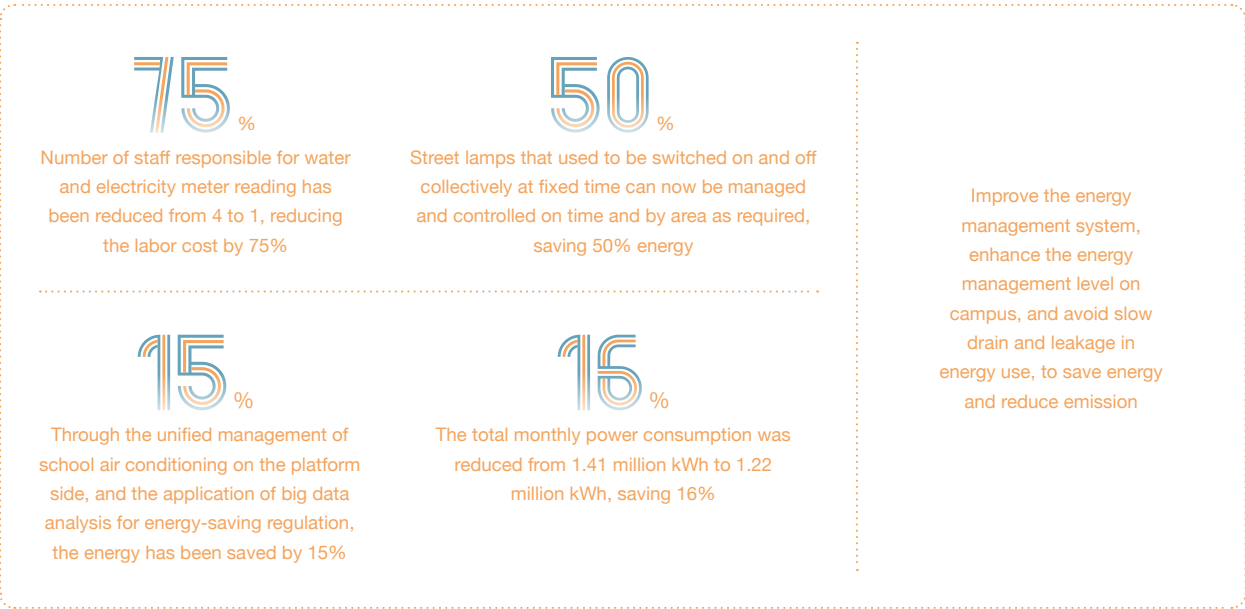
On October 30, 2020, the Guangdong Branch held the final acceptance meeting on offline storage quality of electronic accounting archives

Promote Green Applications

【Build a Green Campus】

Zhejiang Post and Telecommunications Engineering Construction Co., Ltd. deployed a “Green Campus Energy Consumption Big Data Platform” in Zhejiang A&F University. By virtue of its integration and visibility, the platform can present the energy consumption data in real time, visually show the power and water consumption of the campus, monitor the air conditioning and street lamps, and improve the equipment operation efficiency. The 3D view module can comprehensively present the specific equipment and power consumption in each area, and switch the lens angle, enabling people to directly learn about the basic information, real-time data, alarm and energy consumption statistics of each equipment, so as to realize unified management, save management cost and improve equipment management efficiency.

Effects of “Green Campus Energy Consumption Big Data Platform”



Picture of the “Green Campus Energy Consumption Big Data Platform” that realizes 3D visual display of the campus



Picture of the operation interface of the “Green Campus Energy Consumption Big Data Platform”

China Telecom's “Green Campus Energy Consumption Big Data Platform” has reduced the operation risks, human interference, energy efficiency loss, operation cost and equipment failure, and improved the service level, security of energy efficiency, energy consumption quality, work efficiency and management level.

— Lou Weilin, deputy director of the Division of Campus Construction and Public Administration of Zhejiang A&F University

Secure a Decisive Victory in Poverty Alleviation

Since the start of the battle against poverty, China Telecom has taken General Secretary Xi Jinping's important exposition on poverty alleviation as the guide, maintained a high momentum, and continuously invested in resources such as talent, capital and technology by giving full play to the advantages of the enterprise, to enhance support and contribute wisdom and strength of the Company to the battle.

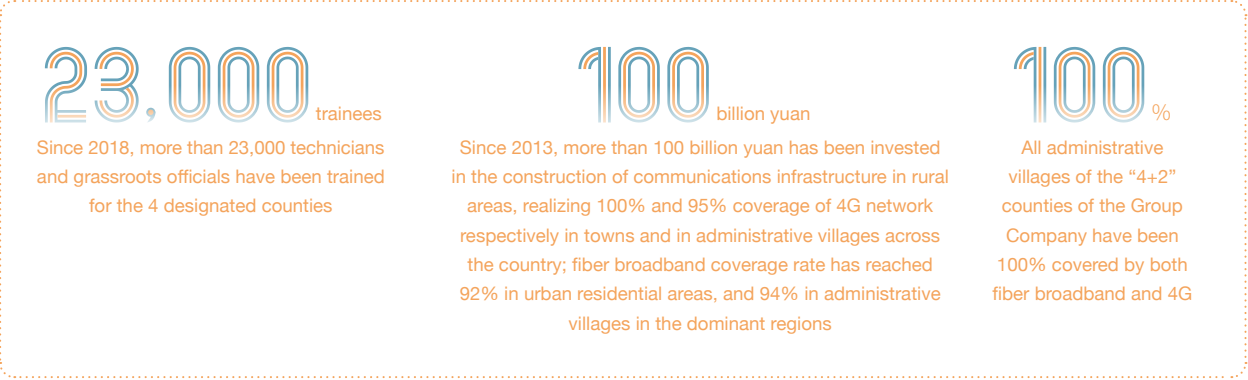
Win the Battle against Poverty

The year 2020 was the last year to fully win the battle against poverty, but COVID-19 brought more difficulties to the year. The Group Company resolutely implemented the decisions and deployment of the CPC Central Committee and the State Council on poverty alleviation, dealt with work on poverty alleviation and epidemic response in parallel, and continued to increase investment in talents, funds and projects, to achieve good results in poverty alleviation. In the year, members of the Party Leadership Group of the Group Company had gone to the front line of poverty alleviation for nearly 10 times to supervise, inspect and investigate relevant work, maintain a tense state and promote the implementation of various assistance measures. Companies at all levels further promoted network-based poverty alleviation and improved the broadband access level of poor villages in severely impoverished areas of “Three Regions and Three Prefectures”. They provided preferential packages and terminal policies for targeted poverty alleviation, opened various information cloud platforms free of charge, assisted work, production and school resumption, and reduced/exempted communications expenses by more than 860 million yuan. The whole Group has invested more than 120 million yuan in the four counties assigned to it for poverty alleviation, introduced more than 19 million yuan of assistance funds, trained more than 16,000 talents and officials, and consumed more than 180 million yuan for poverty alleviation. In 2020, the Group's four designated counties and two paired counties for poverty alleviation (hereinafter referred to as the “4+2” counties) as well as 1,438 villages assisted by companies at all levels were all lifted out of poverty. The Group Company has been rated the highest level for three consecutive years in the performance assessment on designated poverty alleviation by central units, with its work being in the forefront of central SOEs, and won the 2020 Innovative Organization Award for National Poverty Alleviation.

Presenting Poverty Alleviation Work Done by China Telecom with Numbers



PROMOTE CIVILIZATION AND PROGRESS TO
CREATE A BETTER LIFE TOGETHER



Overview of Support to Poverty Alleviation in 2020

Category	Main Actions	Main Progress
Poverty alleviation through connectivity	<ul style="list-style-type: none">Improved network quality in the “4+2” countiesPromoted network construction in severely impoverished areas of “Three Regions and Three Prefectures”	<ul style="list-style-type: none">All administrative villages have been 100% covered by both fiber broadband and 4GHave invested 60 million yuan in the “4+2” counties to optimize network coverage and quality in key rural areas, and provide rural network services “with the same network speed for same network” as citiesRealized 90%+ China Telecom broadband access in all administrative villages and poor villagesCompleted the fifth batch of 4G universal service task and built about 7,400 4G base stations
Poverty alleviation through communications services	<ul style="list-style-type: none">Promoted cheap terminalsCut down communications feesDiversified videos related to agricultural policies, training and health	<ul style="list-style-type: none">Launched 18 poverty alleviation-oriented terminals that have logistics subsidies and par shipping policies, and the supply of which covered 832 poor countiesRolled out poverty alleviation-oriented preferential packages and wealth packages at a total of 39,000 rural channel outlets in 30,000 townships across the country. In 2020, more than 630,000 poverty alleviation packages and more than 1.1 million wealth packages were handled, with a cumulative fee reduction of 860 million yuanIPTV has opened a poverty alleviation channel in all provinces, covering poverty alleviation policies, agricultural technology training, health and other contents, and more than 34,800 videos have been updated throughout the year, lasting more than 11,000 hours
Poverty alleviation through ICT development	<ul style="list-style-type: none">Helped poor areas enjoy the convenience of ICT development simultaneously with developed areas, and contributed to poverty alleviation with smart technologiesPromoted “Internet + poverty alleviation”, “Internet + education”, “Internet + government” and “Internet + health care”	<ul style="list-style-type: none">The Targeted Poverty Alleviation Big Data Platform has served more than 39 million poor people in 1,045 counties in 15 provinces (autonomous regions), covering three designated counties of Yanyuan, Muli and ShufuDid a good job in the school networking action of the Ministry of Education, which benefitted more than 70,000 schools, and sped up the access rate of more than 400 schools in the “4+2” counties to 100M and above free of chargeImplemented ICT-based poverty alleviation projects in the 4 designated counties, such as safe city, rural governance video system and smart government collaborative office platform, to improve government administrationAssisted in building hospitals and clinics in the paired counties, reached an agreement on free donation of remote diagnosis and treatment service with Shufu County, and opened telemedicine platform services for Jiuzhi and Banbar, to improve their diagnosis and treatment level

Category	Main Actions	Main Progress
Poverty alleviation through industrial development	<ul style="list-style-type: none">Directed more capital donations toward poverty alleviation projects through industrial developmentAssisted in introducing third-party enterprises to invest in poverty alleviation projects through industrial development	<ul style="list-style-type: none">Invested 560 million yuan in subscription to the Industrial Investment Fund for Poverty-stricken Areas of Central SOEs to help develop specialized industryDonated and introduced more than 100 million yuan of industrial poverty alleviation funds to the “4+2” counties, to enhance the inner development capacity of poor areasHelped create popular poverty alleviation brands such as Yanyuan Apple, Muli Morchella, Tianlin Agaricus Blazei Murill and Shufu Dates-in-WalnutEmployed poor people during the implementation of the project, provided e-commerce services for the project to solve sales problems, and explored a new poverty alleviation model of “industry + employment + consumption”
Poverty alleviation through employment	<ul style="list-style-type: none">Formulated special policies for poverty alleviation through employmentImplemented the “Poverty Alleviation Plan for Employment of Thousands of Residents in One Hundred Villages” in the 4 designated counties	<ul style="list-style-type: none">Gave preference to poor people and graduates from poor families in the recruitment of companies at all levelsImplemented an employment-based poverty alleviation plan of recruiting 1,000 part-time information officers for China Telecom in 100 villages in the 4 designated countiesHave helped more than 1,600 poor people find jobs
Poverty alleviation through consumption	<ul style="list-style-type: none">Called up staff of the whole Group and social forces to participate in poverty alleviation through consumptionMade use of tyfo.com and other self-owned e-commerce platforms to help expand sales channels for agricultural products	<ul style="list-style-type: none">Widely mobilized companies at all levels to purchase poverty alleviation products of more than 130 million yuan in the form of trade union welfare, love purchase and administrative logistics purchaseCooperated with people.cn, the Social Participation in Poverty Alleviation and Development of China, and China Construction Bank, to create special zones to help sell poverty alleviation products at tyfo.com, jf.189.cn, Bestpay and other self-owned e-commerce platforms, where over 54 million yuan of products have been soldPlanned a series of live streaming activities for poverty alleviation through consumption, and held more than 20 live commerce activities for the 4 designated counties, which were watched by more than 25 million people and sold nearly 4 million yuan
Poverty alleviation through education	<ul style="list-style-type: none">Supported the “Speak Mandarin before Going to School” program of the former CPADProvided training for officials and technicians in poor areas	<ul style="list-style-type: none">Promoted the successful experience of the “Speak Mandarin before Going to School” program of Liangshan Yi Autonomous Prefecture, and facilitated the rollout and operation of relevant information platform in Leshan, covering about 300 preschool education points and 9,000 pupilsDonated 2 million yuan of education-oriented poverty alleviation funds to the “4+2” counties, to subsidize students from poor families and reward excellent teachersHave trained more than 16,000 grassroots officials and technicians throughout the year

Designated Poverty Alleviation and Paired-up Assistance

In 2020, China Telecom continued to donate funds to, send temporary officials to, implement poverty alleviation projects in, and assist in introducing industrial investment projects to the “4+2” counties, to help them improve production and living conditions, develop economy, expand employment, as well as help local residents increase income and get rid of poverty in advance.

Officials Dispatched to Paired Counties in 2020

Tianlin County, Nong Guoning Member of Standing Committee of CPC Tianlin County Committee and Deputy County Head	Muli County, Liu Guoping Deputy Head of Muli County	Yanyuan County, Wang Chao Deputy Head of Yanyuan County
Shufu County, REXIATI Abulimiti Deputy Head of Shufu County	Yanyuan County, Wang Ping First Secretary of Paoerwan Village of Yanjing Township in Yanyuan County	Muli County, He Fuyong First Secretary of Mihe Village of Xiqiu Township in Muli County
Banbar County, Ma Xianyuan Member of Standing Committee and Deputy Party Secretary of CPC Banbar County Committee	Banbar County, Chen Feng Member of Standing Committee of CPC Banbar County Committee and Deputy County Head	Jiuzhi County, Ren Kebo Member of Standing Committee of CPC Jiuzhi County Committee and Deputy County Head

【Consumption-based Poverty Alleviation Unblocking the Road to Prosperity】

China Telecom made full use of its platform resources such as tyfo.com and jf.189.cn to strengthen the linkage between production and marketing, and created a new model of poverty alleviation through e-commerce, with which it comprehensively and deeply carried out consumption-based poverty alleviation, kept on helping Shufu County enhance its inner ability for development and consolidate the results of poverty alleviation. In June 2020, together with the People's Government of Shufu County, the Company made a special live stream for Shufu on the platform of tyfo.com for poverty alleviation and agriculture assistance. The streaming was watched by 8.2 million people, received 1.2 million likes, and achieved a sales volume of 1.03 million yuan.



Taking advantage of tyfo.com, China Telecom created a new model of poverty alleviation through e-commerce. The photo shows Rexiati Abulimiti, who is Deputy Head of Shufu County and dispatched by China Telecom, was doing a live stream for poverty alleviation and agriculture assistance in June 2020

【“Little Eagle Program” Helping Students Build Dreams and Fly】

Intellectual and spiritual support is important to poverty alleviation. China Telecom Research Institute has actively promoted the “Little Eagle Twinning” program by developing a mini program named “Little Eagle Partner Assistance”, and widely encouraging front-line employees in Beijing, Shanghai and Guangzhou to twin with poor families in Muli County, provide intellectual, momentum and financial assistance to students there, and give selfless love and spiritual support to those children, so as to help them build dreams and fly.



Liu Guoping, who is Deputy Head of Muli County and dispatched by China Telecom, was interacting with Muli students

【Network-based Poverty Alleviation Enhancing Inner Capability for Development】

China Telecom went all out to improve the backward communications situation in Tianlin County. We exerted efforts on universal service projects, and invested more than 30 million yuan in building 127 4G base stations, which improved the optical network access rate of natural villages in the county to 65% and above, and the 4G network coverage rate to 90% and above. We also tried to bridge the digital divide between urban and rural development with the help of ICTs, and stimulate the endogenous power of poor villages in the county to get rid of poverty and become better off.

China Telecom has made in-depth efforts on targeted poverty alleviation and achieved good results with many highlights and strong driving effect!

— Luo Junshu, Deputy Head of Tianlin County



China Telecom built networks to bring universal service into the Zhuang and Yao villages. The picture shows China Telecom staff building a base station and pulling optical cables for remote areas of Tianlin County

【Poverty Alleviation through Industrial Development Eradicating Root Cause of Poverty】

The Sichuan Branch has vigorously supported industrial development and infrastructure construction in its paired counties, innovated the poverty alleviation model, established a model of “tyfo.com + ynw360.com”, and built exclusive sales platforms where 340 million yuan of agricultural products were sold in the year. It helped poor counties to develop industries by investing in poverty alleviation funds and introducing projects. It coordinated the introduction of Xinjiang Jiang Guo Guo Co., Ltd. and Anhui Zhanshi Food (Three Squirrels), which signed orders and purchase and sales contracts of 17 million yuan with Yanyuan of Liangshan, to assist the development of walnut industry.



China Telecom keeps close contact with the people in poor counties, goes deep to learn about their needs, supports local industries, and helps them get rid of poverty. The picture shows Wang Ping, who is First Secretary of Paoerwan Village of Yanyuan County and dispatched by China Telecom, was communicating with the masses

Support to Local Poverty Alleviation

While strengthening assistance to the “4+2” counties, China Telecom also actively undertook assistance tasks designated by local governments, and strove to help poor families in local poor villages get rid of poverty.

【Leverage Advantages for Targeted Assistance】

Shuanglong Township in Wushan County is one of the 18 severely impoverished townships in Chongqing. The natural conditions there are harsh with mountains and valleys all over the area. Giving full play to its own advantages and cooperating with the Office of Chongqing Cyberspace Affairs Commission, the Chongqing Branch created an overall solution for a package of network-based poverty alleviation projects, which is praised as “Dongqiao Model”:

1

Realized optical network and 4G coverage in all administrative villages and natural settlements, to enhance the network foundation for poverty alleviation

2

Relying on China Telecom's optical network and e Cloud meeting products, built a remote video conference system to fill the gap of remote conference platform

3

Built an ICT-based “Love House” to care for left-behind children

4

Planned and carried out two themed activities of “cloud training for rural online celebrities” and “cloud shopping + live commerce” to promote local agricultural and sideline products, which achieved sales of more than 260,000 yuan

In order to accomplish the poverty elimination goal of “everyone has work and income every day”, the Xinjiang Branch gave full play to the advantages of the communications industry, and organized the “2020 Comprehensive Skills Training on Communication Engineering for Binamu Village” with Kashi branch of Xinjiang Communications Industry Service Co., Ltd. and Xinjiang Likun Information Technology Co., Ltd. according to local conditions, sending employment skills and employment platform to the door of villagers. 13 and 26 villagers under the age of 45 in phase I and II received training such as on safe production, line pole erection, optical cable laying and climbing operation. Among them, 22 villagers met the employment criteria and successfully signed contracts with employing units. The monthly salary can range from 3,000 to 6,000 yuan according to their work types, and they don't need to worry about food and housing problems, creating favorable conditions for increasing people's income.

The Guizhou Branch has thoroughly implemented decisions and arrangements of the CPC Central Committee and the State Council on poverty alleviation, and innovated the way of poverty alleviation through employment. Taking itself as the hub, it coordinated relevant companies to put forward talent needs, assisted schools setting up computer, big data and other majors that meet the needs of companies, and requested the government to organize students from poor families to be cultivated in designated schools, forming a situation in which poor students have schools to go and potential jobs to take, companies have talents and development, and schools and the government are able to stabilize employment and help the poor. It realized that “one receives vocational education, takes a job and lifts a family out of poverty”, bringing hopes to poor families to eradicate the root of poverty. This innovative employment model has received positive responses from the society and is known as the “ordered class tailored for poor families”.

Enthusiasm in Charitable Undertakings

China Telecom is enthusiastic in participating in social welfare undertakings. Following the principles of “being voluntary, non-remunerated, clear powers and responsibilities, acting within the limit of resources, being honest and trustworthy”, the Company donated money and materials, and provided free services to help the disabled and the weak, support the development of the science, education, culture and health courses, spread civilization, and encourage employees to actively participate in voluntary service activities.

Support to Disadvantaged Groups

The Company cares for the elderly and assists social vulnerable groups such as the disabled, disadvantaged children and disaster victims by means of providing service care, employment assistance, donations and mobilizing employees to donate money and materials.

【Improve Senior-friendly Service Capability】

China Telecom attaches great importance to solving the difficulties of the senior in using smart technologies, adheres to customer-centered, transposition thinking, fully considers the life and use habits of the senior, strives to provide them more comprehensive, considerate and direct ICT services, and gives back to them with warmer services for their long-term support and company.

Upgrade services in offline service outlets

Provide four basic services for the senior and the disabled, including “no health code” green channel, love desk, cash/bank card payment and mobile phone assistance, and provide door-to-door service with appointment as needed

Optimize the service process of customer service hotline

Set up senior seats for elderly users aged 65 and above and registered under the real name system, and provide “one click” to human customer service and priority access service

Accelerate the upgrading of online service hall APP suitable for the senior

Upgraded the special care edition of the online service APP based on the use habits and needs of senior users, using large font, large spacing and large buttons, and adding a voice broadcasting function to facilitate the senior to handle business online



The Quanzhou Branch of Fujian Province cooperated with local civil affairs authority and love groups to provide targeted information services for 350 households of local left-behind people, so that love can be transmitted online. The picture shows a smart home engineer demonstrating the e Housekeeper remote monitoring service for the son of a left-behind elderly



On June 20, 2020, the Jiujiang Branch of Jiangxi Province organized a charity activity at Wangqiao Village together with the Third People's Hospital of Jiujiang City and the Jiujiang Zhongyan Jingjiu Hospital, to provide free physical examination, diagnosis and treatment, and pharmacy services

The online care mode formed by China Telecom e Housekeeper and other intelligent means can help the government fully and effectively conduct hierarchical management and contact tracking of the three left-behind groups. Remote monitoring service also reassures the guardians working away from home.

— Guo Xiaowei, director of Social Assistance Unit, Quangang District Civil Affairs Bureau, Quanzhou City, Fujian Province

Support to Science, Education, Culture and Health

【Contribute to the Protection and Inheritance of Dunhuang Culture】

Responding to the call of the state to protect and inherit Dunhuang culture, the Jiuquan Branch of Gansu Province has taken multiple measures to help cultural relics protection and research of Dunhuang Academy with high-quality network resources, efficient services and rich products and applications, and assist the Academy's ICT development.

Assist Dunhuang Academy Protecting Cultural Relics

Opened 5G base stations covering the office building, exhibition center, digital center and major scenic spots to help promote Dunhuang culture

Deepened cooperation with Dunhuang Academy, and opened cloud hosting and cloud storage services, to help protect Dunhuang cultural heritage

Optimized the network structure and established a looped transmission network for the Academy to help carry forward Dunhuang culture



On August 6, 2020, staff of the Jiuquan Branch were doing pre-check and preventive repair of 5G network outside the Mogao Grottoes

As the main network service operator of Dunhuang Academy, China Telecom gives full play to its technical advantages in such as 5G, big data and cloud-network convergence to provide comprehensive and high-quality services for the protection and inheritance of Dunhuang culture.

—Yang Jing, director of the Network Center, Dunhuang Academy

Promote Social Virtues

【Skillfully Reduce Food Waste with Scientific Methods】

Carrying forward the fine tradition of “hard work and thrift”, the Bengbu Branch of Anhui Province has adopted a series of effective food-saving methods in view of the possible food waste, and promoted social virtues.

Actions against Food Waste

Actions	Results
Developed a WeChat mini program “eFood”, on which the menu is announced one day in advance, and employees may place orders according to their preferences and show the dining code to take the food during the meal time	01 Have effectively shortened the waiting time for employees to pick up meals, and collected the ordering information of employees, enabling the Branch to purchase food ingredients appropriately and reduce waste from the purchasing end
Used small plates to serve food and halved both the amount and price, so that more kinds of dishes can be served while cost the same price as before	02 Have reduced the waste caused by too much food while meet staff's diversified taste demands
Strengthened publicity and cultivated employees' good habits of diligence and thrift by posting slogans and carrying out a signing activity against food waste	03 Have raised employees' awareness of saving and cherishing food, and effectively reduced food waste

Support to Employee Development

China Telecom protects the rights and interests of employees in accordance with the law, pays attention to the establishment of harmonious labor relations, supports trade unions to perform their functions, encourages employees to participate in management, builds stages for employees to improve their capabilities, and strives to grow together with employees.

Safeguard Employees’ Rights & Interests

China Telecom earnestly abides by the Labor Law of the People's Republic of China, Labor Contract Law of the People's Republic of China, Trade Union Law of the People's Republic of China and other laws and regulations related to labor and employees’ rights and interests protection, and enables employees to enjoy their rights & interests in labor, democracy and spiritual culture in accordance with the law. The Company continues to implement the “Notice on Issues Related to Serious Implementation of the Labor Contract Law of the People’s Republic of China and Regulating Labor Management”, to strengthen labor management, use labor in accordance with the law, regulate labor use, and ensure that contract employees have signed labor contracts, as well as salaries and social insurance are paid in full and in time. The Company continues to implement the “Notice on Issues Related to Regulating the Management of Labor Dispatch”, improve the business operation mode and job classification, clarify the employment forms of various posts, regulate the dispatch agreements signed with labor dispatch units, inspect if the dispatch units and dispatched workers have signed labor contracts, and urge them to do so, in order to protect the rights and interests of those dispatched workers.

The Company adheres to employment policies such as gender equality and equal pay for equal work, protects employee privacy in accordance with the law, and implements a paid vacation system for employees. Child labor is prohibited and forced labor is prevented in the Company. There was no child labor or forced labor in the Company in 2020. We also support trade unions to perform their functions in accordance with the law, and encourage employees to take part in management, so as to continue to build harmonious labor relationships.

Facilitate Employee Development

China Telecom continued to promote talent team building, intensify employee training, and accurately empower different employees, to effectively improve the ability of talent teams in 2020. We built innovation studios and organized various forms of competitions to show the value of employees and enhance their talents. We publicized the deeds of model workers in an all-round way through multiple channels, to encourage the employees to carry forward their spirit.

Major Actions Taken to Develop Talent Teams in 2020

Targets	Main Actions
Operational and management talent team	<ul style="list-style-type: none">• Took the initiative to select good officials, form strong teams, and gather talents. Paid attention to performance and grassroots, and improved the professional level of the leader team. Gave preference to those officials who were at the forefront during the epidemic prevention and control period, who bravely stepped forward in times of crisis, and who achieved outstanding results in poverty alleviation. Vigorously selected and cultivated outstanding young officials and took multiple measures to encourage officials to work pragmatically• Organized special training courses for officials, strengthened their exchange and rotation, and helped them improve their abilities• Intensified supervision and management of officials and promoted honesty and integrity
Professional talent team	<ul style="list-style-type: none">• Formulated special policies and actively imported professional leading talents in the fields of cloud-network convergence, 5G MEC, network and information security, and Internet finance• Developed “Guiding Opinions on the Development of an Expert Team for the Government and Enterprise Industry” based on the reform and development needs of the government and enterprise department• Accelerated the building of expert and talent teams for industry information application, big data, AI and cloud network operation. Continued to implement “Spark Program” and “Prairie Fire Program” to cultivate high-end professionals• Cultivated international talents to support Philippine mobile communications operation and other projects in accordance to the needs of overseas business development
Front-line skilled talent team	<ul style="list-style-type: none">• Took into consideration the grassroots needs, and launched a series of practical training programs such as “Comprehensively Strengthening the Training of Talents on Cloud-Network Convergence at the Prefecture Level”, to empower front-line employees• Revised the skill certification and management measures of China Telecom, organized 41 types of skill certification and 2 professional examinations, covering more than 100,000 examinees. Held examinations for smart home engineers and service specialists, and 5G specialists, covering more than 470,000 examinees

Major Actions Taken to Train Employees, Enhance Employees’ Value and Promote the Spirit of Model Workers and Craftsmanship in 2020

Won 296 comprehensive and special honors awarded by external units at the national, provincial and ministerial levels in 2020, including 88 national honors and 208 provincial and ministerial honors, and 27 employees won the honorary title of “National Model Worker”.	Have established more than 1,300 innovation studios in total, including 5 national model-worker and craftsmen innovation studios, 4 industry-level innovation studios, and more than 150 named by provincial and prefectural federation of trade unions. Have won more than 700 national, provincial and ministerial achievement awards, and applied for nearly 1,000 invention patents and utility model patents.
Continued to strengthen the team of internal trainers in 2020. Newly recruited 678 group-level internal trainers and 775 group-level trial internal trainers. The total of internal trainers at all levels has exceeded 13,000, and their teaching hours have exceeded 210,000 hours.	Provided targeted capacity improvement training courses according to the training needs of employees at all levels and positions, to accurately empower front-line employees. The number of online university students has exceeded 220,000, and the per capita learning time was more than 50 hours.

【Support the Growth of Young Employees】



On July 28, 2020, the Hunan Branch held the First Youth Innovation and Creativity and Innovation Skills Competition, focusing on new service and technology directions such as 5G, cloud-network convergence, network and information security, big data, artificial intelligence, block chain and industrial Internet, so as to build a youth talent foundation for the high-quality development of the company and accumulate youth vitality and energy



On April 26, 2020, the Qinghai Branch held a symposium of outstanding young employee representatives. 5 senior experts, 10 model workers at all levels and 13 young employees from different places exchanged ideas

Employee Engagement in Management

China Telecom respects and actively implements employees' right to know, participate and supervise, unblocks employees' appeal channels, puts into practice democratic management systems such as workers' congress and open factory affairs, and encourages employees to participate in corporate management.

Overview of Employee Participation in Corporate Management through Workers' Congress

Indicator	Unit	2018	2019	2020
Proposals from employee representatives	Piece	2,108	1,956	1,356
Training for employee representatives	Time	64	55	47

【Support Employees to Participate in Management】



On May 23, 2020, the Liaoyuan Branch of Jilin held the First Session of the Third Workers' Congress, collected and answered 23 proposals from employees, fully listened to employees' suggestions and safeguarded their rights and interests



The Anhui Branch built a platform named "Lian Xin Bridge" to improve the closed-loop process of processing employees' demands, including "understanding and collection, communication and solution, response and feedback, tracking and supervision, analysis and reporting, as well as assessment and evaluation", to ensure that employees can express their demands in time and receive effective treatment. In August 2020, employees of the Hefei Branch actively offered suggestions to the company via the platform

We appreciate that the trade union and responsible departments of the company attach great importance to the employee representatives' proposals. They have studied and implemented the proposals one by one, and specified the responsible person, timing and promotion plans. In response to the proposal of the Marketing Department on "improving the image of the company", they have purchased business clothing in a centralized way and improved our service image.

— Liu Chunjie, an employee representative from the Marketing Department of the Liaoyuan Branch of Jilin

Care about Employees' Life

China Telecom continues to strengthen communication with employees, understand their demands, increase care for them, satisfy their spiritual and cultural life needs, and strives to improve their sense of happiness and acquisition.

【Enrich the Cultural and Recreational Life of Employees】

In 2020, China Telecom further optimized the operation of the "small facilities in four types" (small canteens, small bathrooms, small toilets and small activity rooms), and enhanced the service capability and contents in terms of catering quality, working environment, activity conditions and life quality. We also set up mother-and-baby rooms based on female staff's special needs, and organized cultural and sports activities that employees are willing to participate in, to help employees balance work and life and improve their sense of happiness.



On July 10, 2020, the Tibet Branch held the 7th "Tianyi Cup" Workers' Table Tennis Competition on the principle of "strengthening physique, enhancing friendship, increasing exchanges and promoting development"

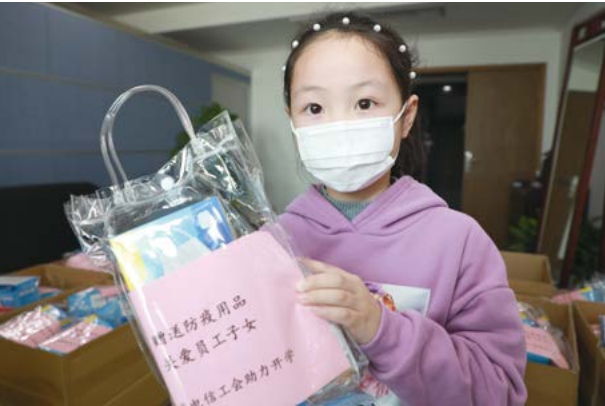


On November 7, 2020, the Harbin Branch organized a football match to enhance the cohesion of the branch, stimulate the vitality of employees and enrich their spare time life

【Care for Employees in an All-round Way】

During the COVID-19 epidemic period, the Group Company's Trade Union set up a special column for employees to express their views. It has collected the opinions and suggestions of over 100,000 people, which reflected the staff's states of minds and difficulties, and provided important reference for the Group Company to adjust its focal points and measures as needed. It also made a questionnaire survey among new employees through the Internet, and sampled 7,897 employees from 19 provincial units (professional companies).

Trade unions at all levels throughout the Group have continuously tracked the ideological, working and living conditions of 86,735 employees (through ways of employee symposium, online/offline questionnaire survey, home visit, visiting the front line, face-to-face communication with employees online or offline, receiving visits, handling letters or emails, etc.).



In April 2020, trade unions at all levels of the Jiangsu Branch purchased epidemic prevention supplies and presented them as gift bags to employees' school children



In November 2020, the Diqing Branch of Yunnan held a tea party for retirees, at which more than 20 retirees gathered together to talk about their lives and families

Stringent Compliance Management

China Telecom insists on operation with integrity and legal compliance, and continues to strengthen audit supervision, Party discipline, clean governance and social responsibility management to ensure its high-quality development.

Strengthen Legal Compliance and Comply with Industry Regulation

China Telecom takes Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the guide, and has thoroughly implemented the spirit of the 19th CPC National Congress and the 2nd, 3rd, 4th and 5th Plenary Sessions of the 19th CPC Central Committee, strictly put into practice the requirements of the State Council on building central SOEs under the rule of law, and promoted the main responsible people of the companies at all levels to conscientiously fulfill their duties as the first person responsible for promoting the rule of law. We continue to deepen legal construction in the Company, strengthen standardized management, adhere to business integrity and legal compliance, keep intensifying audit supervision, improve Party conduct and uphold integrity, and enhance responsibility management, to ensure the Company's high-quality development. In 2020, the Group Company set up a separate Legal Department (Compliance Management Department), further improved the compliance management system of the three sectors: business, compliance management and audit supervision, and formulated the “Compliance Management Action Outline of China Telecommunications Corporation Limited (2021-2023)”. We issued a China Telecom compliance proposal to regulate the operation and management behaviors of companies and employees, and took the initiative to cultivate compliance culture and promote “compliance by everyone, for every matter and at any time”. We strictly abided by relevant laws, regulations and industrial rules, established and improved a long-term communication mechanism, standardized the disclosure of enterprise information, and consciously accepted government supervision and social monitoring.



The Guizhou Branch of China Telecom Co., Ltd. was rated as an integrity model company in Guizhou

Audit Supervision

China Telecom conscientiously implements the new requirements of the central government on internal audit with an aim to “guard against risks, ensure implementation, promote development, and improve value”, and gives full play to the role of audit in “examining economy” to support the Company's reform and high-quality development. In 2020, the Company audited more than 260,000 items, put forward over 3,300 management recommendations and helped improve over 3,400 institutional items.

- Continued to strengthen audit supervision on the effectiveness of the compliance management system and the internal control management system, and enhanced the inspection of key units and key fields while ensuring the full coverage of the audit for three years, to promote the companies' honest and compliant operation, and prevent and resolve major risks
- Paid close attention to the rectification of problems identified in audit, and strengthened the building of a long-term mechanism, to promote companies to improve their self-healing ability
- Enhanced the overall planning of the audit work of the whole Group, and deepened the intensive management of audit at provincial branches, to further improve the audit management system
- Improved the accountability system for illegal operation and investment, ascertained the responsible people according to law and regulations, and strengthened warning education, to raise the compliance and bottom-line awareness of managers at all levels

Party Discipline and Clean Governance

China Telecom has achieved good results in improving Party conduct, upholding integrity, and anti-corruption by fulfilling its responsibility in strict Party governance, and strengthening supervision, discipline enforcement and accountability.

- Earnestly enforced laws and regulations on honest administration and anti-corruption, strengthened the construction of systems, mechanisms and culture, and strictly prevented corruption such as bribery, extortion, fraud and money laundering
- Established and improved five mechanisms for clean and honest administration, including education for prevention, system supervision, punishment and accountability, fault tolerance and correction, and inspection
- Conducted clean education and discipline education, formulated an integrity guidebook and other codes of conduct, opened and operated an official account of “Clean China Telecom”
- Set up a mailbox and hotline for accepting accusations against the Company's personnel and complaints about relevant handling, as well as criticisms, opinions and suggestions on clean and honest administration and anti-corruption
- Strictly implemented the “Working Rules for Discipline Inspection and Supervision Organs to Deal with Reports and Accusations”, to handle reports and accusations according to rules, disciplines and laws, strictly fulfill confidentiality requirements, and effectively protect the rights of whistleblowers

Overview of Party Discipline and Integrity Education in 2020

Indicator	Unit	2018	2019	2020
Number of integrity education activities carried out	Session	20,242	25,457	31,135
Number of people receiving integrity education and training	Person-time	782,658	799,356	1,041,420

Responsibility Management

China Telecom earnestly implements the requirements of the CPC Central Committee, the State Council and various ministries and commissions on corporate social responsibility, continues to integrate social responsibility into its development strategy, daily production, operation and management, and actively fulfills its social responsibilities. In 2020, we selected and commended 32 outstanding CSR cases, and 5 advanced individuals in social responsibility management. The cases we submitted “Practice the New Development Philosophy, Implement the New Infrastructure Strategy, and Accelerate the Development of 5G Networks through Co-building and Sharing” and “Building China-Philippines Digital Silk Road” were respectively included into the Blue Paper on Corporate Social Responsibility of Central SOEs (2020) and the Blue Paper on Overseas Corporate Social Responsibility of Central SOEs (2020) published by SASAC of the State Council.

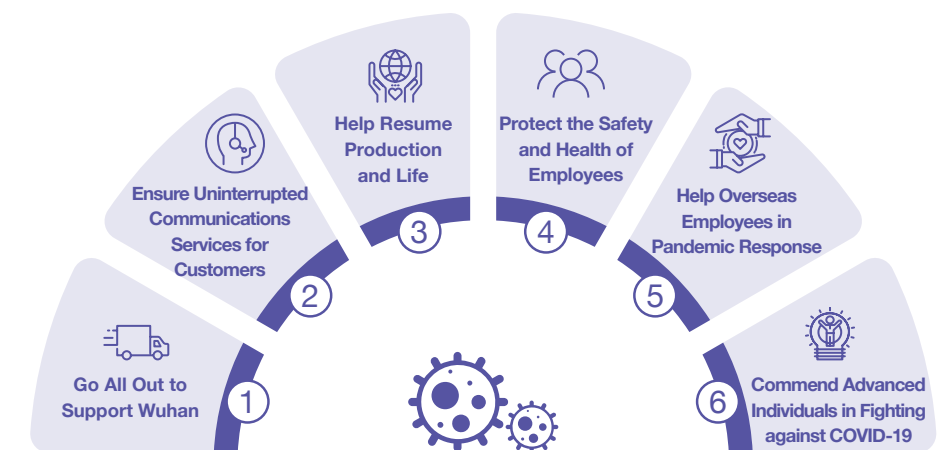
The Company continues to enhance communication with stakeholders, and dynamically releases information on fulfilling social responsibilities through its official website and WeChat account. The year 2020 is our 10th consecutive year of releasing the Corporate Social Responsibility Report in Chinese and English, and the 9th year that our report was awarded “five-star (outstanding)” by the Chinese Expert Committee on CSR Report Rating. We conducted closed-loop management on CSR reports and collected 203 readers' questionnaires to analyze their views, expectations and suggestions regarding China Telecom CSR report, providing helpful experience and lessons to improve report compilation and promote CSR-related work in 2021.

In accordance with the provisions in Appendix 27 (Environmental, Social and Governance Reporting Guide) of the Listing Rules issued by the Hong Kong Stock Exchange, Hong Kong-listed China Telecom Co., Ltd. and China Communications Services Co., Ltd. under the Group Company released their ESG (Environmental, Social and Governance) Reports 2020.



UNITE TO FIGHT AGAINST COVID-19

At the beginning of 2020, the outbreak of COVID-19 epidemic severely affected social production and life, as well as China Telecom's business development, customer service, network construction and operation. The senior management of the Company strengthened overall command while companies at all levels implemented policies and measures in accordance with laws and regulations for different stages of epidemic prevention and control by taking into account local reality, and actively fulfilled corporate social responsibilities.



Go All Out to Support Wuhan

Since the outbreak of the epidemic, China Telecom has gone all out to do a good job in supporting the command and dispatching of the Party, government and army, medical treatment, resumption of work and production, and people's life and communications needs, and actively undertaken the responsibility of a central SOE. We built a video conference system in Hubei Province as soon as possible to ensure smooth transmission of government orders. We built information service systems for Huoshenshan Hospital, Leishenshan Hospital and local mobile cabin hospitals rapidly to support medical treatment. We mobilized China Telecom forces across the country to support the 12345 government service hotline of Hubei to ensure smooth interaction between the government and the public. All those efforts made an important contribution to the epidemic prevention and control in the severely afflicted areas.



In July 2020, Ke Ruiwen, Chairman and Party Secretary of China Telecommunications Co., Ltd., and his companions extended their regards to the front-line employees of the Wuhan Branch

Party organizations and leading officials at all levels of the Wuhan Branch, especially front-line employees, have done a very good job. You are not afraid of hardships and risks, and stand at the forefront of epidemic response and communications support. You made outstanding contributions to the victory of fighting against COVID-19 in Wuhan, ensured the smooth operation and development of businesses, and demonstrated the responsible image of a central SOE. This is a great moment in the history of China Telecom, and your spirit will become the most precious wealth of China Telecom culture in the new era.

—Ke Ruiwen, Chairman and Party Secretary of China Telecommunications Corporation Limited

【The Greatest “Cloud Supervisors” in History】

When COVID-19 was rampant in Wuhan and spreading throughout the country in the early 2020, China Telecom just spent 3 days on launching a super high-speed 5G network connection for Leishenshan Hospital. Relying on the cloud-network convergence advantage, we, together with Yangshipin, built a platform enabling hundreds of millions of people to “cloud supervise” the construction of the hospital. This phenomenal “slow TV” made a vivid and powerful “China Telecom footnote” for “China speed”.

2020

Jan. 23

230 China Telecom employees of the Wuhan Branch worked hard at Huoshenshan Hospital, took the lead in opening a 5G base station in the area in only 26 hours, and completed high-quality full coverage of optical network and 4G/5G wireless network for Huoshenshan Hospital within two days.

Jan. 25

More than 200 China Telecom employees completed the installation of 11 circuits, 1,674 fixed-line telephones and nearly 2,000 network information points at Leishenshan Hospital. They had opened 8 10G Internet circuits, 4 special circuits for medical and health care networks and medical insurance, and more than 1,700 fixed lines for Huoshenshan and Leishenshan, providing SMS platform, Wi-Fi, video conference system and other security services.

Jan. 26

The Cloud Company gave full play to its advantage in cloud-network convergence and completed the construction of cloud monitoring system platforms of Huoshenshan and Leishenshan through dual Gigabit networks of 5G + optical fiber.

In the small hours of Jan. 27

While completing the task of communications network infrastructure construction, the Wuhan Branch set up a task force to undertake the mission of helping Yangshipin make live streaming of Huoshenshan and Leishenshan hospitals.

At 20:00 on Jan. 27

China Telecom cooperated with Yangshipin to launch a program named “Epidemic 24-hour”, which streamed a 24-hour live broadcast of the construction sites of the two hospitals. Once the live broadcast was launched, tens of millions of netizens viewed it and acted as “cloud supervisors”. The total live broadcast visits exceeded 300 million, while the peak concurrent visits exceeded 20 million. The viewers were vividly called the greatest “cloud supervisors” in history by netizens.



On January 23, 2020, Wuhan Huoshenshan Hospital started construction. After receiving the notice from the epidemic prevention and control emergency headquarters late in the afternoon that day, the Wuhan Branch immediately organized and started network construction for Huoshenshan Hospital with the assistance of professional companies of the Group. After a continuous day and night of high-intensity operation, the first 5G base station in the area of Huoshenshan Hospital was opened in 26 hours, and within 2 days, the area was fully covered by high-quality optical network and 4G/5G wireless network

The live broadcast of Wuhan Huoshenshan and Leishenshan hospitals has attracted tens of millions of viewers. Everyone closely watched the construction of the hospitals through the lens and cheered for Wuhan behind the screen. This is not only a common witness, but also cohesion of strength.



On January 27, 2020, China Telecom and Yangshipin jointly launched the program of “Epidemic 24-hour”, which made whole-process HD live broadcast of the construction of Huoshenshan and Leishenshan hospitals. The peak concurrent visits exceeded 20 million, and the cumulative live visits exceeded 300 million. The viewers were vividly called by netizens as the greatest “cloud supervisors” in history

—People's Daily (Page 01 of January 30, 2020)



A close view of the construction of Wuhan Huoshenshan Hospital and Leishenshan Hospital via e Cloud on January 31, 2020

In combating COVID-19, China Telecom always adheres to the people-centered principle and gives full play to its role as a pillar and national team. When Wuhan and other places were in the most severe situations, China Telecom spared no effort to support anti-epidemic services at all costs to meet people's needs.



Ensure Uninterrupted Communications Services for Customers

With a strong sense of responsibility, China Telecom entered the “all-weather” working state, took the initiative to learn about the needs of all parties involved in epidemic prevention and control, and provided support and services with the fastest speed and the highest quality. We rolled out more than 20 special services to facilitate epidemic response, such as public service SMS, fast opening for important support, and caller tag. We strengthened service management, and improved the online service capacity of electronic channels. While our agents of 10000 customer service center could work from home, we steadily promoted the resumption of work and production of physical offices and stores on the basis of divisional and hierarchical epidemic prevention and control measures, to ensure uninterrupted customer service and visibility.

【Ensure Uninterrupted Communications for Anti-COVID-19 Organizations】



On February 10, 2020, staff of the Shaanxi Branch fused the base station optical cable, opened wireless network for the epidemic prevention hospital in Gaoling District, Xi'an, Shaanxi, and made every effort to ensure the on-time opening of the 4 base stations of Xi'an Public Health Center to provide communications and information services for the hospital



On February 15, 2020, the installation & maintenance task force of the Yunyang Branch of Chongqing completed the access service of communications network and iTV for the COVID-19 observation and quarantine points in Nanxi 12 hours ahead



The Beijing Branch provides key communications support to Beijing Hospital, and uses information-based support schemes for quarantine wards, to reduce the infection risk of medical staff and improve the treatment efficiency of patients. The picture shows the video consultation scene in the quarantine ward of Beijing Hospital on February 10, 2020



On February 12, 2020, the maintenance personnel of the Fujian Branch rushed to the fault point to guarantee smooth communications for combating the epidemic. The Fujian Branch actively responded to the communications needs of key areas, and went to the areas hit hard by the epidemic, to ensure stable and smooth communications networks, and protect the information "lifeline" in an all-round way

In order to speed up the progress and reduce the time to wear and take off protective clothes, we worked in the quarantine area without a break. When we were hungry, we just ignored it, and when we were sleepy, we talked to the others to drive sleepiness away.

—Xiao Qinglin, member of the installation & maintenance task force and community manager of the Yunyang Branch of Chongqing

【Provide “Stop-free” Service】

China Telecom actively fulfilled the mission and responsibilities of a central SOE, and immediately launched emergency support measures to communications services. We provided stop-free and emergency re-access services for three specific groups, including medical personnel going to Hubei and ordinary users in key epidemic areas, to ensure normal communications of front-line staff and users in epidemic areas.

The Henan Branch completed the stop-free task through adjustment, test and rollout. On February 29, 2020, it received and completed 17 batches of stop-free adding demands for specific targets, with a total of 18,574 stop-free users.

From January 24, 2020 to March 1, 2020, the Jilin Branch provided 6.8 million relevant users in the province with stop-free service, reduced and exempted communications fees for 12 batches of medical teams to Hubei, and gave 1,000 yuan of complimentary communications fees to each of them, as well as complimentary call fees to 275 volunteers in the province.



The Henan Branch completed the stop-free task through adjustment, test and rollout. The picture shows staff of the Henan Branch adjusting the out-of-service procedure on February 28, 2020

【Solve Customer Problems via Video】

During the lockdown period, China Telecom rapidly promoted “home-based customer service” in the country and launched a series of measures such as “remote counter” service to ensure the customer service standard not lowered while protecting the safety of customer service personnel.

Rapid Deployment of Cloud Production Mode of Home-based Customer Service

Video-based Remote Counter Service

From January 25, 2020, we rapidly promoted the home-based customer service mode and all the customer service centers of 31 provincial branches had fully applied it within one week. We enhanced standardized management of home agents from five aspects: service efficiency, quality management, information security, personnel training and system support, so as to effectively ensure that employees are always on duty and services are always online. During the epidemic period, 13,500 home seats were put into service by the 10000 service in 31 provincial branches, and nearly 65% of customer service personnel worked from home at the peak of the epidemic, effectively ensuring the daily million-time of human handling of the hotline.

In order to facilitate customers to deal with their service applications when they are not convenient to go out, we took the lead in launching 10000 remote counter to provide customers with face-to-face, one-to-one video service. It was first trialed in Guangdong, Hunan, Zhejiang, Shanghai, Beijing and Sichuan, and then fully rolled out for promotion in 31 provinces within two months. It served 200,000 customers per month on average, with a customer satisfaction rate of 97.2% and a problem-solving rate of 95.68%, and was highly praised by the media and users.



On February 11, 2020, the 10000 video customer service officially started, giving priority to providing customers with card replacement, broadband renewal, number cancellation and other services. The picture shows Ms. Wei who lives near Xiangshan of Beijing talking with a 10000 video customer agent without going outside on February 11, 2020



Since February 14, 2020, the video customer service function has been officially launched on the official WeChat account “China Telecom Hunan Customer Service” and other channels, providing IPTV online troubleshooting and cancellation of loss reporting. By the end of December, the video customer service had served 19,351 users

Help Resume Production and Life

China Telecom has always put customers at the center, and in responding to the needs of normalized epidemic prevention and control, resumption of work, production and school, it gives full play to its technical advantages and has organized and provided all kinds of targeted information applications and services, to escort the recovery of production and life.

Examples of China Telecom Products for Epidemic Response

e Cloud Meeting – Cloud Platform of HD Video Conference

Relying on mobile, broadband and other communications networks, it provides integrated services of “5G + Cloud network + Security + HD conference” for governments, enterprises, institutions and individuals, supports meeting initiation and participation through mobile phones, tablets and computers, and meets the audio/video call needs of efficient communication and convenient collaborative office.

Cloud Broadcasting – Enterprise-level Live Streaming Platform

Composed of a cloud platform, an app with independent live broadcast function and a portable live broadcast terminal with director function, it provides low-latency, high-definition, smooth and massive concurrent webcast services to meet the needs of government affairs disclosure, epidemic situation publicity and implementation, industry video application, etc.

e Cloud Classroom – Online Study Platform

In response to the call of “class suspended but learning continues”, China Telecom provides teachers and students with interactive teaching support based on mobile interactive digital courses, and enables synchronization of computer, tablet and mobile phone, to meet the needs of online teaching.

e Speaker – Smart LoudSpeaker Product

It is a wireless, networked and digital product for information release, which is based on the self-developed “smart loudspeaker” SaaS platform, takes China Telecom IoT private network as the core, and 4G sound column, tweeter and IP microphone as the equipment carrier. It supports remote operation, scheduled, automatic and emergency broadcasting, as well as packet and domain-based broadcasting. Different broadcast speakers may play different contents as required, and all broadcasts can be managed and traced.

e Housekeeper – Home Information Product

It is a home information product integrating family monitoring, video recording, wireless access and other functions tailored for target customers. Customers can use it for multiple scenarios, such as checking the situation of the house, of the elderly and children at home in real time and play back the video through PC and mobile phone.

Applications for Epidemic Prevention & Control

The Group Company joined hands with provincial and prefectural branches to implement three-level linkage, carry out big data analysis, and launch a series of applications for epidemic prevention and control, including epidemic monitoring system, epidemic prevention & control investigation system (app) and epidemic self-inspection and reporting system, which have been deployed in 30 provinces and cities across the country (including Xinjiang Corps) to help units at all levels do a good job in epidemic prevention and control.

In response to the requirements of accurate classification, and hierarchical and zone-based management of inbound personnel, China Telecom has carried out the following work:

- Cooperate with relevant provincial branches to make big data analysis of daily inbound users and support provinces to do a good job in joint prevention and control;
- Carry out big data summary, analysis and other processing, and provide users' entry information and main activity tracks abroad to relevant state departments;
- Provide services such as activity track query of inbound personnel. According to requirements of relevant departments, add a function of “Visited Country Query” to the application of “User's 14-day Track Query”, and open corresponding data interfaces to the “Travel Code” and customs' query mini-program to provide the activity track query service of inbound personnel.



Since January 23, 2020, big data experts of the Henan Branch have actively participated in the analysis of epidemic data in Henan Province, given full play to their technical expertise, generated the itinerary of roaming users in Henan Province, and provided epidemic data to the Big Data Bureau and the Communications Administration every day, effectively supporting the epidemic prevention and control in Henan. The picture shows the scene of the epidemic analysis meeting of the data team of the Henan Branch on May 14, 2020



On February 4, 2020, the Jiangxi Branch completed the system development of “Online Service Platform for Key Personnel for Epidemic Prevention & Control in Nanchang of Jiangxi Province”, and launched a trial in Aixihu Health Service Center to help the hospital reduce workload, avoid cross infection, know the body temperature and symptoms of quarantined residents, and optimize the allocation of the community's medical and health personnel. The picture shows the big data interface of the Online Service Platform for Key Personnel for Epidemic Prevention and Control in Nanchang of Jiangxi Province

After using the prevention and control platform, our center has saved the workload of 5 medical staff, effectively reduces the possibility of cross infection, and is able to clearly know the body temperature and symptoms of quarantined residents at home. For residents, online reporting of body temperature is more convenient and private, and avoids some unnecessary panic.

—Gui Yufang, from Jiangxi Nanchang High-tech Zone Aixihu Community Health Service Center

e Cloud Meeting for Efficient and Smooth Communications

During the COVID-19 epidemic period, e Cloud Meeting has provided free meeting services to people's governments at all levels, health commissions, medical institutions, enterprises and public institutions, as well as individuals, the total of which has exceeded 7 million. It also provided important support to more than 1,300 events of the WHO, the National Health Commission, CCTV and other customers, such as “Briefing on China's Experience on COVID-19 Response” and the “73rd World Health Assembly”.



On March 12, 2020, China Telecom successfully supported the “Briefing on China's Experience on COVID-19 Response” organized by the National Health Commission and the WHO



On March 9, 2020, Nanchang Xiaolan Economic and Technological Development Zone in Jiangxi Province held an online signing ceremony of “Combating the Epidemic, Stabilizing Foreign Trade and Promoting Investment” via China Telecom's e Cloud Meeting platform, and merchants from all over the country remotely connected to the main venue

The China Telecom team has provided support services for many video conferences of our department during 2020. Being trustworthy, reliable and useful, it is an important force for ICT support. China Telecom colleagues have devoted a lot of time and hard work. We really appreciate that!

—Pan Biyue, from the International Cooperation Department of National Health Commission

e Cloud HD Classroom for Resumption of Study

By the end of December 2020, e Cloud HD Classroom had served 14,300 schools, nearly 100 education bureaus and more than 10 million teachers and students in 31 provinces.



The Yunnan Branch built a free and diversified online platform “e Cloud Classroom” to meet the learning needs of students during the epidemic period. The picture shows an English teacher of Tian Jiabing Middle School for Nationalities in Yulong Naxi Autonomous County, Lijiang City, Yunnan Province giving a lesson via the platform on March 2, 2020



The Fujian Branch established a special service team on “Cloud Classroom” live broadcast, which has provided online teaching services for nearly 10,000 teachers and hundreds of thousands of students from more than 600 schools in Longyan City, Fujian Province. The picture shows the “Cloud Classroom” live broadcast special service team explaining how to use the platform to teachers in Zhangping No. 1 Middle School of Fujian on January 31, 2020

【e Speaker Connecting the Last Kilometer】

During the period when COVID-19 was rampant, e Speaker (China Telecom’s smart loudspeaker) quickly sounded all over the country, continuously sending epidemic information, prevention and control popular science and other contents to villages and fields, and bridged the last kilometer of information on epidemic response.

The Fujian Branch installed a total of 3,856 smart speakers in Fuzhou, Ningde and Sanming of the province, and duly changed the broadcast information according to the publicity needs of local epidemic prevention and control. The content for circular broadcasting not only includes knowledge related to epidemic prevention & control, but also those easy-understanding slogans and expressions that tell villagers to try to stay at home, not gather, cancel banquets, family feasts and other large gathering activities. It effectively supported the publicity of epidemic prevention and control knowledge in rural areas, especially in remote villages.



The Guangxi Branch promoted e Speaker in Wuming District, Nanning City, Guangxi Zhuang Autonomous Region, and the speaker has covered a total of 700,000 rural residents and 1,220 natural villages, providing great support to the transmission of epidemic prevention and control information. The picture shows the installation and maintenance staff installing e Speaker in Dawutun, Baqiao Village, Shuangqiao Township on March 9, 2020

After the installation of e Speaker, it can not only improve the epidemic prevention and publicity ability of the village, but also give early warning of bad weather, and timely transmit information on such as resumption of work and production and agricultural science and technologies to each villager.

—Meng Siying, officer of the Organization Department of CPC Wuming District Committee, Nanning City, Guangxi Zhuang Autonomous Region



On July 20, 2020, an employee of the Xinjiang Branch was installing e Speaker in Talabulak Village, Qianshan Township, Yiwu County, Hami City. And just in 5 days, they completed the installation and commissioning of 28 speakers in the county, achieving information coverage of remote areas

China Telecom’s e Speaker makes the epidemic prevention and control work simpler and more efficient. It is really a good helper!

—Waresijiang Aimu, Deputy Secretary of the CPC Talabulak Village Committee, Qianshan Township, Yiwu County, Hami City, Xinjiang Uygur Autonomous Region

【e Housekeeper for Safe Work Resumption in Industrial Parks】

There are more than 200 enterprises and more than 15,000 industrial workers in the Industrial Park of Yongchun County, Quanzhou City, Fujian Province. In the face of the large-scale personnel flow brought by the resumption of work in the park, self-quarantine of migrant workers before resumption was important to the park’s safe and orderly resumption of work.

In response to the demand of orderly resumption of work in the industrial park during the epidemic period, the Yongchun Branch of Fujian developed a full set of information service plan for the Health Management Center of the park with a technical mode of “high-speed fiber broadband + e Housekeeper”, and quickly installed 200 broadband lines and 20 sets of e Housekeeper devices for the park. With the help of the e Housekeeper intelligent system installed in the dormitory building of the quarantine area, the epidemic prevention personnel of the Health Management Center can remotely and in real time check the on-site situation of the quarantine area through computer and mobile phone app, and respond to various emergencies immediately, to ensure the orderly progress of epidemic prevention work and production.



On March 12, 2020, workers of the Yongchun Branch of Fujian were adjusting and testing e Housekeeper in the Industrial Park of Yongchun County in Quanzhou City, Fujian Province

【Intelligent Infrared Temperature Monitoring System Helps Work and Production Resumption】



On March 13, 2020, in order to improve the temperature check efficiency of students returning to school, the Qinghai Branch enabled synchronous sensing of multi-person temperature with the help of its technical advantages, ensured rapid and efficient temperature check of teachers and students, and effectively solved the problems of personnel shortage and low efficiency of manual temperature measurement. The picture shows the installation of thermal imaging temperature measurement equipment in Qunke Central Primary School, Hualong Hui Autonomous County, Haidong City



On February 11, 2020, the Wulian Branch of Shandong successfully enabled the “thermal imaging temperature screening system” for Wuzheng Group, and solved the problem of no walk-in check equipment at the gate to screen people entering the inner environment of the park that has more than 5,000 employees

In the past, several of our teachers stood outside to measure the temperature one by one, and the students wasted time in lining up. After installing thermal imaging temperature measurement equipment, students can be measured simultaneously when they enter the door, and don't have to wait any longer.

—Mo Qizhi, from Qunke Central Primary School, Hualong Hui Autonomous County, Haidong City, Qinghai Province

【Assist Epidemic Prevention in Key Areas and Communities】



The Fujian Branch used 5G, cloud computing and other information technologies to cooperate with the government epidemic prevention department to provide remote video monitoring, infrared thermal imaging temperature measurement and travel query services for customs ports, centralized quarantine points and home quarantine points, contributing to technology-based epidemic response. The picture shows a worker introducing how to use the large electronic screen



The Beijing Branch took the initiative to offer advice for community epidemic prevention. In order to solve difficulties in community epidemic prevention, such as large workload of grid-based workers, insufficient manpower and long information collection time, the Beijing Branch rolled out Best Tone intelligent outbound call service for epidemic prevention, which is more than 5 times efficient than the traditional manual outbound call. The picture shows the staff guiding the use of the intelligent outbound call service at Yuetai Jiayuan neighborhood committee, Pinggu District, Beijing on February 17, 2020

Protect the Safety and Health of Employees

China Telecom has always put the life safety and health of employees first, established a team on employee care, and guided companies at all levels to strengthen their care for employees. We cared for employees on the anti-epidemic front-line for communications support and 11 specific employee groups, established an information ledger of employees who were confirmed with COVID-19, whose family members were confirmed cases, who were suspected cases, whose family members were medical staff on the front-line of anti-epidemic and who were stranded in Hubei, and designated special personnel to contact, care for and comfort those people. A psychological care hotline has been set up to help employees alleviate psychological anxiety.

Main Actions Taken to Care for Employees during Epidemic Period

Institutional construction and top-level design

- Set up an employee care team to coordinate the top-level design
- Improved the care work mechanism
- Established a designated contact mechanism to take charge of the work in each provincial branch
- The Hubei Branch established a three-level response mechanism to care for employees during the period of epidemic prevention and control, and clarify the division of labor and responsibilities; the Wuhan Branch issued "Implementation Rules on Reimbursement of COVID-19 Medical Expenses" to ensure timely support in terms of money

Consolation

- Classified employees into different types, set up an employee ledger, assigned special personnel for contact and consolation, and helped reflect and solve difficulties
- Established a designated contact mechanism to contact and take charge of the employee care work in all provinces, and made communication and discussion through video conferences every week; and set up a telephone follow-up mechanism
- Raised masks and other protective materials to offer care in practical ways, and arranged home-based telecommuting

Caring about employees' physical and mental health

- Investigated and reported the mental, working and living conditions of employees during the epidemic period through daily analysis and weekly report, to reflect their thoughts
- Opened a special zone on epidemic response and employee care, and released epidemic prevention knowledge, psychological hotline, questionnaire survey, care policies, online recreational and sports activities, etc.
- Coordinated and solved the difficulties reflected by employees through employees' voice and psychological hotline, as well as the problems reflected by grassroots units in classified care as early as possible

Publicity

- Publicized good practices of employee care through various media channels, to boost employee morale and pool employee strength

Main Actions Taken to Care for Employees during Work and Production Resumption

Main Actions	Results
Protected the life safety and health of front-line employees returning to work	<ul style="list-style-type: none"> Formulated and issued the "Notice on Strengthening the Care of Front-line Employees in Epidemic Prevention and Control", organized companies at all levels to reasonably arrange communications support and key communication construction projects in areas severely afflicted by COVID-19 and susceptible to infection, helped employees take protective measures, arranged shifts scientifically to avoid staff fatigue, equipped and enriched "small medical kits" to protect the life safety of employees Cared about the physical and mental health of front-line employees and their families, provided psychological counseling and helped them relieve pressure
Did a good job in caring for staff stranded in Hubei	<ul style="list-style-type: none"> Comprehensively investigated and learned about the health and psychological status of 2,032 employees stranded in Hubei during the COVID-19 outbreak, assigned personnel to contact, comfort, stabilize their mental states, and channel bad emotions via phone call and WeChat, and helped solve their life difficulties After the lockdown had been lifted in Hubei, mastered the physical condition, return time, transportation way and other information of each employee who planned to return to work, organized trade unions at all levels to guide employees to return orderly and safely, and did a good job in quarantine and observation before returning to work
Organized trade unions at all levels and wide employees to prevent and control the epidemic	<ul style="list-style-type: none"> Trade unions at all levels acted as propagandist and supervisor of epidemic prevention and control measures, logistics supporter to front-line employees, performer of care of special groups, and psychological comforter to employees, organized employees to pool their efforts and wisdom, as well as supervised and cooperated with the Company to do a good job in epidemic prevention and control For business, channel, 10000 customer service, installation & maintenance, customer manager, network construction, network operation and maintenance and other customer contact posts, organized employees to find loopholes in epidemic prevention in time and kept improving protection measures

【Care for Employees' Safety and Health】

China Telecom focused on key areas and actively promoted convenient online office, and distributed epidemic prevention supplies to protect the health of employees. The Company allocated epidemic prevention supplies to units in provinces with serious epidemic situations, with high pressure on work and production resumption, and in urgent shortage of epidemic prevention supplies. More than 1.6 million masks, 6,000 sets of protective clothes and more than 400 liters of disinfectant were allocated to 24 provincial branches, 8 directly affiliated units, professional companies and 6 paired counties, which effectively alleviated their urgent needs, protected the life safety and health of front-line employees, and helped all units resume work and production.



On February 3, 2020, the Chongqing Branch built 10000 "home-based customer service hotline" together with multiple departments, enabling all customer service agents to work from home. The picture shows a remote group photo of home-based agents of the Chongqing Branch during the lockdown period in February 2020



During the epidemic period, the Yunnan Branch took various actions to care for employees. The picture shows the scene of the traditional Chinese medicine center contacted by the Yunnan Branch making diagnosis and giving treatment for the Branch's employees on July 10, 2020

【Pay Attention to Mental Health】

In 2020, the Group Company and 15 provincial branches set up psychological care hotlines, to provide psychological assistance to employees suffering from emotional distress, poor parent-child relationship, inadaptation after returning to work, and other problems during the epidemic period, and have received nearly 600 times of consultations.

On March 18, 2020, in view of the common problems reflected by employees in the psychological hotline and focusing on their working and living conditions, China Telecom held a live lecture on “Empowering self-motivation in the post-epidemic era” for employees through webcast for the first time. The 1.5-hour lecture was watched by 34,170 employees and received more than 9,000 comments, supporting employees to adjust emotions, shape a positive attitude, and devote to customer service, operation and production with a stable and efficient mental state.

On the basis of the mental health service innovation studio and in combination with the “Tianyì” brand, the Shanxi Branch set up an “e Mind Station” to provide mental health service for employees and help combat the epidemic and resume work. In 2020, it became one of the 100 “Demonstration Bases for Employee Mental Health Consultation in Shanxi”.

Work Done by the “e Mind Station”

- Opened a hotline to effectively alleviate the psychological pressure of employees and their family members;
- Established a service platform to provide mental health service support for employees;
- Spread mental health knowledge and provided psychological counseling and prevention education;
- Organized reading activities for employees, to improve their cultural attainment and mental quality;
- Organized group psychological counseling to promote the construction of team culture and corporate culture;
- Cared for employees, and organized rich and healthy activities to delight body and mind and release pressure.

The labor union of the Beijing Branch organized a series of activities to relieve pressure on employees working from home and keep them in good physical and mental health: set up a psychological counseling hotline, and made live stream of a hospital’s psychological lecture to enable employees to get professional assistance and relieve psychological pressure; organized the eighth “Tri-color Flower” reading and essay solicitation activity during the “March 8th” International Women’s day; live stream of an exclusively customized lecture on “Fashion color and matching in 2020”; as well as online activities such as home-based parent-child activities and painting competitions.



A group photo of the “e Mind Station” team of the Shanxi Branch when accepting the acceptance of Shanxi All Federation of Trade Unions on September 4, 2020



“CT Deliveryman”, a work created by an employee of the Daxing Branch of Beijing for a painting activity on February 2, 2020

Help Overseas Employees in Pandemic Response

China Telecom provides services to overseas customers through China Telecom Global Limited (hereinafter referred to as China Telecom Global) and China Communications Services International Limited (hereinafter referred to as CCS International, or CCSI), a wholly-owned subsidiary of China Communications Services Co., Ltd. (China ComService), and is committed to providing customers with efficient and high-quality communications solutions and comprehensive, intelligent information services, and actively performing social responsibilities in combination with the actual conditions of relevant countries/regions.

Overseas Business and Service of China Telecom Global

China Telecom Global Limited provides Internet access and transit, broadband, unified communications, cloud computing, ICT, fixed and mobile voice services and value-added services, professional and industrial solutions, as well as telecom operation consulting and service outsourcing services to international operators, multinational corporate customers and individual customers (mainly overseas Chinese). As of the end of 2020, China Telecom Global had established operations in 41 countries and regions around the world and more than 200 overseas PoPs with over 70T of international Internet bandwidth and transcontinental capacity, as well as assets in 42 submarine cables, including more than 10 cables under joint construction, and direct land cable connectivity with more than 10 neighboring countries and regions, shaping a global footprint of service outlets and network capabilities.

Overseas Business and Service of China ComService

The products and services of China Communications Services Co., Ltd. cover three pillars – “Telecommunications Infrastructure Service (TIS)”, “Business Process Outsourcing (BPO)” and “Applications, Content and Other Services (ACO)”, including design, engineering & construction, supervision, network maintenance, channel services, facility management, IT application services, value-added voice services, value-added Internet services and other services. As of the end of 2020, China ComService had established operations in 33 countries/regions with a focus on expanding regional business in Southeast Asia, Asia-Pacific, the Middle East and Africa to provide customers with professional, integrated, and differentiated communications construction and other related services.

【Pandemic Combat Overseas】

China Telecom has established a special working group and a steering group on overseas pandemic prevention & control, earnestly fulfilled its primary responsibilities, and clearly put forward work requirements, such as paying close attention, strong organization and leadership, clear understanding of personnel situation, timely analysis and judgment, prepared prevention & control measures and plans, enhanced linkage of joint prevention and control, caring for employees, and scientific epidemic prevention. We have held regular meetings for many times to study and deploy overseas work related to pandemic prevention & control and work & production resumption.

Under the guidance of the Group’s Party leadership group and the epidemic prevention office, there’re no confirmed or suspected COVID-19 cases among all dispatched employees, and no imported or exported cases among cross-border flows of personnel in China Telecom’s 89 overseas institutions and projects in 71 countries and regions.

Key Actions for Covid-19 Prevention and Control Overseas

Area	Main Measures	Results
Institutional guarantee	<ul style="list-style-type: none">Established a special working group and a steering group on overseas pandemic prevention and controlGuided China Telecom Global and China ComService to keep improving their overseas pandemic emergency response plans and the guidebooks for pandemic prevention and control, and guided and urged all overseas institutions and project teams to develop and improve relevant plans according to the actual situations of each country/region	<ul style="list-style-type: none">Continuously refined the overseas pandemic prevention and control plans and emergency response plans according to the actual situation of the host country/region, and have guided all employees to master the protective measures under various scenarios such as home, office, home quarantine, medical treatment and so onHave made full video inspection of pandemic prevention overseas to promote pragmatic and detailed implementation of overseas prevention and control work
Staff management	<ul style="list-style-type: none">Guided overseas institutions to plan in advance, and prudently and orderly arrange the cross-border flow of staff according to local reality and staff needsGuided all overseas units to resume work on the basis of ensuring the life safety of staffRequired all overseas institutions to strengthen overseas vaccine coordination and vaccination according to the actual situation of their countries and regions	<ul style="list-style-type: none">Closely watched the pandemic development trend, safety situation and local policies on resumption of work, production and school, formulated a phased resumption plan based on the four states of “low-risk lifted”, “lifted with pandemic”, “plan to lift” and “not lifted”, reported for approval in strict accordance with the process, carefully promoted on-site resumption, and always do a good job in pandemic preventionOn the premise of informed consent and free will of staff, promoted vaccination in accordance with the principle of “those who are willing to be vaccinated shall be vaccinated in time”
Material reserve	<ul style="list-style-type: none">Strengthened domestic and foreign linkage, and coordinated the reserve of pandemic prevention supplies, living materials and drugs, to ensure sufficient and quality reserve in all overseas institutions	<ul style="list-style-type: none">Reserve emergency pandemic prevention materials for 5-month consumption and living materials for 1-month consumptionDrug reserves include drugs for dealing with common diseases such as influenza and diarrhea, as well as Lianhua Qingwen, oseltamivir and other drugs
Staff care	<ul style="list-style-type: none">Guided overseas institutions to effectively help overseas employees solve practical difficultiesNormalized the care for domestic family members of staff overseas	<ul style="list-style-type: none">Improved the medical insurance and medical treatment schemes for employees in the host countries/regions, and developed a “Health Consultation Plan for Overseas Employees of China Telecom” with the Third Affiliated Hospital of Southern Medical University, which provided telemedicine services to 217 people in 2020Have organized trade unions at all levels of main industry companies to send special regards to families of employees dispatched overseas twice at festivals such as the Dragon Boat Festival, Mid-Autumn Festival, and National Day; and on New Year’s eve, called overseas employees who had applied for returning home for personal reasons to extend care and concerns. Developed a “Proposed Q&A Guidebook for Contacting Family Members of Overseas Employees”, sent regards and season’s greetings to family members of overseas employees via SMS, e-mail, message of good wishes and door-to-door visit, learned about their current situations in detail, listened carefully to their voices, and timely summarized and reported their main difficulties to improve the ledger of careInvited psychological experts to give lectures on mental health to help employees and their families release anxiety and relieve psychological pressureOrganized a care team to send special regards to families of overseas employees, especially those who have been sent to areas severely afflicted by COVID-19 or have been abroad for more than 1 year, and 178 family members of the dispatched employees have received greetingsEstablished a mechanism to handle “important matters” for employees. Main industry companies and branches at home and abroad and at all levels helped coordinate and solve the “important matters” such as ticket purchase, drug mailing and passport reissue

【Protect Safety of Overseas Employees】

When the COVID-19 was rampant around the world, CCSI dynamically adjusted the company's regulations, safety and health measures, and business processes, which effectively protected the company's teams and fulfilled its commitment on employees' health while ensuring the progress of projects.

The management team of CCSI's Nepal Telecom 4G LTE project made timely adjustment and emergency deployment, to resolutely protect the safety of employees on the basis of implementing the important instructions of superior departments and the Embassy on pandemic prevention and control:

Conducted a drill: studied and formulated a more targeted guidebook on pandemic prevention and emergency plans according to the local reality and project characteristics in Nepal, and conducted a drill to strengthen employees' protection awareness and self-protection ability.

Developed measures: developed plans for cross-border flow of personnel, resumption of work and production, as well as personnel quarantine management methods and resident management methods under the guidance of the Embassy in Nepal, to ensure no dead corner in pandemic prevention.

Built a platform: built and guided employees to use the “China Telecom Health Consulting Program” platform to update employees' health information in real time, so as to achieve early detection, early quarantine and early treatment.

Facilitated work resumption: advanced project with remote, online and other “contactless” working modes to minimize risks of cross infection and cluster infection and ensure the progress of the project.

Protected safety: strictly controlled all key areas and key links of the project, specified the prevention and control measures under various work and life scenarios, and detailed the classified management of various groups, to protect the life safety of employees.

Comforted employees: organized employees to do indoor sports, take part in lectures on overseas pandemic prevention and control, and talked with employees to alleviate their anxiety.

At the same time, Nepal Telecom 4G LTE project accelerated its construction pace. The project division installed an average of 400 4G stations and 30 TK tower stations per month. By the end of August 2020, 4,260 stations had been commercially available, far exceeding the total number of original 4G stations in Nepal, enabling Nepal to achieve 4G network coverage in 77 administrative regions and 7 provinces for the first time.

From only two cities covered by 4G network to all seven provinces across the country, this is a great progress. Fast communications speed plays a significant role in promoting economic development. It is hoped that with the cooperation efforts of all parties, the project will be completed as soon as possible.

—Khadga Prasad Sharma Oli, Prime Minister of Nepal



On March 4, 2020, Zhang Changzheng of CCSI attended the opening ceremony of the Snow Mountain Helicopter Station near Mount Everest in Nepal

【Move Ahead with Customers in Pandemic Response】

China Telecom Global sets “fully ensuring secure and smooth customer communications during the period of pandemic prevention” as its primary goal, and gives full play to its advantages in cloud-network convergence and IT application, helping customers combat the pandemic.

Individual Customers

Offered 10GB complimentary traffic data and stop-free service to all post-paid individual users in response to the urgent communications needs of overseas Chinese, and exempted all domestic data roaming fees for student customers to satisfy their distance learning needs. Other measures taken to meet customers’ information communication needs at different places abroad also include complimentary traffic data, and fast and free opening of services.

Business Customers

Helped customers complete the emergency expansion of port bandwidth in a short time to meet their needs for large traffic loading.

Aiming at the mobile service needs of business customers, the overseas mobile business department of China Telecom Global promoted Multiline product to business customers together with Movius Interactive Corporation, helping them open nearly 300 new phone numbers in a short time for emergency use by their employees, and sped up the launch of mobile UC products. Giving full play to its cloud advantages, China Telecom Asia Pacific helped enterprises realize remote office, launched a series of cloud application services, and provided business customers in 16 countries and regions in the Asia Pacific with cloud conference, cloud video, Internet acceleration, Aliyun integration and other application experiences. It also accelerated the internal emergency acceptance process to ensure response to customer needs within 24 hours.

China Telecom Asia Pacific pays close attention to the emergency needs of MNC (multinational company) customers involved in cross-border business. It conducted customer review with MNC customers that have large teams in China, and tailored solutions for each of them to meet their demands.

China Telecom launched a series of pandemic prevention office products, which greatly supported the office needs during the pandemic period, and is a trusted partner.

—Zhu Jincao, head of IT Department, China Construction Bank Singapore Branch

【Assist Local Hospital Construction】

On March 26, 2020, with the pandemic worsening in the United Arab Emirates, the whole territory of the country was locked down for comprehensive disinfection, and the local government decided to establish a mobile cabin hospital in Dubai. In response to the requirements of local government, the du line project division of China ComService UAE (du is the second largest telecom operator in the UAE) completed in advance the opening of one core computer room and the optical cable in 35 buildings of the mobile cabin hospital as well as the construction of 1,034 user end links at 6 a.m. on March 29, and ensured its smooth communications.



The performance of China ComService in the past two days has impressed me. Your coordination, mobilization and delivery ability are really excellent!

—Mr. Mohammed Awadi, NOI project manager of du, UAE

On March 29, 2020, the staff of the du line project division of China ComService Dubai branch in the UAE were laying and welding optical cable at Wasan mobile cabin hospital in Dubai

【Timely Respond to Customer Needs】

Kenya is located in eastern Africa, where medical resources are scarce and unevenly distributed, and mostly concentrated in a few large hospitals. Due to the difficulty of seeking medical services, most ordinary people have to choose nearby clinics that have weak medical facilities. In April 2020, the pandemic spread in Kenya and the surging number of confirmed cases brought huge pressure on and medical risks to Bliss Medical Center, which has 90 clinics in Kenya. China Telecom (Africa and Middle East) and China Telecom Kenya cooperated with Bliss Medical Center for fast response, and preliminarily completed the full coverage of temperature imaging equipment in key clinics of the center in a short time, helping clinics speed up their initial diagnosis and triage at the time when the pandemic was severe and there were a lot of patients, providing the most direct and effective protection for the front-line medical staff in Kenya.

【Help Local Pandemic Prevention】

Local institutions of China Telecom Global took measures to effectively prevent and control the spread of COVID-19, such as distributing masks and handling business online, and provided rapid and accurate body temperature screening plans for local enterprises to help them return to work in an orderly manner.

On the basis of implementing various pandemic prevention measures, CTExcel Hong Kong stores offered diversified pandemic prevention services by taking into account the actual needs of customers, such as providing customers with mobile phone disinfection service, and presenting air purifier, mask storage bag, etc. free of charge. The Macao company took the lead in launching stop-free service and large traffic upgrading service, and encouraged customers to handle various businesses online. The Americas company raised masks from China instantly, carried out a series of activities for CTExcel users in the United States, such as distributing masks, package upgrading, and extension of the number retaining period while service has been stopped, and sent open letters to business customers and comfort messages to users.

After learning that the overseas students lacked masks and other pandemic prevention supplies, China Telecom Americas immediately delivered its newly purchased masks to campus ambassadors all over the United States, and distributed masks through various forms such as on-campus distribution and mail delivery in 100 colleges and universities in the east, central and west parts of the United States. At the invitation of the Chinese Consulate General in New York, the company recorded an official promotional video “Cheer for overseas

students” for overseas students in the United States. It also shot and produced “Growing in the sun – a documentary video of 7 Chinese students abroad during COVID-19” in a form of online interviews, which has been watched for 450,000+ times, truly showed the life of overseas students during the pandemic, and passed positive energy to the group of students abroad.



On March 18, 2020, China Telecom Americas distributed masks in front of the IV Library of the University of Southern California

Thanks to the free mask given by China Telecom Americas, it makes me feel the warmth of home in a foreign country.

—Wu Nan, an international student of the University of Southern California

Commend Advanced Individuals in Fighting against COVID-19

In the process of fighting the epidemic, the leaders and workers of China Telecom fought hard on the front line and made due contributions to ensuring smooth operation of the national economy, social stability, as well as epidemic prevention and control. Emerged a large number of advanced collectives and individuals, who are brave to take responsibilities, not afraid of difficulties and sacrifice.

2020 Advanced Collectives in Combating COVID-19

Level	Collective
National	China Telecom Wuhan Branch of Hubei
SASAC	Big Data and AI Center of China Telecommunications Corporation Limited

Milestones of the Wuhan Branch in Combating COVID-19

In the face of the epidemic, China Telecom Wuhan Branch raced against time to defend the lifeline in the battle against COVID-19.

01

Ensure smooth communications and secure network operation of units at all levels

Served epidemic prevention command departments at all levels, medical and health institutions, designated hospitals, mobile cabin hospitals and temporary quarantine points, totaling 383.

02

Give play to the advantage of cloud-network convergence and build a medical treatment network

On February 5, 2020, more than 200 task force members enhanced wireless network coverage and installed video conference system for 26 designated hospitals and 11 mobile cabin hospitals overnight. During the epidemic period, they had enhanced wireless network coverage for 183 designated hospitals, mobile cabin hospitals and quarantine points, and installed and opened video conference systems for 64 points.

03

Go all out to ensure the call completing rate and unblock the life-saving line for the public

Made 20x capacity enlargement to 120 hotline system platforms, and more than 300 Party members, officials and employee volunteers were on duty 7×24 to ensure 100% call completing rate of the mayor's hotline 12345. From January 20 to April 20, 2020, the mayor's hotline received 1.233 million calls, offered assistance for more than 27,800 times and switched to relevant departments to handle severe cases for more than 17,000 times.

04

Ensure the orderly development of communications services, production and operation

In the early stage of the epidemic, kept opening 2-4 business outlets in important areas every day according to the needs of citizens; and 1,200 regular maintenance staff held their positions in the three towns of Wuhan, with a total attendance of 13,000 person-times and installed and repaired 24,000 pieces of equipment.

05

Fully cooperate with epidemic prevention and control

19 grassroots Party organizations and more than 200 Party members fought hard on the front line of community fight against COVID-19, and actively helped 24 communities and more than 5,100 people. More than 50 Party members and employees volunteered to join the emergency support team, and participated in various emergency activities of epidemic prevention and control, such as picking up and transporting medical personnel and supplies.

【Pioneer on the COVID-19 Battlefield – the Wuhan Branch】

Since the outbreak of COVID-19, China Telecom Wuhan Branch has been a pioneer of the Company in epidemic prevention and control. It has built a good image and reputation for the central SOE with the spirit of fearlessness and iron character.

On January 21, 2020, General Secretary Xi Jinping made important instructions on the prevention and control of the epidemic. The Party committee of China Telecom Wuhan Branch promptly implemented the central spirit, took the epidemic prevention and control as a major political task, and resolutely followed the unified command, coordination and dispatch of the Party Central Committee, implemented the arrangements of the higher Party committee, and shifted its focus to ensuring smooth communications and protecting the health of employees.

More than 1,800 Party members, officials and employees of China Telecom Wuhan Branch obeyed orders and quickly devoted themselves to the front line of the battler with a high sense of political responsibility. The 48 grassroots Party organizations affiliated to the company immediately set up 87 Party member task forces with 814 members, and 85 emergency teams with 995 members. They are base station builders, installation and maintenance engineers and outlet staff... They stood up without fear, fought hard and overcame difficulties with all their strength, showing the speed and responsibility of the “China Telecom Iron Troop”.

Since the outbreak of COVID-19, China Telecom Wuhan Branch has been a pioneer in China Telecom's involvement in epidemic prevention and control. It has established a good image and reputation for the central SOE with the spirit of fearlessness and iron character, highly waving the Party flag in the forefront, and contributing to the high recognition of central SOEs by the whole nation.

—Deeds of National Advanced Collectives in Combating COVID-19



2020 Advanced Individuals in Combating COVID-19

Level	Name	Position
National	Yang Tianlu	Deputy General Manager of the Network & Information Security Department of e Cloud Technology Co., Ltd.
National	Xing Wenlong	Manager of the R&D Center of Corporate Information Department of China Telecom Hainan Branch
Central SOE	Zhang Xin	Deputy Director General of Big Data Marketing & Application Division of Cloud-Network Operation Department of China Telecommunications Co., Ltd.
Central SOE	Deng Zihui	Manager of the Customer Response & Maintenance Department of China Telecom Shenzhen Longgang Branch
Central SOE	Shi Jun	Deputy General Manager and Member of Party Committee of China Telecom Wuhan Branch
Central SOE	Wei Guangzheng	Deputy Director of the Customer Service & Scheduling Center of China Telecom Wuhan Branch
Central SOE	Zhang Changzheng	Manager of the Nepal Telecom 4G LTE project of China ComService International

【Cloud Builder on the Anti-Epidemic Front Line – Yang Tianlu】

In the blocking action against COVID-19, the Yang Tianlu team endured hardships to fight, overcame all difficulties, and completed the tasks of safeguarding the migration of the website of Wuhan Health Commission to e Cloud, as well as the migration of the medical systems of Huoshenshan and Leishenshan hospitals to cloud in a very short time, and built a “safe cloud network” for epidemic prevention and control. In the late stage of the epidemic, making use of e Cloud’s unique “2 + 4 + 31 + X + O” resource distribution advantage, which is one province with one pool, it provided strong technical support to SMEs and education industry for resumption of work, production and school on the cloud, urgently completed several 100G resource expansion projects, and successively participated in the resource pool expansion projects in more than 20 provinces and cities such as Wuhan, Guangzhou and Shenzhen, supporting a highly efficient cloud to the fight against COVID-19.



The hospital’s information system is particularly complex and requires high security and stability. We had to complete cloud resource delivery, security solution deployment, cloud dedicated line system connection, and overall joint commissioning and testing in a very short time. The purpose of daily research and development and technology accumulation is to be able to provide support and win at the critical moment when the country needs us.

—Yang Tianlu, Deputy General Manager of the Network & Information Security Department of e Cloud Technology Co., Ltd.

【Vanguard in Big Data-based Epidemic Combat – Xing Wenlong 】

The COVID-19 Health Service Management System of Hainan, which was developed by the team led by Xing Wenlong, completed the work of preventing imported cases, and built a non-proliferation operational platform. It is the first time that a complete grid-based administrator system was established in Hainan Province and that an overall management of patients in fever clinics and the joint linkage with the grid-based system were realized in the province. The system had completed the health service management of 238,161 people from COVID-19 afflicted areas to Hainan for 14 consecutive days, and conducted health service surveys for 1,171,630 times, covering 24,952 grid-based personnel and village officials of 5,837 villages, towns and communities, 3,784 front-line medical staff in 337 fever clinics in the province, and serving 221,720 fever patients.



Shi Jun, Advanced Individual and Advanced CPC Member of Central SOEs in Combating COVID-19



Zhang Changzheng, Advanced Individual of Central SOEs in Combating COVID-19



Wei Guangzheng, Advanced Individual of Central SOEs in Combating COVID-19



Deng Zihui, Advanced Individual of Central SOEs in Combating COVID-19



Zhang Xin, Advanced Individual of Central SOEs in Combating COVID-19

AFTERWORD

About Us

China Telecommunications Corporation Limited is an ultra-large communications operator in China. It has ranked as a Fortune Global 500 company for many years in a row. It specializes in integrated information services including mobile telecom, Internet access & application, landline, satellite communications, and ICT integration with total assets of 907.8 billion yuan and 400,000 employees.

China Telecommunications Corporation Limited is owned by the central government and funded by the state. The State-owned Assets Supervision and Administration Commission of the State Council (SASAC) fulfills the responsibility as an investor on behalf of the State Council under authorization and dispatched personnel to set up a Supervision Committee at the Group Company. The Group has set up Board of Directors as required by the SASAC, under which there are Nomination Committee, Remuneration and Appraisal Committee, Auditing and Risk Management Committee as well as Strategy Committee.

China Telecommunications Corporation Limited has operating organizations in 31 provinces (autonomous regions and municipalities directly under the central government), America, Europe and Asia. The Group controls its listed companies including China Telecom Corporation Limited, China Communications Services Corporation Limited, New Guomai Digital Culture Corporation Limited, and Beijing Global Safety Technology Corporation Limited.

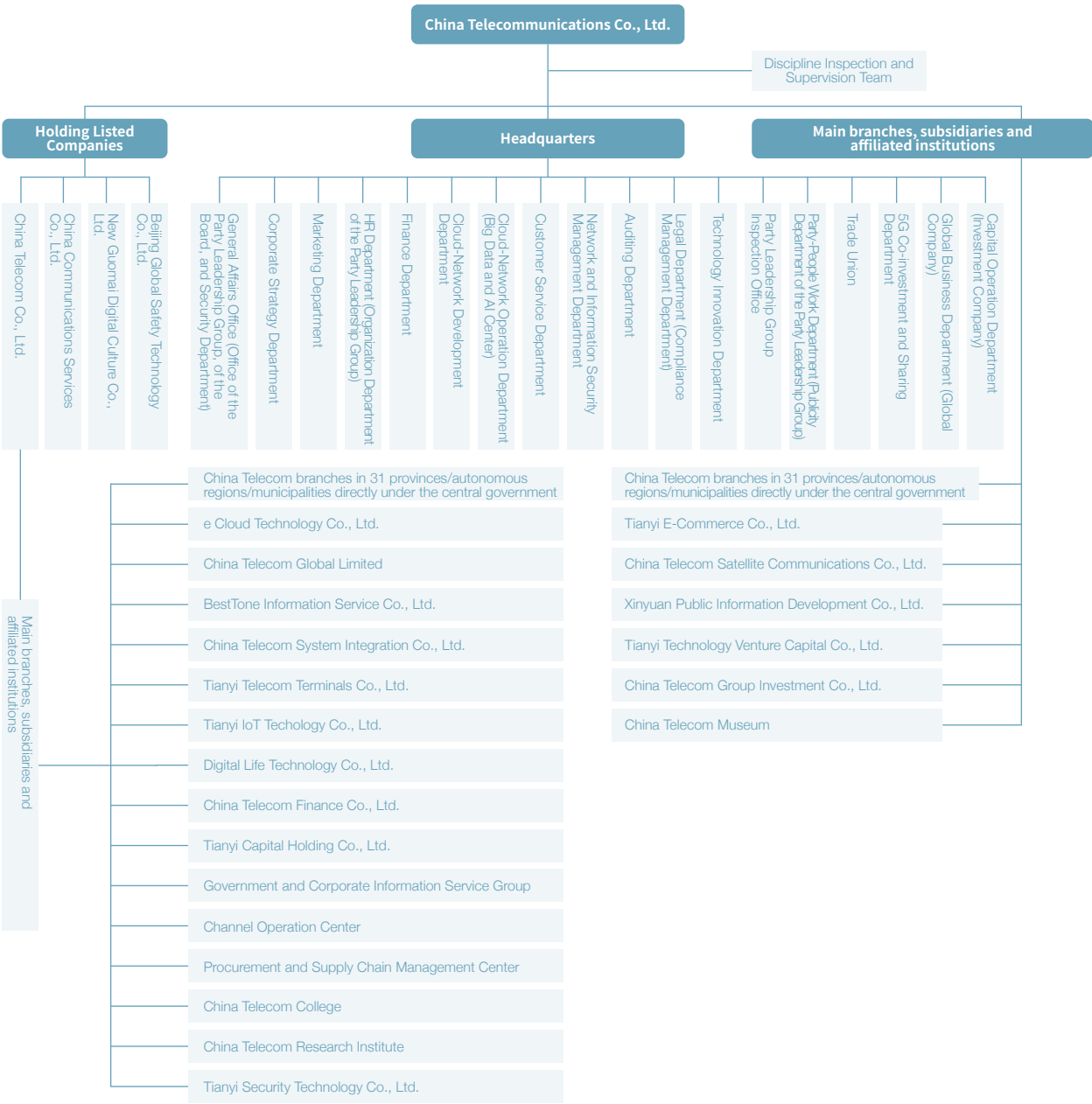


Table of KPIs

Essential Responsibility	2018	2019	2020
Call drop rate of mobile communication (%)	—	0.10	0.05
Call completing rate of mobile communication network (%)	—	97.57	99.07
4G international roaming countries and regions	158	174	220
5G base station (*10,000)	—	8	38
Cities covered by 5G network	—	50	337
Call completing rate for landline phones (%)	92.35	92.45	93.05
Packet loss rate of backbone network of broadband Internet ChinaNet (%)	0.06	0.03	0.06
Broadband coverage rate in administrative villages in 21 southern provinces/autonomous regions/municipalities directly under the central government (%)	95.9	96.7	97.0
Internet backbone interconnection bandwidth (Gbps)	5,886	8,416	12,305
International interconnection bandwidth (Gbps)	5,640	8,766	9,985
Emergency communication staff dispatched (person-time)	87,046	69,817	146,397
Number of rural channel outlets (*10,000)	24.1	16.2	13.1
R&D input as a percentage of income (%)	1.32	1.65	1.73
Number of new patent licensing	823	840	957
Total tax paid (*100 million yuan)	105.7	101.2	67.6
Number of people employed (*10,000 people)	1.8	2.1	1.9
Labor productivity of employees (*10,000 yuan/person/year)	116.4	119.4	126.4
Responsibility to Shareholders	2018	2019	2020
Total assets (*100 million yuan)	8,441	9,010	9,078
Main business income (*100 million yuan)	4,303	4,496	4,762
Ranking in Fortune Global 500	141	141	158
Total profit (*100 million yuan)	258.1	269.0	275.1
Asset-liability ratio (%)	42.6	44.7	44.9
Value-maintained and value-added rate of state-owned assets (%)	107.0	110.3	104.8

Responsibility to Customers	2018	2019	2020
Number of mobile subscribers (million)	303.0	335.6	351.0
Among which: 5G subscribers (million)	—	4.6	86.5
Number of users of landline phones (million)	121.3	115.6	112.6
Number of wired broadband users (million)	169.8	178.8	187.2
Among which: FTTH/O users (million)	157.4	167.3	177.5
IoT connections (million)	106.9	157.4	237.6
Number of IPTV subscribers (million)	121.4	130.0	133.6
Number of customer complaints (piece)	—	11,944	28,012
Customer complaint rate (person-time/million users)	—	20.9	43.7
Degree of satisfaction of mobile Internet users (points)	78.9	81.9	78.2
Degree of satisfaction of mobile voice users (points)	83.8	82.7	82.6
Degree of satisfaction of fixed Internet access (points)	79.9	79.5	78.9
Degree of satisfaction of landline voice users (points)	85.0	87.6	87.6
Responsibility to Employees	2018	2019	2020
Percentage of employees joining trade unions (%)	99.7	100	100
Number of grassroots trade union organizations	2,605	1,965	2,429
Ratio of male to female employees (male : female)	2.2:1	2.2:1	2.2:1
Percentage of ethnic minority employees (%)	5.1	5.3	5.5
Percentage of female managers (%)	19.6	20.0	19.9
Coverage of health and safety training (%)	98	98	98
Work-related injury and death (person)	0	0	1
Per capita training time (hour/person)	25.1	29.8	22.6
Employee turnover rate (%)	4.1	3.7	3.4
Funding for care (*10,000 yuan)	9,875	14,158	28,149

Main Honors

Environmental Responsibility	2018	2019	2020
Consumption of electric energy during operation (hundred million kWh)	186.1	211.6	249.4
Electric energy saved (hundred million kWh)	4.9	4.6	6.6
Consumption of gasoline (*10,000 tons)	13.6	12.3	11.7
Consumption of diesel (*10,000 tons)	3.0	2.8	2.9
Consumption of natural gas (*10,000 cubic meters)	1,860	1,791	1,990
Consumption of purchased heat (million kilojoule)	1,706,667	1,594,362	1,462,360
Greenhouse gas emission during operation (*10,000 tons)	690.0	766.5	886.6
Energy consumption per unit of information flow (kgce/TB)	5.6	4.6	4.2
Number of trainees on energy saving and emission reduction (person-time)	4,995	7,970	11,918
Power consumption per carrier frequency at base station (kWh/carrier frequency)	717	1,096	1,255
Percentage of green procurement (%)	82	84	87
Disposed waste (ton)	105,021	106,034	90, 258
Income from waste disposal (*100 million yuan)	21.2	18.6	12.7
Online trading volume of proprietary electronic channels (*100 million yuan)	222.2	186.1	262.8
Staff per capita learning time in online college (hour)	27.9	18.4	50.2
Public Welfare Responsibility	2018	2019	2020
Total social (external) donation (*10,000 yuan)	13,937	20,548	29,164
Number of registered volunteers	60,458	68,652	71,990
Number of volunteer activities (person-time)	105,030	121,083	146,873

Note: The statistical approach to the “5G base station” was adjusted in 2020, not comparable with the previous year’s data.

Award to	Honor	Award granted by
China Telecommunications Co., Ltd.	Class A for 2019 Business Performance Evaluation of the Central SOEs Executives	SASAC, State Council
	First Prize of 2020 Management Innovation Award in the Communications Industry (No. 1)	China Association of Communication Enterprises
	First Prize of 2020 CIC Technology Award	China Institute of Communications
	2020 A-Level Organization for Tax Credit	State Taxation Administration
China Telecom Co., Ltd.	“Xinduqiao-Bangda section optical cable project along the Sichuan-Tibet Highway” won the Gold Award for National Quality Engineering	China Association of Construction Enterprise Management
	2020 A-Level Organization for Tax Credit	State Taxation Administration
	2020 Innovation Case of Economic, Scientific and Technological Archival Work	National Archives Administration
	“Most Honored Companies in Asia”, “Best CEO”, “Best CFO”, “Best IR Team”, “Best IR Program”, and “Best ESG”	<i>Institutional Investor</i>
	“Platinum Award - Excellence in Environmental, Social and Governance”, “Best CEO in Telecommunications”, and “Best Investor Relations Team”	<i>The Asset</i>
	“The Best of Asia – Icon on Corporate Governance (2007-2020)”, “Asian Corporate Director 2019”, “Asia’s Best CEO”, “Asia’s Best CFO”, “Asia’s Best CSR”, and “Best Investor Relations Company”	<i>Corporate Governance Asia</i>
	No. 1 Best Telecommunications Company in Asia	<i>FinanceAsia</i>
	ESG Leading Enterprise Award	<i>Bloomberg Businessweek/ Chinese Edition</i>
	“Most Honored Companies in Asia”, “Asia’s Best IR Program in Telecommunications”	<i>Institutional Investor</i>
	Advanced Collective of the MIIT System in Combating COVID-19	MIIT
China Communications Services Co., Ltd.	“100 Most Competitive Software & IT Service Enterprises 2020”	China Information Technology Industry Federation
	“The Best of Asia – Icon on Corporate Governance”, “Asian Corporate Director”, “ESG Influencer”	<i>Corporate Governance Asia</i>
	“2020 FORTUNE China 500” and “2020 Forbes Global 2000”	<i>FORTUNE China and Forbes</i>
	“Honored Companies in Asia”, “Best CEO”, and “Best CFO”	<i>Institutional Investor</i>

Outlook

In 2021, China Telecom will carry out the following tasks in fulfilling its social responsibilities:

Promote responsibility management: resolutely implement the decisions and arrangements of the CPC Central Committee and the State Council, stand in the new development stage, implement the new development philosophy, and build a new development pattern. Earnestly fulfill the responsibilities of central SOEs, practice high-quality development, continue to promote responsibility integration, and make innovation in responsibility fulfillment practice. Improve the responsibility work mechanism, actively respond to the concerns of stakeholders and continuously improve the responsibility work, and enhance responsibility management capability.

Drive development of new infrastructure: continue to construct new ICT infrastructure that takes “network as the foundation and cloud as the core and that allows network functions to be adaptive to the cloud under cloud-network integration”. Promote the new infrastructure represented by 5G, and accelerate the layout of new infrastructure that integrates 5G, cloud, network and digital technology. Steadily advance 5G network construction through co-building and sharing and with SA technology, use high-quality networks to serve more users and provide high-quality services. Fully support major regional strategies and promote network construction and universal services in remote and poor areas. Promote scientific and technological innovation and independent control of key core technologies. Strengthen network information security, and improve emergency communications support capacity, to ensure secure and unblocked networks. Enhance smart service capability and improve customer service level.

Empower digital economy development: lead the digital innovation ecology, strengthen cooperation with industrial partners and accelerate the pace of innovation. Promote technological innovation in the areas of 5G SA and cloud-network convergence, actively explore the application of information industry in the fields of industrial Internet, smart city, education, health care and residential services, continue to enable the digital transformation of traditional industries, and propel crossover cooperation in the whole industrial chain, to help the development of the cause related to people's livelihood and fully promote the development of digital economy.

Join hands to build a harmonious and beautiful society: abide by laws, comply with regulations, and insist on integrity management. Practice the concept and follow the road of green development, strive to further reduce the energy consumption per unit of information flow, and actively participate in the construction of ecological civilization. Make every effort to promote rural revitalization, help paired areas consolidate and expand the achievements in poverty alleviation, gradually achieve effective connection with rural revitalization, and contribute to local rural revitalization. Put customers at the center and effectively protect the rights and interests of users. Protect the rights and interests of employees, improve the talent team building system, fully mobilize the enthusiasm of employees, and stimulate their vitality. Carry forward the spirit of model workers and craftsmanship, and care for the lives of employees. Actively support the development of social undertakings such as science, education, culture and health. Widely take part in the “Belt and Road” development, and fulfill social responsibilities overseas to assist the economic and social development in relevant countries/regions.

Rating Report

Rating Report of China Telecom CSR Report 2020

Commissioned by China Telecom, the Chinese Expert Committee on CSR Report Rating selected experts to form a rating team and give a rating to “China Telecom CSR Report 2020” (hereafter referred to as “the Report”).

I. Basis of Rating
“Guidelines for Preparation of CSR Reports in China (CASS-CSR 4.0)” of Chinese Academy of Social Sciences and “Rating Standard of CSR Reports in China (2020)” of the Chinese Expert Committee on CSR Report Rating.

II. Process of Rating
1. The rating team reviewed the CSR Report Process Information Confirmation Letter and related evidentiary materials submitted by the Report preparation team;
2. The rating team evaluated the compilation process and contents of the Report, and drafted a rating report;
3. The vice chairman of the Chinese Expert Committee on CSR Report Rating and the leader and expert of the rating team reviewed and signed the rating report.

III. Conclusion of Rating
Procedural Performance (★★★★★)
The Group's Corporate Strategy Department has set up a report preparation team to take charge of the specific preparation work, and the Chairman and the President of the Company were responsible for controlling the overall direction and key nodes, as well as the final review of the report. The Company positioned the Report as an important tool to improve CSR transparency, develop corporate culture, enhance communication with stakeholders, and spread the image of the Company as a responsible enterprise with clearly defined value proposition. It identified substantive issues according to relevant national macro policies, domestic and international social responsibility standards, stakeholder surveys, etc. It drove the subordinate companies - China Telecom Corporation Limited and China Communications Services Corporation Limited - to independently produce and publish their CSR reports and strengthen the vertical management of social responsibilities. The Department planned to release the Report on the official website and present it in electronic and printed versions in both English and Chinese as well as other forms such as a brief version, having outstanding procedural performance.

Substantive Performance (★★★★★)
The Report systematically discloses key topics in the telecom industry in detail, such as ensuring communications quality, innovation in products and services, dealing with customer complaints, protecting customer information, creating a healthy Internet environment, safeguarding emergency communications, closing the digital gap, co-building and sharing of base stations, development and application of environmental protection technologies and managing electromagnetic radiation, having outstanding substantive performance.

Completeness (★★★★☆)
The Report systematically discloses 85.21% of the key indicators of the telecom industry from such aspects as “New ICT Infrastructure to Lay a Solid Foundation for New Development”, “Digital Transformation to Build New Development Dynamics” and “Promote Civilization and Progress to Create a Better Life Together”, and is leading in completeness.

Balance (★★★★☆)
The Report discloses negative data and information including “call drop rate of mobile communication”, “packet loss on ChinaNet backbone”, “number of customer complaints”, “customer complaint rate”, “work-related injury and death”, and “employee turnover rate” with an outstanding balance performance.

Comparability (★★★★★)
The Report reveals comparable data about 62 indicators in three

consecutive years, including “total assets”, “total profit”, “degree of satisfaction of mobile Internet users”, “total social (external) donation”, “electric energy saved”, and “percentage of green procurement”, and made horizontal comparison of the rank of “the 158th in Fortune 500”. In conclusion, it is excellent in comparability.

Readability (★★★★★)
Themed with “Toward a New Development Stage”, the Report systematically presents the progress of the Company's annual responsibility performance from three levels: laying a solid foundation for new development, building new development dynamics and creating a better life. The framework structure is clear and the key topics are prominent, which respond to the expectations and demands of stakeholders. The cover and chapter spreads design adopts a hand-drawn illustration style, which outlines the elements of the Company's main businesses, skillfully integrates with beautiful life scenes, highlights the industry's characteristics and enhances the uniqueness of the Report. The “Tips” column interprets technical terms and improves the readability of the Report. The simple and fresh design style, the properly matched pictures and texts, and rich and detailed cases and performance data, make it excellent in readability.

Originality (★★★★)
The Report includes a responsibility feature of “Unite to Fight against COVID-19”, which describes the actions and results of the Company in helping the prevention and control of the pandemic, and demonstrates the responsibility of a central SOE. The testimonials from stakeholders testify the effectiveness of its CSR performance and enhance the communicability and spread effect of the Report, suggesting excellent originality.

Overall Rating (★★★★★)
As evaluated by the rating team, the 2020 China Telecom CSR Report is rated five-star as an outstanding CSR report.



中国企业社会责任报告
评级专家委员会

Chinese Expert Committee on CSR Report Rating

China Telecom CSR Report won five-star rating for the 10th year in a row

IV. Suggestions for Improvement
Increase disclosures of core industrial indicators to further improve the completeness of the report.



Vice Chairman of Chinese Expert Committee on CSR Report Rating



钟宏武 张晓松

Leader of Rating Team Expert of Rating Team



Issuing date: September 1, 2021 Scan here to check corporate rating

Reader Feedback Form

Dear Readers:

Thank you for taking time to read China Telecom CSR Report 2020.

If you have any advice or suggestions on this report or on China Telecom's CSR performance, you are welcome to fill in the following form and send it to us by post, fax or email. For contact information, please refer to the Report Specification on the first page.

Thank you very much for your attention and support to China Telecom!

Corporate Strategy Department, China Telecom

October 2021

1. Do you think this report can inform you of China Telecom's performance in social responsibilities?

A. Excellent B. Good C. Not bad D. Bad E. Not informe

2. How do you evaluate China Telecom's actions in moving toward a new development stage?

A. Excellent B. Good C. Not bad D. Bad E. Very bad

3. How do you evaluate China Telecom's achievements in fulfilling social responsibilities in 2020?

A. Excellent B. Good C. Not bad D. Bad E. Very bad

4. In your opinion, which areas should China Telecom improve in this report? (Multiple Choices)

A. Framework and logic B. Substance and integrity C. Language expression

D. Report design E. Others _____

5. Please leave your other advice or suggestions:

Please let us know more about you if convenient:

Name: Occupation:

Contact: Employer:



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