

CHINA TOWER CORPORATION LIMITED
中國鐵塔股份有限公司



(A joint stock company incorporated in the People's Republic of China with limited liability)

Stock Code : 0788

Environmental, Social and Governance Report
2021

Sharing
for a more sustainable future



About the Report

Introduction

This Report seeks to disclose information regarding the environmental, social and governance (ESG) performance of China Tower Corporation Limited (hereinafter referred to as "China Tower", "Company" or "we/us") in 2021. This Report is prepared in accordance with Appendix 27 "Environmental, Social and Governance Reporting Guide" ("ESG Reporting Guide") to the Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited ("Listing Rules") to help stakeholders acquire a better understanding of China Tower. This Report is in compliance with the "comply or explain" provision set out in the ESG Reporting Guide.

Scope of Report

The organizations covered by this Report include China Tower Corporation Limited, as well as its subordinate companies. Compared with the ESG reports of the Company in previous years, this Report made no major adjustment to the scope of disclosure and used consistent statistical methods. The statistical scope of the data covered by the report is indicated herein, and the data calculation is performed according to national regulations or international standards.

Reporting period

The reporting period of this Report is from 1 January 2021 to 31 December 2021 (hereinafter referred to as "This Year"). Certain information contained herein may concern events, etc. occurred before or after the reporting period to make this Report more relevant and complete.

Reference guide

The content of this Report conforms to Appendix 27 "ESG Reporting Guide" to the Listing Rules issued by the Hong Kong Stock Exchange, and is compiled in accordance with the principles of materiality, quantification, balance and consistency, as indexed in the appendix of this Report.

"Materiality" principle: During the preparation of this Report, major stakeholders and ESG issues of concern have been identified, and targeted disclosures have been made in this Report according to the importance of their concerns.

"Quantitative" principle: This Report uses quantitative data to present key performance indicators at the environmental and social level. The measurement standards, methods, assumptions and/or calculation tools for the key performance indicators in this Report, as well as the sources of conversion coefficients used have been explained correspondingly.

"Consistency" principle: This Report applies the same statistical method with the 2020 Environmental, Social and Governance Report of the Company.





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Chairman's Statement



2021 was the 100th anniversary of the founding of the CPC and a landmark year in the history of China. Over the past year, China accomplished the building of a moderately prosperous society in all respects, resiliently dealt with major changes and the pandemic unseen in a century and strived to complete the arduous tasks during reform and development. Over the past year, keeping in mind the utmost interests of the nation, we fully implemented the decisions and plans of the Communist Party Central Committee and the State Council. Playing as China's primary force for the construction of wireless communications infrastructure and 5G infrastructure, we have fully, accurately and comprehensively implemented the new development philosophy. Despite the difficulties, we endeavored to promote the high-quality start of the "14th Five-Year Plan".



Zhang Zhiyong

*Chairman of the Board
China Tower Corporation Limited*



Chairman's Statement

We continued to develop resources sharing to comprehensively support the cyberpower strategy in China.

By deepening coordination and resources sharing, we constructed in a more intensive and efficient way. As of the end of 2021, we accumulatively completed over 3.2 million tower construction projects and improved the site co-location percentage from 14.3% to 81%, resulting in a 135% increase in the total number of ready-to-use sites for telecommunications service providers, which helped China build the world's largest mobile broadband network with the best quality. With continuous efforts made in resource sharing and creating shared benefits, a total of 920,000 towers have not been built, saving RMB165 billion in investment for the industry. We made an all-out effort to support constructing 5G infrastructure, constantly innovated construction and service models, and further fostered our comprehensive competitiveness by providing low cost, high efficiency, and quality services. We contracted to an aggregate of 1.226 million 5G base station projects, over 97% of which were built through co-location, which enabled China to maintain a leading position in the world in terms of scale and speed of 5G network construction and the fundamentals of cyberpower have further been strengthened.

Empowering a wide range of industries to fully supporting the implementation of Digital China.

Construction of sound, solid and safe new infrastructure facilities is the top priority for the promotion of healthy development of the digital economy. While promoting the construction of 5G networks, China Tower is diligently expanding resource sharing within the telecommunications industry to the wider society, transforming "Telecom Towers" into "Digital Towers". Fully leveraging resource advantages of our extensive site coverage combines the strengths of various types of site and monitoring capabilities, the Company has developed and formed the largest tower-sharing platform and practical IoT platform in China. Through "Towers + 5G + AI", we provide mid and high-point monitoring services for more than 30 industries, ranging from the meteorology to environmental protection, seismology, agriculture, forestry and water resources. The number of sites has reached approximately 180,000. The profound existence of towers, shelters and ancillary resources has become the strategic infrastructure for facilitating a digital economy, smart society, and 5G + industrial Internet. The cornerstone role of the Company for the digital economy is becoming increasingly prominent.

Chairman's Statement

Deepening Energy Sharing to Achieve "carbon peak and carbon neutrality" Goals.

Relying on our power supply capacity provided by our mature distributed base stations and professional O&M team, we have accelerated our energy business applications such as smart battery exchange, power backup, charging and cascade utilization in civil fields. Among these, the smart battery exchange business was launched in 280 cities, with 44,000 battery exchange cabinets equipped, serving more than 610,000 users, making us the largest battery exchange operator for light electric vehicles in China in both network and user scale. We have deployed centralized charging piles for low-speed electric vehicles in communities to meet the needs of people for centralized, safe and convenient charging services. Our charging piles covered more than 310 cities with more than 1.07 million ports equipped, serving more than 5.2 million users. Thanks to our power backup capacity provided by our mature base stations, we have offered integrated and comprehensive new energy service solutions of "Power Backup + Power Generation + Monitoring + Maintenance" for sectors in finance, medical and transportation. We have also played an active role in the power assurance for major events such as the 14th National Games and the United Nations Conference on Ecological Diversity. As the sole pilot enterprise for the recycling and utilization of retired new energy vehicle power batteries of the Ministry of Industry and Information Technology, we have used a total of 510,000 sets of batteries for cascade utilization in about 250,000 telecommunications base stations in 31 provinces across China, offering a total of 3GWh of batteries for cascade utilization, to help achieve the "Dual Carbon" goals.

Making Reform and Innovation to boost vitality and impetus of the Company.

We have made solid progress in the three-year action plan for the reform of state-owned enterprises, the project of developing enterprise by talent management, benchmarking against the highest standards in the world. As a result, our flat and efficient organizational system and Internet-based management model have become more mature and established. The Anhui Branch was awarded the "Benchmark Enterprise for Management Improvement" by the State-owned Assets Supervision and Administration Commission. The Energy Company was selected as one of the "Double Hundred Enterprises" by the State-owned Assets Supervision and Administration Commission and launched the mixed-ownership reform. We set up two key laboratories for new energy and communication to further optimize our systems and mechanisms for scientific and technological innovation. We have firmly grasped the development opportunities of digitization, intelligence and networking. On the basis of setting up the "Internet + O&M monitoring" platform, we have advanced steadily the intelligent O&M following the principle of prioritizing "automatic mode instead of manual mode, remote mode instead of on-site mode." In the meantime, we have also actively reconstructed the autonomous maintenance and organization system, pushed forward the change of maintenance management mode, and prompted the transformation of the operation management model from "Manual Management" to "Digital Management".

Demonstrating commitment to fully fulfill corporate social responsibilities.

We actively responded to the government's work requirements on "Carbon Peak and Carbon Neutrality", paid attention to climate change, constructed clean energy sites, and continued to enrich the energy structure by using diversified energy sources. We adhered to the sharing of tower facilities, the innovation of construction solutions, the upgrade and transformation of technology, the update and optimization of products, the recycling of resources, the construction of pollution control system, we conduct business in line with the laws of nature, respect and protect the nature. We insisted on a people-centered approach, collaborated with telecommunications enterprises to promote the proportion of 4G access to poor villages to exceed 99.9%, and promoted a more balanced network layout in the eastern, middle and western regions in China to narrow the regional "Digital Divide". By continuous upgrading of communication infrastructure, people have a greater sense of happiness and gain. We resolutely promoted the organic connection between poverty eradication and rural revitalization strategy. As a result, we helped 43 counties and villages with 26 supporting projects launched and completed. The Company took the responsibility of emergency rescue during natural disasters and communication operations of large-scale events, with a cumulative involvement of 448,200 staff members, 232,600 vehicles, and 451,100 diesel engines; successfully completed major telecommunications security tasks, including Celebration of the 100th anniversary of the founding of the Party, "20 July" Zhengzhou heavy flood control and disaster relief, the 14th National Games of China and the Winter Olympics. Our contributions to protecting the lives and property of the people have earned recognition from all parties.

Chairman's Statement

Adhering to employee-oriented and caring for employees in an all-round way.

We effectively enhance employees' sense of belonging, achievement and happiness. We dedicate to building a big family of Tower, caring for employees, effectively solving their utmost concerns and needs. We effectively protect the rights and interests of employees, create a fair employment environment, and implement a number of caring measures to protect the physical and mental well-being of employees. We are committed to setting up an extensive career platform, adhering to the concept that "every employee is a talent and should be a talent". We coordinate the talent development scheme via "Election, Education, Deployment and Retention" and the "Recruitment, Training, Management and Application" practices for new employees. We promote special cultivation and retention plans for the technical and leadership development of young talents and make good use of all kinds of talents, allowing employees to grow with the Company. We commence to building a knowledge school, where employees can learn theoretical knowledge, enhance professional skills and improve comprehensive quality through giving play to the roles of the Tower Party School and various training platforms.

The year 2022 is a crucial year for linking the previous and the future of the nation's 14th Five-Year Plan, and China Tower is making every effort to march towards being an enterprise with revenue of "RMB100 billion" according to the overall deployment of the 14th Five-Year Development Plan Outline made by the Company, entering into a new stage of development with a higher standard, level and quality. In the new year, we will fully, accurately, comprehensively implement the new development philosophy, actively serve and integrate into the new development landscape and adhere to the general work principle of seeking progress while maintaining stability; we will maintain integrity and innovation, continue to strive, conduct reform and innovation, coordinate epidemic prevention and control and production and operation, coordinate development and security, and deepen the business landscape of "One Core and Two Wings". Our position as a "world-class integrated information and communications infrastructure service provider and a highly competitive information and new energy applications provider" will see us developing an operating system that is professional, intensive, delicate, efficient and digitalized. We will use this to build an enterprise centered around sharing, service, innovation, technology and value creation. We will sustain the stable growth of our operating results and strive for value growth and the sustainable and high-quality development of the Company.



Zhang Zhiyong
Chairman of the Board

Statement of the Board of Directors :∴∴

The Board of Directors of the Company has placed great emphasis on the ESG management and has established an ESG management system headed by the Board of Directors and led by the management, for cross-departmental and top-down collaboration. As the highest responsible and decision-making body for ESG matters, the Board of Directors of the Company is responsible for overseeing environmental, social and governance matters and holds a meeting at least once a year to discuss management strategies of ESG and important matters.

The Company regularly evaluates the importance of environmental, social and governance concerns, and the specific evaluation process and results are detailed in the section headed “Stakeholder communication and substantive concerns analysis” of the annual ESG report and reviewed by the Board of Directors. The Audit Committee of the Board of Directors of the Company is responsible for overseeing the risk management and internal control system, including risks related to environmental, social and governance, as detailed in Corporate Governance Report of the Company’s Annual Report and reviewed by the Board of Directors on a regular basis.

During the Reporting Year, the Company has established environmental objectives associated with its business operations, as detailed in the section headed “Commitment to the Creation of Ecological Civilization” of the annual ESG report and reviewed and discussed by the Board of Directors.

Detailed ESG-related matters are disclosed in this Report, which has been reviewed and approved by the Board of Directors on 9 March 2022.

Walking into China Tower :❁❁

China Tower Corporation Limited, a large state-owned enterprise that provides telecommunications infrastructure services, was founded with the support from the State Council, against the backdrop of implementing the cyberpower strategy, deepening the reform of state-owned enterprises, and promoting the sharing of telecommunications infrastructure resources. The Company mainly engages in the construction, maintenance and operation of telecommunications towers and other ancillary facilities of base stations, public network coverage over high-speed railway tunnels and subways and large indoor DAS; the Company also leverages on its unique resources to provide the public with services featuring informatized applications and energy application services such as smart battery exchange and power backup, and serves as China's main force for the construction of wireless communications infrastructure and 5G infrastructure.

Incorporated on 15 July 2014 and headquartered in Beijing, the Company has established branches in 31 provinces and prefecture-level cities across China. After over seven years of operation, China Tower has developed into an international company with 2.038 million tower sites and assets of more than RMB320 billion, as well as the largest telecommunications infrastructure operator around the globe. On 8 August 2018, the Company was listed on the main board of the Hong Kong Stock Exchange (stock code: 0788.HK). In 2019, the Company was selected as one of the Fortune Global Future 50, enjoying a ranking of 22, and as one of the world's top 100 digital companies, ranked 71st; it was titled "Listed Company with the Best Investment Value (最具投資價值上市公司)" by the China Securities Golden Bauhinia Awards for three consecutive years from 2018 to 2020, and won the special award of "Listed Company with the Best Investment Value during the 14th Five-Year Plan Period (十四五最具投資價值上市公司)" granted by the 11th China Securities Golden Bauhinia Awards.

Walking into China Tower

As a state-owned enterprise established after the 18th National Congress of the Chinese Communist Party, the Company practices the new development philosophy in all respects, gives full play to its core competitive advantages in low cost, high efficiency and quality services, and supports the development of such wireless communications infrastructure as 5G in an economical and efficient manner, to firmly prop up the strategy of “Cyberpower” and “Digital China”. When devoting to building telecommunications infrastructure sharing and unified operations, the Company leverages on its unique resources to expand and optimize its course of sharing. It has enlarged the sharing scope from intra-industry to the public and by establishing the wholly-owned subsidiaries, namely, Smart Tower Corporation Limited (鐵塔智聯技術有限公司) and Energy Tower Corporation Limited (鐵塔能源有限公司), the Company has formed a business layout featuring “One Core and Two Wings”, with TSP business as the core and the businesses operated by Smart Tower Corporation Limited and Energy Tower Corporation Limited as two wings. The Company is committed to becoming a world-class integrated telecommunications infrastructure service provider, as well as a service provider of informatized application and new energy application with core competitiveness. Smart Tower Corporation Limited tapped into its advantage in high – and mid-point resources characterized with numerous and wide-spread points covering large area to turn telecommunications tower to digital towers, and employed technologies including visual perception, data collection, image analysis, information processing, etc. to develop the product named Tower on Monitoring (鐵塔視聯) which is serving more than 30 industries such as environmental protection, meteorology, emergency, public security, and navigation. Energy Tower Corporation Limited relies on the power supply capacity of mature, distributed base stations and professional operation and maintenance teams to provide the communities with integrated new energy services such as battery exchange, charging, power backup; it is the only enterprise to pilot recycling the traction batteries of new energy vehicles, which is specified in a document by seven ministries and committees including the Ministry of Industry and Information Technology, striving to become the main force for cascade utilization of traction batteries.

Walking into China Tower

Honors awarded to the Company in 2021 mainly includes:

- In December 2021, the Company won the special award of “Listed Company with the Most Investment Value during the 14th Five-Year Plan” in the 11th China Securities Golden Bauhinia Award.
- In December 2021, China Tower won the award of “Listed Enterprises of the Year 2021” by Bloomberg Businessweek/Chinese Version.
- In December 2021, China Tower was awarded “The Asset ESG Corporate Awards 2021” by The Asset.
- In October 2021, the “Data Governance Project” declared by China Tower won the “2021 Outstanding Practice Case Award for Enterprise Data Management Capability” awarded by China Federation of Electronics and Information Industry.
- In September 2021, Tower Monitoring products won top award at China International Big Data Industry Expo – Outstanding Science and Technology Achievement Award.
- In July 2021, the Party Committee of SASAC held the “Two Excellence and One Superiority” Commendation Conference for central state-owned enterprises in Beijing, and eight advanced collectives (individuals) of China Tower won the commendation of the Party Committee of SASAC.
- In May 2021, two international standards including Sustainable Power Supply Solutions for 5G Networks drafted by the Company won the second prize of 2021 Science and Technology Award of China Communications Standards Association.
- In February 2021, Peng Jiasen, an employee in the Xiangxi Prefecture (Hunan Province) branch of China Tower, won the “Outstanding Individual in the Nationwide Tough Battle against Poverty Alleviation” at the National Poverty Alleviation Summary and Commendation Conference.

Management System of ESG

I. Environmental, social and governance philosophy

Adhering to the core values of “Entrepreneurship and innovation, pragmatism and efficiency, benefiting customers and employees enablement”, China Tower accelerated the enhancement of the new generation of information technology, new energy and other emerging industries in line with strategic plans made by the state of “Cyberpower”, “Digital China”, “5G infrastructure” and “carbon peak and carbon neutrality” to promote the healthy development of the sharing economy, the digital economy and the platform economy.

We effectively fulfill our environmental, social and governance responsibilities, incorporate the philosophy of sustainable development into corporate strategy and business operation and management, work hard to implement the United Nations’ Sustainable Development Goals (SDGs), and promote the construction of telecommunications infrastructure in China’s least developed regions, to significantly increase the penetration of communications networks and support network upgrades. The Company insists on taking resource sharing as our core, reduces redundant construction to save natural resources, works hard to reduce the impacts of the Company’s business operations on the environment, increases the use of renewable energy, and proactively promotes low-carbon and environment-friendly production methods. We are committed to supporting the healthy and sustainable development of the industry and enterprises and to jointly tackle the issues of climate change.

II. ESG governance structure

The Company has established an ESG management system headed by the Board of Directors and led by the management, for cross-departmental and top-down collaboration. The Board of Directors is responsible for the formulation of ESG strategies and goals, and the management takes charge of the practical implementation of such strategies and goals. Several departments in the headquarters work together as an ESG working group tasked with carrying out ESG operations within their fields of business, and each provincial branch performs local ESG tasks under the guidance of the ESG working group. The establishment of the ESG management system ensures that the environmental and social risks involved in various business lines are properly managed, and that the ESG philosophy and strategies are effectively implemented.

III. Stakeholder communication and substantive analysis

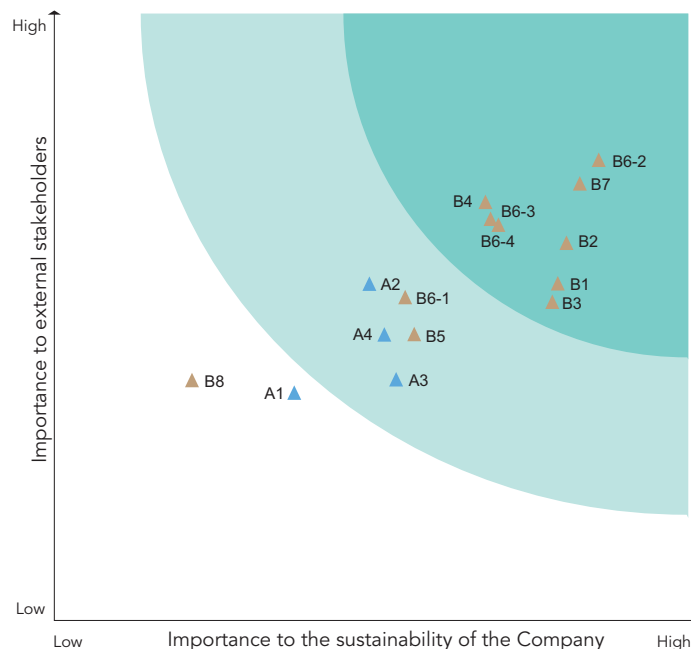
With reference to the requirements of the Environmental, Social and Governance Reporting Guide of the Hong Kong Stock Exchange, the Company actively understood and responded to stakeholders’ concerns on the ESG issues of the Company through questionnaires, reviews and summaries, and exchange meetings, identified and determined the importance of concerns of stakeholders, and took it as an important reference for the degree and boundary of issue disclosure. The key stakeholders that we have identified based on the characteristics of our business operations, their major ESG concerns, and the main communication channels are listed in the table below.

Management System of ESG

Main stakeholders	Key ESG issues	Main communications and responses
Government and regulatory authorities	Legality and compliance Environmental protection Climate change	Meetings with government and regulatory authorities Disclosure of compliance reports Relevant conferences and forums
Shareholders and investors	Legality and compliance Transparent governance Climate change	General meetings Annual reports and announcements Investor meetings
Customers	Customer service Quality maintenance Customer complaints Privacy protection	Dedicated customer managers 10096 service hotline Customer complaint management mechanism WeChat service account Questionnaire
Employees	Employee interests and benefits Remuneration system Labor standards Training and development Health and safety	Employee representative conferences Employee activities Employee training Performance review mechanism Employee appeal mechanism Questionnaire
Communities	Targeted poverty alleviation Social welfare	Volunteer activities Poverty alleviation plans
Suppliers	Transparent procurement Equal competition Business ethics Win-win and mutual benefits	Procurement activities Supplier evaluation Supplier portals Supplier hotlines Questionnaire

Management System of ESG

In 2021, the Company continued to communicate with various stakeholders to learn about their views and advice on issues related to environment, social, governance and others. In light of China Tower's strategy and business priorities, the Company performed materiality analysis on 12 aspects of ESG issues that were listed in the ESG Reporting Guide, and the analysis results are as follows:



The Company identified highly important topics, i.e. "B6-2 Product Responsibility – Customer Service", "B7 Anti-corruption", "B4 Labor Standards", "B6-3 Product Responsibility – Information Security", "B6-4 Product Responsibility – Product Innovation", "B2 Health and Safety", "B1 Employment" and "B3 Development and Training"; topics of moderate importance included "A2 Use of Resources", "B6-1 Product Responsibility – Brand and Intellectual Property", "B5 Supply Chain Management", "A3 Environment and Natural Resources" and "A4 Climate Change"; relevant topics included "A1 Emissions" and "B8 Community Investment". The Company will elaborate on the above topics individually in respective chapter in this Report.

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Contributing to the efficient deployment of 5G and supporting the Cyberpower strategy

Enabling smart industries and supporting the construction of Digital China

Deeply cultivating smart energy and serving the public livelihood guarantee



Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods :∴∴

I. Contributing to the efficient deployment of 5G and supporting the Cyberpower strategy Guidelines for sustainable development of China Tower

The new digital infrastructure is a staunch cornerstone to realize the strategies of "Strong Manufacturing Country", "Cyberpower", and "Digital China", and promote the overall improvement of the digital transformation and upgrading capability of the national economy and society. Positioned as a world-level integrated information and communication infrastructure service provider, the Company gives full play to its advantages in resource planning and deepens sharing and intensive construction. With a focus on high-quality development, the Company continues to strengthen the innovation-driven approach, builds up its competitive capabilities and effectively supports the intensive and efficient construction of 5G networks to aid the network capability of China rapidly. Building on the core advantages of low-cost, high-efficient and superior services, the Company aims to create benefits and values for users, industries and society.

Actions Taken by China Tower in 2021

Promoting sharing to reduce redundant construction and enhance resources utilization efficiency

- By the end of 2021, the Company undertook a total of 1,226,000 5G base stations
- The co-location rate of new tenants reached 81%, with a tenancy ratio of 1.70
- The total number of towers spared from the building was 920,000, resulting in a saving of RMB165 billion of investment and 51,000 mu of land
- In 2021, the Company satisfied around 552,000 5G base station construction demands, more than 97% of which were constructed by renovating existing sites



Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Actions Taken by China Tower in 2021

Enhancing our ability to coordinate social resources, promote the sharing of public resources, and deepen trans-sector resources collaboration

- Proactively promoting the opening of public resources such as government department, public institutions, state-owned enterprises, tertiary institutions, hospitals and scenic spots to fully share industrial resources such as railways, electric power and postal services to accelerate construction and save investment and land occupation
- Around 60% and 16.5% of newly-built small cells and macro cells were built by using social resources, respectively



Leveraging advantages in resource coordination, the Company adopted intensive construction, deepened sharing, worked with telecommunications enterprises to create a high-quality 5G network, and improved the co-location rate of newly-built towers, to enhance the economic and efficient deployment of China's 5G networks. The Company continued to innovate its construction model and meet network construction needs at low cost and high efficiency during the ongoing improvement of site co-location. As of the end of 2021, the tenancy ratio had increased from 1.66 in late 2020 to 1.70, which has largely improved economic and social benefits.

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(I) Intensive and efficient deployment of 5G network

With the gradual expansion of 5G network coverage, 5G services are being deeply applied in key areas, major events, and key industries. The Company made full use of the advantages of resource planning, deeply explored existing site resources, and strived to resolve the problem of repeated tower construction and resource waste; the Company also grasped the direction of industry technology evolution, strived to satisfy the general requirements of customers to reduce costs and increase efficiency and adapt to the economy, and actively promoted technological innovations such as 5G power supply and DAS in combination with operators' new frequency bands, new technology applications and network deployment strategies to give strong support for the economical and efficient construction of 5G network.

Case: Service of communications infrastructure construction for Winter Olympics and efficient deployment of high-quality network

In order to secure the communication of the Winter Olympics in 2022, the Company resolutely implemented the concept of "green, sharing, opening, and honesty" for holding the Winter Olympics. During the six months before the Winter Olympics, the Company intensively and efficiently completed the construction of indoor and outdoor 5G and trunking communication coverage in the competition and non-competition venues in the Beijing, Zhangjiakou and Yanqing competition areas, and the line along Beijing-Chongli Expressway and Beijing-Zhangjiakou High-speed Railway connecting the competition areas. The Company built a total of 615 new communication base stations and 77 sets of DAS systems. The Company maintained 306 sites for important security in the core area and 861 base stations in the surrounding area of the Winter Olympics. The Company made full use of its existing resources to meet the needs of communication and other business, with the overall infrastructure sharing rate exceeding 95%.



Construction of Tower Poles in the National Cross-country Skiing Center



Internal Infrastructure in the Capital Gymnasium

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Securing network communication for the 14th National Games and strengthening sharing to save resources

In order to meet the communication coverage requirements of the 14th National Games, the Company adhered to the principle of "prioritizing co-location and sticking to sharing philosophy in building up new site", set the general construction goal of "full standard, full frequency band, and full coverage" and adopted the comprehensive solution of "combination of macro and small cells as well as indoor and outdoor network infrastructure with high-low matching" to build 1,036 macro cells, 236 small cells and 264 DAS systems in 63 venues in Shaanxi province. The overall site sharing rate amounted to 98%, reducing construction land by 22.37 mu, saving 7.58 million kWh of electricity annually, and reducing investment of more than RMB72 million for the telecommunications industry. The Company efficiently completed the communication security task of the 14th National Games.



Outdoor Macro Cells of the 14th National Games

Case: Integrated upgrade of metro network to achieve intensive and efficient 5G coverage

Nanjing Metro Line 1 is the first in-service subways line fitted with four cables to achieve 5G upgrade in China. Giving full play to its unified leading role, the Company resolved the difficulties including many coordination problems, short construction period of skylight points, high technical difficulties and high safety risk. Leveraging 46 skylight points only, the Company completed all construction, troubleshooting, joint debugging and engineering optimization and achieved the shared coverage of the 5G network for three telecom companies. The peak speed in subways measured in the tunnel exceeded 1Gbps, and the average speed exceeded 700Mbps at the time of high network load, which improved the network experience of passengers and won unanimous praise from customers and the subway operators.



Construction of Nanjing Metro Network



5G Shared DAS Equipment

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(II) Shared Use of public resources

In order to make full use of public resources and speed up the construction of network infrastructure, the Company actively seeks the support of national ministries and local governments at all levels, and continues to create a favorable policy environment; collaboratively promotes 31 provinces and 383 prefecture-level cities to issue support documents to promote open public resources such as government agencies, public institutions, state-owned enterprises, tertiary institutions, hospitals, scenic spots, simplify approval procedures, increase electricity charges reduction and exemption, and focus on solving the problems of difficult site selection, difficulty in entering the site, and high cost; promotes 26 provincial governments to issue building communication construction specifications, so that communication infrastructure and building engineering can be integrated and deployed, effectively improves the Company's resource planning capabilities and strengthens the co-construction and sharing of communication infrastructure.

Case: Promoting the opening and sharing of public resources to facilitate telecommunications infrastructure construction

The Company entered into a strategic cooperation agreement with the Sichuan provincial government. Sichuan province will open the office areas of the Provincial CCP Committee, the provincial government and the municipal and state governments for free, and the Company will carry out the overall construction of 5G infrastructure. Through the transformation of the original base station supporting facilities, the 5G networks coverage of all the locations within and surrounding the government's office building, nearby buildings and roads has been achieved rapidly.

The Jilin Provincial Department of Industry and Information Technology provided free computer rooms and space on the top of the office building for the construction of 5G base stations. The Company coordinated to quickly complete the base station design, on-site construction and other work to ensure the network signal coverage of the Department of Industry and Information Technology and surrounding residential areas.



Deployment of 5G facilities on the rooftop of Sichuan Provincial Government



Deployment of 5G facilities on the rooftop of the office of Jilin Provincial Department of Industry and Information Technology

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(III) Synergic optimization of social sharing

The Company has focused on shared growth and keeps deepening partnership with the China State Railway Group to promote the construction of telecommunications infrastructure along railway lines. We strengthened our strategic collaboration with China State Grid, for the sharing of "electricity towers" and "telecommunication towers" across China. We had made full use of various social pole and tower resources to achieve the utilization of social resources of the newly-built small cells of approximately 60%, and the utilization of social resources of the newly-built Macro cell of approximately 16.5%.

Case: Comprehensive coverage through sharing of power resources

For collaboration with the China State Grid, the Company has carried out the "electricity towers" to "telecommunication towers" project in Nanping, Fujian Province. Through the shared use of 110 kV power tower, the Company enabled TSPs to mount the newly added 5G smart antennas to realize 5G network coverage on Shaowu No. 6 Middle School new campus and surrounding residential areas, significantly reducing the construction cost and cycle of 5G communication base stations, land resources were saved and problems such as "difficult location, long cycle and high cost" were effectively solved, high quality accelerates the progress of 5G network coverage in Nanping City.



Mounting telecommunications antennas on 110 kV power tower



Through the sharing of Jinchuan Street power tower in Ankang of Shaanxi, the Company effectively solved the matter of location selection caused by overall demolition in Xiba area, and settled the problem of wireless network coverage in Xiba area.



Sharing power tower to solve difficulty in location selection of relocation areas

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Accelerating network coverage in urban areas by sharing social poles and towers

In response to the requirements of Shanxi Province to deepen the development of the digital economy and rapidly support the 5G networks construction, in Taiyuan, the Company drove the co-development of social resources such as "telecommunication towers" and lighting poles, and comprehensively utilized over 150 lighting poles to construct 5G base stations to settle the tough problem of covering the blind area for TSPs over the years.

In response to the request of the Beijing Municipal Government for "smart parks" construction, the Company coordinated the Beijing Park Management Center and completed the 4G/5G construction in six parks by making comprehensive use of the existing social towers in the parks.



Improving 5G coverage in cities of Shanxi Province by using light poles



Achieving signal coverage in parks by using integrating local poles

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Sharing of railway resources to help to achieve comprehensive network coverage

The China-Laos Railway is a key railway project of the "Belt and Road Initiative". In order to achieve the goal of "wireless communications network coverage when the China-Laos railway is opened to traffic", the Company adhered to the principle of "sharing philosophy in building up new sites", and successfully shared 23 railway private network towers, 1,010 railway tunnel cabinets, 398km of tunnel walls, 508km of optical cable conduits, and 259 railway box transformers substations, ensuring the rapid and efficient completion of the construction project of wireless communications network signal coverage for the 508km domestic section of the China-Laos Railway, and 100% of the telecommunications infrastructure was built through joint-construction and sharing to realize the "parallel implementation" of the high-speed rail communication network and the railway.



Sharing railway tunnel cabinets



Deploying antennas on shared railway network towers

Case: Sharing tower poles in the convention and exhibition center to reduce coverage cost and improve efficiency

National Exhibition & Convention Center (NECC) (Tianjin) is the third national convention and exhibition center after the ones in Guangzhou and Shanghai. In order to achieve comprehensive network coverage for the outdoor and surrounding areas of Exhibition & Convention Center, the Company adopted the philosophy of "Multiple Poles in One" and "From Overhead to the Ground" and built telecommunication towers by adequately using 25 light poles in the Exhibition & Convention Center, effectively saving overall investment cost.



Full view of National Exhibition & Convention Center (Tianjin)



Construction of telecommunication towers using light poles

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

II. Enabling smart industries and supporting the construction of Digital China Guidelines for sustainable development of China Tower

The digital economy represents the trend of global development. The Company established a multi-pillar development plan, focused on the transformation of "telecommunication towers" into "digital towers", expanded social informatization services, maximized the benefits of the sharing model, served the wider national economy and people's livelihoods and social governance, fully demonstrating its capability and resource advantages in water resources, forestry and grassland, agriculture, environmental protection, transportation, geological disaster and other fields. The Company is committed to becoming a sharing and service-oriented information application service provider with core competitiveness.

Actions Taken by China Tower in 2021

Focusing on Tower Monitoring, with the support of telecommunications tower and relying on the monitoring platform, the Company is able to provide ubiquitous and nationwide video surveillance and digital information services, widely serving industries involving national economy and people's livelihoods as well as corporate and individual customers and accelerating the informatization of the service model. Typical smart connection services of the Company include:

- Water resources
- Forestry and grassland
- Agriculture
- Environmental protection
- Transportation
- Geological disaster alert
-



Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Focusing on a high-quality development pattern, the Company made further efforts in the model of shared development, continuously enriched the concept of "digital towers", boosted the development of the digital economy, and pushed forward the implementation of "Digital China" strategies. In the past two years, the Company has signed strategic collaboration agreements with the National Ministry of Water Resources, the Ministry of Agriculture and Rural Affairs, the National Forestry and Grassland Administration, and China Earthquake Administration respectively, actively contributing its "Tower Power" in areas such as reservoir surveillance, Yangtze River fishery ban, forest fire prevention, disaster prevention and alleviation, ecological and environmental protection.

(I) Serving smart water conservancy construction

On 28 January 2021, the Company entered into a strategic collaboration agreement with the National Ministry of Water Resources to jointly promote the full coverage of communications and the construction and application of video surveillance for water conservancy facilities, and facilitate the modernization of water conservancy governance systems and governance capacity. In order to ensure the safety of people's lives and property during the flood season, the National Ministry of Water Resources issued the Management Measures on Hydrological Data Telemetry and Forecasting of Small Reservoirs and Construction and Operation of Safety Surveillance Facilities of Dams 《小型水庫雨水情測報和大壩安全監測設施建設與運行管理辦法》, in response to which the Company actively promoted the application of its Tower Monitoring products in small and medium-sized reservoir surveillance.

In 2021, the Company has implemented 1,012 water conservancy projects in 31 provinces and cities across the country, including 99 reservoir safety surveillance projects and 319 intelligent video surveillance projects on water flow in ecological basins, covering more than 16,000 km of river channels; it also provided repair and maintenance of hydrological observation equipment, sharing of underlying resources and facilities and other service for 57 hydrological observation points in 9 provinces nationwide, providing real-time forecast, projection and early warning and serving smart water conservancy construction.

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Smart development of water resources optimized command and coordination capabilities

In Hebei, the Company made full use of the high-point resources of towers to build a “full coverage, all-weather and smart” video surveillance system for 1,386 rivers, 23 lakes with a perennial water surface area of over 1 square kilometer, 1,027 reservoirs, 13 flood storage and detention areas, 15 important flood control hubs, and the water conveyance lines and the Yellow River diversion lines supporting the middle route project of the South-to-North Water Diversion Project. The system provided a strong guarantee for the ecological safety of rivers and lakes and the safety of water supply in the province, particularly enhancing the command and coordination capabilities of flood control. In the flood season of 2021, the Company provided strong support for the safety of flood control in the province.



Smart video surveillance system for rivers and lakes in Hebei

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Constructing water monitoring system to protect the ecological environment of Dianchi Lake

Dianchi Lake, the sixth largest freshwater lake in China, has been suffering difficulties in monitoring the lake surface and wetlands around. In order to better realize the ecological protection of Dianchi Lake, the Company shared the use of 13 towers with a height of over 35 meters around Dianchi Lake and installed high-precision dual-spectral monitoring equipment covering a radius of 5 to 15 kilometers to realize all-weather visual monitoring of the entire lake surface of 330 square kilometers without dead corners. Managers can master the overall situation of the monitoring area from the aerial view of the high-altitude observation camera, and view the low-point camera to inspect the details of the monitoring area from different angles.

Meanwhile, the AI algorithm works around the clock, which can promptly detect ecological and environmental problems such as green algae flooding and sewage discharge in the waters of Dianchi, greatly enhancing the management capability of illegal sewage discharge in the lake area and improving the law enforcement monitoring experience and command efficiency.



Yunnan Dianchi Lake and Wetland Monitoring System

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(II) Serving forestry and grassland fire disaster prevention

The Company opened up tower site resources in and around forest areas nationwide to provide precise video surveillance service to 1,556 key forestry and grassland fire prevention areas and counties planned by the State Forestry and Grassland Administration. During this year, the Company invested in the construction of 432 forestry and grassland projects nationwide, used over 37,000 tower shelters and tower resources, and provided video surveillance for over 420,000 square kilometers of forest areas, especially, all the key areas in Hebei Province. The application of tower monitoring in forestry and grassland fire prevention saved more than 100,000 national forestry and grassland fire inspection personnel per day, enabling early detection, early disposal and early prevention of any fire incidents.

Case: Constructing forestry and grassland video system for efficient closed-loop fire disposal

As an important ecological niche, Sichuan Aba Prefecture faces arduous task in respect of forestry and grassland fire prevention. The Company built 64 sets of forest fire video surveillance terminals in 8 counties (cities and districts) at high risk of forest and grassland fire, quickly completing the construction of the forest fire video surveillance system covering the whole prefecture with high quality. Since the system was put into operation, it had assisted supervisory personnel in capturing 171 illegal fires in the wild, and efficiently disposed of any fire in a closed-loop manner from fire detection, on-site treatment, and reporting of results, avoiding any fire expansion and spread.



Forest Fire Surveillance System in Aba Prefecture, Sichuan Province

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Constructing fire monitoring and early warning system to seize the initiative in fire prevention

There are various types of landforms in Tai'an City, Shandong Province, and the previous monitoring system facilities of forest farms in various districts and counties are outdated, lacking the ability of intelligent analysis, information integration and automatic management. Utilizing the high-point resources in forest areas, the Company has built 217 video fire prevention and warning monitoring points, in addition to the function of thermal imaging monitoring, which are also superimposed with meteorological module integrated display auxiliary decision-making (氣象模塊集成顯示輔助決策), intelligent smoke detection (智慧煙感), passenger flow statistics at scenic spots (景點客流統計), smart low point bayonet (智慧低點卡口), 3D precise mapping (三維精準地圖測繪), satellite UAV stereoscopic surveillance and wind-solar hybrid power guarantee (衛星無人機立體監控以及風光互補能源保障) and other functional services.

Since the launch of the fire monitoring and early warning system "Sky Eye Mountain Protection" (天眼護山), the fire prevention in forests has changed from "manual protection" to the combination of "manual protection and technical protection". We firmly take the initiative of fire prevention through fire treatment processes such as system discovery, on-site verification, judgment and disposal. By the end of 2021, a total of 209 effective alarms had been triggered, and all the fires had been disposed of at the first time, which greatly deterred the illegal use of fire and greatly reduced the potential fire hazards.



"Sky Eye Mountain Protection" fire monitoring and early warning system in Tai'an, Shandong Province

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(III) Serving the development of digitalized agriculture

In order to promote the development of local modern agricultural industrial parks and promote the improvement of management efficiency of each link of agriculture, the Company uses its own advantages in resources to apply modern information technology and equipment to the process of agricultural production to support the development of local digitalized agriculture.

Case: Carrying out the Smart Agricultural Park project to improve the capability in informatization monitoring of the park

In Fujian, the Company utilized 11 high-point resources to mount cameras, IoT antennas and small meteorological stations to provide the visual management of “the overarching map” agricultural smart park for five agricultural parks. We also made full use of the smart park system to develop the application of environment control technology, biotechnology, fermentation technology, information Internet technology and automatic equipment to implement the analysis of online monitoring and management on temperature, humidity, light, carbon dioxide and other parameters in park. Since the commencement of operation, the system has improved the capability in informatization monitoring, which reduced the labor cost, realized the early prediction, early warning and prevention of management risks of agricultural products, and gradually built an agricultural brain to meet the informatization needs of agricultural management.



Fujian Smart Agricultural Park Project

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(IV) Serving the ecological and environmental conservation governance

1. Integrated environmental protection surveillance

A sound ecological environment is a priority area for improving people's well-being and an important foundation for building a beautiful China. The Company closely focused on the overall target of "increasing the usage of natural gas and reducing the carbon dioxide emissions to improve ecosystem; increasing water and stabilizing soil to prevent risks", gave full play of resource advantages, such as base station, telecommunications, power, transmission and network operations and maintenance, explored and utilized the high and medium altitude video surveillance and monitoring technology to serve the ecological and environmental conservation governance, and developed an intricate surveillance and monitoring networks for ecological environment, contributing to the development of modern ecological environment system, providing strong supporting for winning the tough battle against prevention and control of pollution, constructing a protective barrier for ecological environment and ecological civilization construction.

Case: Yangtze River water ecological environment surveillance effectively improved the performance of supervision and control of its water quality

In Jiangsu and Chongqing, the Company utilized high altitude tower video surveillance system along the Yangtze River in combination with low altitude video surveillance by chemical enterprises along the Yangtze River to develop video surveillance networks covering the surface of the Yangtze River and sewage draining exits, realized smart warning and automatic tracing through video artificial intelligence analysis and improved the efficiency of regulation and enforcement for water quality of the river effectively. In 2021, in Taizhou, Jiangsu province, the Company controlled 97.78 kilometres long area along the Yangtze River in Taizhou effectively through 50 high altitude monitoring points of tower sites and low altitude monitoring points from 149 enterprises; in Chongqing, the Company adopted video monitoring on 51 cross sections¹ and 31 key cross sections of county drainage basins through 81 monitoring points, covering over 40 rivers both long and short, such as the Yangtze River, Chia-ling River and Wujiang River.

In 2021, the system had identified more than 400 pollution incidents such as river garbage, water hyacinth, garbage by rivers and construction projects carried out by rivers. The system had also provided support, for more than 10 times, for dispatching meetings and promoting meetings in relation to prevention and control of pollution convened by provincial and municipal ecological and environmental departments, effectively protecting the water quality of the Yangtze River valley and improved the technical level of environmental protection.



Video Monitoring of Water Ecological Protection in Yangtze River valley

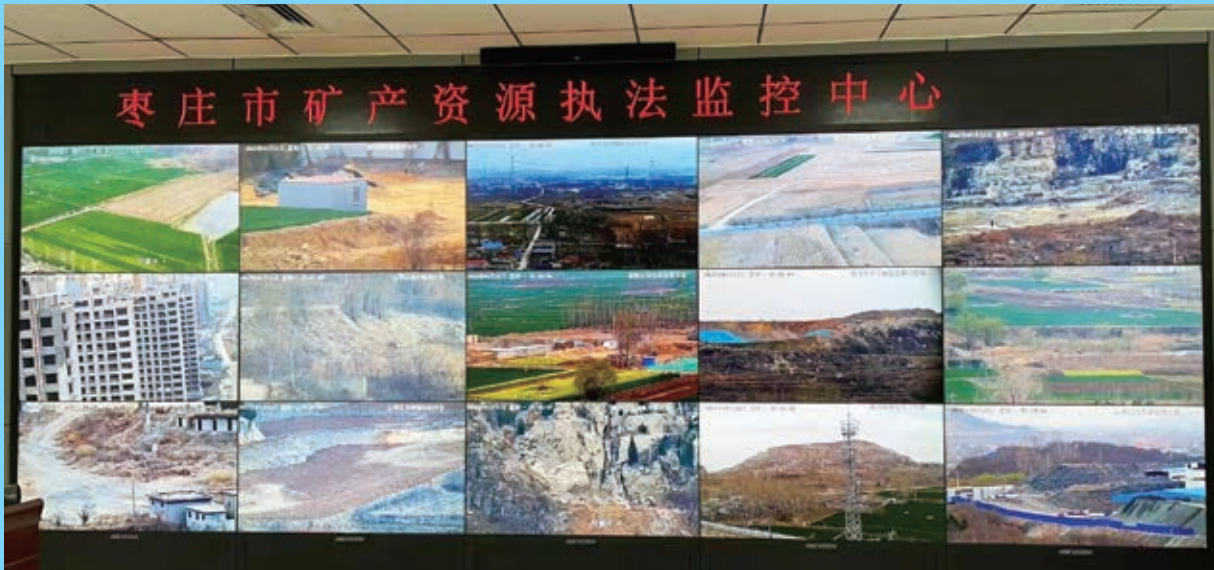
¹ cross section of river refers to the cut surface of a river that is cut vertically to the ground at a certain position, and is the basic unit of hydrological observation

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Monitoring illegal mining in mines, improving environmental protection law enforcement

Illegal mining is one of the culprits that aggravate air pollution in Zaozhuang City, Shandong Province. The distribution of mineral resources in Zaozhuang is resourceful but scattered, and illegal mining is scattered and concealed, which makes it difficult to supervise.

By utilizing the base station resources, the Company has set up 511 monitoring points in 48 towns (sub-districts) and 421 villages (dwellings) in Zaozhuang to automatically monitor and warn against the activities of illegal production, emissions and illegal mining, and has newly built six-meter cross-road rails in key road sections with 105 chokepoint capture cameras set up to capture suspicious vehicles in real time. Since the establishment of the system, more than 300 illegal clues have been found in time by AI analysis. After verification based on the clues, the local land regulatory department has filed and investigated 18 cases, and issued 69 enforcement proposals to the district (city), and illegal mining activities decreased by 95% year-on-year, which effectively improved the deterrent effect of environmental protection and resource protection enforcement, and saved manpower costs of more than RMB3 million.



Monitoring system of illegal mining in Zaozhuang, Shandong

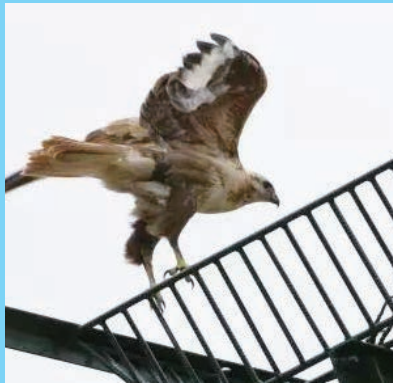
Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

2. Conservation of biodiversity

The Company has 3,021 towers in the 22 counties where the Sanjiangyuan Nature Reserve (三江源自然保護區) is located and 527 towers within 1,000 meters along the Sichuan-Tibet Railway. The Company used existing tower sites to provide strong support for ecological protection monitoring and surveillance in the Sanjiangyuan Nature Reserve and along the Sichuan-Tibet Railway.

Case: Providing mid – and high-point resource support to promote ecological protection monitoring and surveillance

In Yushu Tibetan Autonomous Prefecture, Qinghai, the Company cooperated with the Ecological Environment Bureau to use the tower site resources along National Highway G214 in the area of over 4,000 meters above sea level for installing high-magnification spherical cameras, to monitor the Longbao Wetland Reserve (隆寶濕地保護區) and the First Bay of Yangtze River (長江第一灣) in Zhiduo County in real time. The video monitoring and information management platform can realize functions including online monitoring, real-time monitoring and ecological data analysis. For the full year of 2021, a total of more than 7,800 hours of video was recorded, which was equivalent to more than 1,000 manual collections in the traditional way. The biological populations, numbers and distributions in the Longbao Wetland Reserve and the First Bay of Yangtze River were recorded automatically, thus reducing the burden on relevant environmental protection staff going out, as well as improving the efficiency of technical inspection, and enhancing the objectivity of observation evidence for ecological protection departments to analyze the impact of human activities on the ecology.



Sanjiangyuan ecological protection monitoring project in Yushu, Qinghai

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(V) Serving smart transportation construction

In 2021, the Company focused its video surveillance reuse capabilities on the fields of expressways, railways and maritime affairs, creating a video surveillance network for high and low points, far and near points for the transportation management departments of several provinces. It integrated AI analysis platform to realize the functions of visualization of road information, intrusion alarm of the railway red line area, real-time monitoring of traffic operation status, assessment of traffic, analysis of traffic big data, smart alert management and emergency police dispatching.

Case: Railway video surveillance coverage helped realize safe and intelligent road protection

In Yingtan, Jiangxi, the Company assisted railway safety authorities to develop and establish a smart application platform for the safety supervision of operating environment of Yingtan high-speed rail. Relying on the communication base stations around the railway, the Company built 45 high-point video surveillance points and 1 geological disaster monitoring point to realize the video surveillance coverage of the whole section of the Shanghai-Kunming high-speed railway in Yingtan and the video surveillance of the key sections of the general-speed railway. AI smart warning and monitoring methods are applied to carry out smart warning and monitoring for illegal construction identification, intrusion detection, fireworks detection and geological disaster detection, so as to detect problems and eliminate potential dangers in time. The system laid for the fully realizing smart road protection along the general-speed railway and high-speed railway in the province



Video Surveillance System for Railway Protection in Yingtan, Jiangxi

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(VI) *Serving geological disasters alert*

Areas with frequent geological disasters usually have harsh environment and cannot be monitored by manpower, and there is no real-time monitoring method. In 2021, the Company conducted monitoring and early warning for the geological disaster areas by deploying the sensing and data acquisition equipment in the disaster areas. In case of any slight geological change due to disasters, the monitoring equipment will send monitoring data to the cloud data center through satellites and ground-based enhancement station of China Tower for alert and real-time monitoring.

Case: Smart geological disaster monitoring helped effectively reduce accident casualties

In Baishan, Jilin, the Company built 62 geological disaster surveillance sites, and installed 164 sets of IoT sensors and 44 sets of AI video monitoring equipment, developed the combined and coordinated monitoring system of "video + IoT sensing" to monitor landslides, debris flows, collapses, settlements, etc. Emergency departments can obtain comprehensive services integrating geological disaster monitoring, forecasting, information release, disaster trend analysis, and disaster assessment in the smart comprehensive supervision platform built by the Company.

With the system, the Company established and improved the disaster data forecasting, reporting and monitoring network in the whole area of Baishan City. It organized emergency rescue to gain time to evacuate people in areas affected by geological disasters and reduce accident casualties and property losses, which has also laid a solid information foundation for subsequent disaster prevention.



Automatic Monitoring of Geological Disaster by Baishan Natural Resources Bureau

Serving the National Strategy and Taking a New Role
in the National Economy and People's Livelihoods

III. Deeply cultivating smart energy and serving the public livelihood guarantee

Guidelines for sustainable development of China Tower

The Company practices the new development philosophy and strives to develop the sharing. While providing quality services for the industry, the Company revolved around the "carbon peak and carbon neutrality" strategy of the nation, to accelerate the efficient deployment of the energy operation business infrastructure, build quality network, focus on the key sectors and explore service model to create a service provider of new energy applications with core competitiveness.

Actions Taken by China Tower in 2021

The Company extended our capabilities of providing power supply based on telecommunication base station to local communities, focusing the smart energy services like China Tower battery exchange, backup power, charging and so on. Through source sharing, the company takes initiative to deploy new energy application sectors and to support the national economy and people's livelihoods.

China Tower Battery Exchange

- As of the end of 2021, the battery exchange service has been carried out in 280 cities across China, with more than 44,000 battery exchange cabinets equipped to serve 612,000 users, being the largest battery exchange operator for light electric vehicle across China.

China Tower Backup Power

- Having been widely applied in financial service outlets, transportation, medical care, education and other fields. As of the end of 2021, the total number of backup power points reached 29,600.

China Tower Charging

- As the end of 2021, there existed 1,073,000 low-speed charging couplers being operated in 316 cities across China and 5,232,000 users for our low-speed charging services.



Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

There has been a growing demand for continuous and stable power supplies for industries amid socioeconomic development. By focusing on the "One Core and Two Wings" strategy, the Company adhered to the philosophy of sharing and coordinated development. Leveraging its advantages on site resources and specialized capabilities to ensure power supply, the Company took the initiative to fully promote the standardization of the products and platforms, systematization of operation and management. We fostered the core competitiveness of "the best quality and service". We proactively built a platform for socialized energy application serving the nation. The Company provided communities with diversified energy services such as battery exchange, power backup, battery charging and so on.

(1) Serving people's livelihoods with China Tower Battery Exchange

In recent years, light electric vehicles experienced rapid growth and its existing number in the society continues to increase. The consequent issues like slow charging and lack of safety and short battery duration emerged. The battery exchange business for light electric vehicles is therefore come into being. Based on IoT technology and centralized and unified control platform, the battery exchange business integrated smart battery exchange cabinets, traction batteries, digital battery monitor and others to form the battery exchange network, which can provide staffs in the parcel and food delivery and the logistic industries and the general public with self-help battery exchange services.

Relying on its rich site resources, the Company deployed battery exchange networks on a large scale and launched China Tower battery exchange service. Users only need to start China Tower APP and scan the AR code to exchange the battery. Electric vehicles can be charged 100% rapidly, which relieved the riders' worries and safety problems.

The China Tower battery exchange service had been rolled out in 280 cities across China, and a total of 44,000 battery exchange cabinets have been built to benefit more than 612,000 users, being the largest battery exchange operator for light electric vehicle across China.



"The Riders' Home" battery exchange official store

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Building battery exchange eco-industry of China Tower based on wider range of cooperation

Adhering to the concept of Openness and Collaboration, the Company has established strategic cooperation with more than 20 leading enterprises in the upstream and downstream of the industrial chain, such as China Postal Express & Logistics, Meituan, SF Express, Yunda Express, ELEME, BYD, Huawei, etc., to actively build the eco-industry, enhanced innovation capability based on the industrial chain cooperation and continuously promoted iterative upgrade of products, so as to better support green travel and the implement of national "carbon peak and carbon neutrality" strategy.



China Tower signs agreements with partners in the industrial chain to carry out cooperation on battery exchange for delivery vehicle

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: Caring for riders and creating a trustworthy workers' harbor

In the spirit of "caring for workers employed in new forms", the Company fully carried out practical activities under the theme that "I do more practical work for the public benefit" by actively building more than 300 "Riders' Homes" nationwide to provide riders with one-stop services for work and life. Caring for the rider community, the Company has provided riders with considerate services such as "home-like service site" and "travel without worry", creating a trustworthy "workers' harbor".



Riders' leisure place



Vehicle rental service



Riders' rest place

In Hubei, depending on the 5G distributed energy warehouse IoT ecology, the Company promoted the construction of "Riders' Home" across the province, comprehensively expanded "China Tower's battery exchange" business, provided stable, safe and after-sales-guaranteed brand lithium batteries and reduced the battery use cost and threshold to meet the professional requirement for "long range". By integrating the brands under the trade union such as "Love Post" and "Riders' Home", the Hubei Federation of Trade Unions worked with the Company to build "China Tower battery exchange – Riders' Home" into a front line serving the people's livelihood and workers. By the end of 2021, the Company had built 2,255 battery exchange cabinets and 33 rider service stations in Hubei Province, serving more than 50,000 riders in the province.

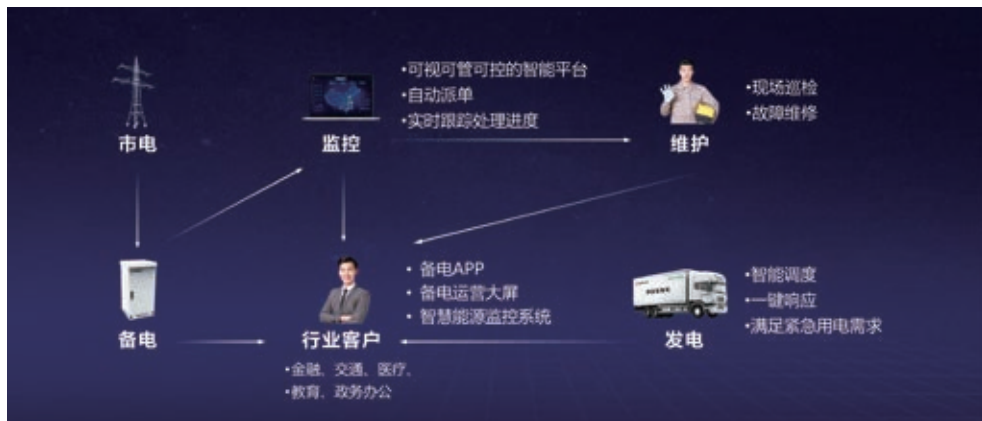


Hubei Branch of Energy Tower sends cool and refreshing materials to riders

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(II) Power backup service provided by China Tower against any power supply needs

In view of the instable mains supply and sudden power outage, leveraging its mature base station power supply security capability, the Company is capable to provide customers with a four-in-one power supply security solution integrating power backup, power generation, monitoring and maintenance. Up to now, the Company's power backup business has been widely used in many fields such as finance, medical care, transportation and education, with 29,600 power backup service points.



Four-in-one power supply security solution

Case: Stable power supplies during important examinations to achieve zero outage in the examination halls

In 2021, the Company focused on important examinations, fully shared the local power backup and power generation equipment resources, and construction and maintenance capabilities, and proactively expanded the power security services for major customers. The Company proactively contacted school and enrolment authorities across the country to set up a dedicated power security service team. Combining the demand for silent, stable and safe power supply during examinations, the Company involved the use of sound-proof generator vehicles, UPS backup power supply and other power supply and security systems to provide power security service for test centers, monitoring centers, test paper secrecy rooms and listening broadcast across China. As of the end of 2021, the Company has fulfilled nearly 40,000 power security tasks in nearly 1,000 examination halls across the country, achieving "zero outage" of power supply, demonstrating outstanding security capabilities of the Company, and it has strongly expanded the brand awareness and influence of China Tower' energy business.



Silence maintenance and power backup for the National College Entrance Examination

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

Case: The power supply guarantee for the National Games to strongly support the power supply of the event

In September 2021, the 14th National Games were held in Xi'an, Shaanxi and it was the first major comprehensive sports event to be held in China under the background of normalized pandemic prevention and control. The Company has undertaken the emergency power supply and security work for 156 power security points in 20 venues, and set up a dedicated power security team of 125 people in total, including project managers, senior engineers and core teams. The Company has satisfactorily completed the whole process of power security services, including survey and design, scheme output, material reserve, equipment transportation, personnel training, construction survey, load experiment, emergency drill, delivery acceptance and power security duty, and highlighted the professional image of China Tower's power security, which was highly recognized and praised by the leaders of the Competition Committee and venues and received several banners and letters of appreciation.



Power security for the 14th National Games



Power security operation

Serving the National Strategy and Taking a New Role in the National Economy and People's Livelihoods

(III) Tower charging is safe and convenient

At present, there are nearly 300 million electric bicycles in China, with over 30 million new bicycles increased each year. The need for safe charging is increasingly evident in resident communities where there are widespread problems such as difficulties and hidden dangers in charging electric vehicles. Based on the national requirements for the safe charging of electric vehicles, the Company has launched a Tower Charging Service to provide centralized, safe and fast charging services for the public by deploying low-speed electric vehicle charging piles in communities. As of the end of 2021, Tower charging service has covered 316 cities across China, which has operated 1,073,000 low-speed charging couplers with and 5,232,000 users for our low-speed charging services.

Case: Low-speed charging business provides convenient charging services

The Company has fulfilled its role as a state-owned enterprise and integrated with local policies to help the development of the shared economy. In Xinjiang, the Company took into "Safe Cities" and "People's Livelihood Project" as the entry point, and actively collaborated with the Housing, the Fire, the Sub-district and other departments and units to deploy low-speed charging piles for electric vehicles in residential communities. The Company's staff reached out to the frontline of the communities and joined hands with the community and other departments to launch daily charging campaigns to guide users on safe usage and solve the difficulties of community residents in safe charging. As of the end of 2021, the Company's charging business had covered 15 cities and approximately 2,960 communities in Xinjiang.



Recharging convenience services in Xinjiang



Intelligent charging pile

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Leading the industry
by independent
innovation

Efficient management
to consolidate
foundation



Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements ∴∴∴

I. Leading the industry by independent innovation

Sustainable development thoughts of China Tower

The Company has been focusing on the new pattern of high-quality development of “One Core and Two Wings”, continuously improving its independent innovation capability, stimulating grass-roots innovation vitality, and striving to build a “technological and innovative” enterprise. In terms of system construction, the Company continued to promote the mechanism of top down collaboration and internal and external collaborative innovation; in terms of product innovation, the Company closely tracked the evolution of 5G technologies and customer network construction strategies, and accelerated the iterative optimization of products; in terms of technical means, the Company followed the trend of the digital era and continuously strengthened operation and maintenance and platform innovation with the help of information and digital means, comprehensively improved the core competitiveness of tower smart products and energy products, and accelerated the process of refined management.

Actions Taken by China Tower in 2021

In order to build an excellent enterprise with a complete system, efficient coordination, and outstanding leadership and driving ability, the Company implemented basic management, escorted standardized management, and made innovation in digital and smart management, actively promoted the benchmarking of world-class management improvement actions, and vigorously carried out independent innovation in the following aspects:

Innovative system construction

- Revising the Company’s Administrative Measures for Innovative R&D and Promotion of Achievements to optimize the innovative organizational model and promote the orderly and efficient development of R&D projects
- Standardizing the implementation process of the open competition mechanism to select the best candidates to lead research to gather the intellectual resources of the entire company



Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Actions Taken by China Tower in 2021

Strengthening product innovation

- Making innovation in tower types to meet the diverse needs of low-cost investment and construction scenarios
- Providing more 5G DAS products to improve product sharing capabilities and diversified application scenarios
- Making innovation in 5G power products to support the rapid and low-cost construction of 5G power
- Promoting the formulation of industry standards to accelerate the development of the industry

Deepening digital reform

- Publishing the Company's 14th Five-Year Sub-Plan for Digitalization to create a digital pattern with tower characteristics
- Launching tower monitoring products to meet the informatization needs cost-effectively
- Accelerating the transformation of the operation management model from "manual management" to "digital management" by means of informatization and digitalization

In 2021, China Tower Anhui Branch was successfully selected as a benchmarking enterprise for management of state-owned key enterprises.



Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

(I) System innovation to improve efficiency

The Company thoroughly implemented the national innovation-driven strategy, continuously optimized the technology innovation mechanism, standardized the innovation R&D management process, and promoted innovation to mobilize the initiative of innovation entities at all levels, stimulate innovation vitality and motivation.

In 2021, the Company focused on improving the efficiency and effectiveness of innovation, and revised the Company's Administrative Measures for Innovative R&D and Promotion of Achievements to further improve the R&D process, optimize and make innovation in organizational model, and implement the project manager responsibility system. At the same time, the Company intensified its efforts in innovation by strengthening the coordination with external superior intellectual resources and making the top-down collaboration between headquarters and branches, which promoted the orderly and efficient development of R&D projects and strengthened the role of innovative R&D in enabling the high-quality development of the Company's business.

Guided by major needs and measured by the effectiveness of solving problems, the Company coordinated the annual R&D needs of the Company and concentrated on two key R&D projects of DAS and power supply through the new innovative organizational model of the open competition mechanism to select the best candidates to lead research. The Company has fully explored and exerted the innovation potential of the provincial branches, gathered the intellectual resources of the entire company and stimulated the enthusiasm of the innovation entities to overcome difficulties to support the Company to achieve the strategic goal of building a "technology-based" and "innovative" enterprise.

(II) Product innovation and iterative optimization

The Company accelerated the pace of independent innovation, carried out technology and product innovation in the fields of towers, DAS, and power supply, led the industrial transformation, saved resource consumption from the source, and improved deployment efficiency.

1. Innovative R&D of 5G DAS products

With the emergence of new 5G frequency bands, new technologies, and new equipment for telecommunications companies, the indoor coverage scenarios of 5G networks tend to be diversified with higher requirements on network quality. The Company led the R&D and sharing of DAS products and solutions in the industrial chain, and supported TSPs in 2/3/4/5G full sharing; the manufacturing level of related products in the industrial chain has been steadily improved. In response to the new changes in the evolution of the communication network, the Company further enriched the types of passive DAS products and improved the sharing capabilities of various products to increase the diversity of solutions.

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In 2021, the Company has studied the feasibility of introducing 700MHz frequency band for existing products, including new 5G POI² products supporting the 700M-3,700M frequency band, which can enable the same set of POIs to be connected simultaneously by up to 12 systems of four TSPs in 2/3/4/5G businesses, better meeting the demand for co-construction and sharing and 5G 4T4R³ DAS sharing in medium and high-capacity scenarios. At the same time, the Company has innovatively increased the types of DAS antennas covering special scenarios, providing more choices for scenarios such as elevators and residential areas, reducing the energy loss of RF signal transmission, and increasing the coverage distance of a single source in tunnel scenarios.

Case: Innovative 5G coverage solutions to improve network performance in special scenarios

In medium and high-capacity building scenarios such as shopping malls, the Company innovatively adopted 5G passive distributed MIMO technology⁴ to achieve the 4T4R coverage in the overlapping coverage area of two-channel DAS antennas on the same floor and different floors. The construction method and cost of this solution are basically the same as those of the 2T2R passive DAS, but the rate is increased by 10%-50% in the overlapping coverage area, which basically achieves the coverage effect of the 4T4R active small cells; in the subway tunnel scenario, the Company studied the polarization characteristics of leaky cables to further enrich the radiation performance parameters of the product and improve the 5G performance of subway tunnels through the orthogonal polarization networking of adjacent leaky cables.



Diagram of 5G passive distributed MIMO technology in high-capacity building scenarios

² POI: multi-system access platform

³ 4T4R: the base station has 4 transmitting antennas and 4 receiving antennas

⁴ MIMO technology: technology to multiply the capacity and spectrum utilization of the communication system without widening the bandwidth

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Leaky Cable Cross-Polarization 4T4R Solution Improves 5G Performance of Subway Tunnels

2. Innovative R&D of 5G power products

With the rapid deployment of 5G base stations on a large scale, the Company innovates product solutions, makes precise allocations, deepens sharing, maximizes the use of existing resources, and reduces redundant construction and waste of resources taking into account the actual situation of each site. In 2021, in response to the issues such as the high power consumption by 5G devices and the large volume of power supply renovation, the Company has worked with participants in the industrial chain to develop a 750V HV DC remote power supply system, outdoor integrated power supply technology solutions and products, modular power supply V2.0 products and differentiated power backup and battery controller products, which reduces costs, saves resources, decreases energy consumption and supports the rapid construction of 5G power supply.

(1) 750V DC remote supply

The small and micro base stations required for 5G network construction feature dense coverage and large number and power consumption, setting higher requirements on the power supply technology of the communication system. At present, domestic 240V and 336V HV DC power supply systems have long construction periods, scattered power backup, difficult maintenance, serious voltage drops and low system efficiency due to increased load. In this regard, on the basis of the existing DC remote power supply technology, the Company made innovation in increasing the system working voltage to 750V, which may reduce the line voltage drop by about 30%, double the power supply distance, and improve the energy efficiency of the power supply system to realize the cascade utilization of retired power batteries of electric buses, improve the availability, reliability, stability and safety the system, and promote the healthy and steady development of technologies related to the entire communication base station infrastructure.

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Case: 750V DC power supply solution to reduce 5G construction cost

In order to cope with the difficulties in power supply and high cost of 5G base stations, the Company adopted a 750V DC power supply scheme in Chongqing to install power supply devices at the local site and use cascade battery packs as backup power to provide long-distance power supply for nearby stations without mains introduction conditions, realizing the power supply for new 5G base stations and greatly reducing 5G construction costs.



Diagram of 750V HV DC Remote Supply System

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(2) New outdoor power supply product

To satisfy the new demand for efficient and fast 5G construction and resource saving, the Company has developed and upgraded an outdoor self-cooling power supply product suitable for small cells and C-RAN cells (including rooftop cells, pole and tower cells, etc.). It is an outdoor distributed power supply equipment designed for base stations. With high overall conversion efficiency based on a natural heat dissipation mode of operation, the product is suitable for AAU⁵ C-RAN scenarios, meeting the rapid deployment of one station one power supply. In line with the innovative trend of miniaturisation, energy efficiency and refined management, the product is simple without compartment/cabinet and air conditioning, and is equipped with innovative features such as shunt metering, remote power-on and energy-saving shut-off. The commissioning of the product enables flexible deployment of base stations, saving investment by approximately 34% and electricity costs by approximately 14%.



Diagram of outdoor integrated power supply

⁵ AAU: refers to Active Antenna Processing Unit, a new type of device introduced in the 5G network

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Case: Applying outdoor integrated power supply for efficient and fast 5G deployment

To lower the construction cost and speed up deployment of 5G base stations, the Company used an outdoor integrated power to supply power to 5G AAUs in Hangzhou, Zhejiang Province, which enabled the rapid and flexible deployment of new 5G base stations and reduction in the power consumption.



Site for application of outdoor integrated power supply

(3) Modular power supply V2.0

The Company has innovatively developed high-density modular power supplies, in response to the inflexibility of traditional modular power supply configurations and the lack of refined power management. In June 2021, the Company organised a pilot of a new modular power supply to validate the innovative features of the products of several power suppliers. The product's differentiated power supply and backup management functions can effectively address the technical challenges posed by the centralisation of operators' BBU⁶. The product is highly intelligent and effectively enhances the refined management of power supply configuration of the Company.

⁶ BBU: represents Building Base band Unite

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Case: Applying modular power V2.0 for refined management

In Hangzhou, Zhejiang Province, the Company innovatively applied the Modular Power V2.0 product, which has intelligent functions such as authorised on-hire and remote upgrading, and can implement the Company's refined control requirements through shunt control and accurate measurement.



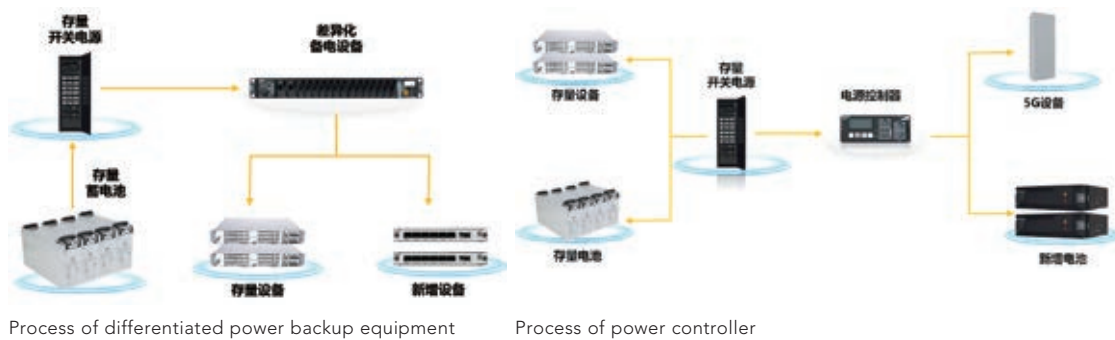
Site for application of modular power supply



(4) Differentiated power backup and battery controller

To achieve the goal of full sharing of stock equipment, saving resources and improving efficiency, the Company has innovatively developed differentiated power backup equipment and battery controllers. Differentiated power backup equipment can be used to meet the backup needs of different equipment under different control strategies, e.g. power backup hours, discharge time or voltage and power, making the best use of stock batteries and reducing additional capacity. The battery controller can control the link between the switching power supply, the battery and the new load equipment, so that the new load equipment and the battery can be isolated from the stock load during the discharge phase, enabling differentiated power backup for the new load and the stock load. Differentiated power backup equipment and battery controller enable the full sharing of stock batteries and switching power supplies under specific backup requirements and stock battery redundancy, effectively saving resources and enhancing the flexibility of equipment configuration to serve 5G construction economically and efficiently.

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3. Innovation of tower structure

To achieve green and sustainable deployment, and enhance the economic and efficient adaptability of towers to various construction scenarios, the Company has optimized and improved the Cost-effective Tower Standard Atlas V1.0 to form the Cost-effective Tower Standard Atlas V2.0. The Company has innovated a wide range of low-cost floor and ground mast products through initiatives such as simplification of ancillary structures, innovation in structural systems and optimal selection of raw materials based on customers' carrying requirements. Compared with traditional towers of the same type, height and wind pressure, the newly innovated tower type can effectively save resources and reduce construction costs by 10%~20%, effectively meeting the demand for low-cost mast construction in new urban areas, along high-speed rail lines and universal services.

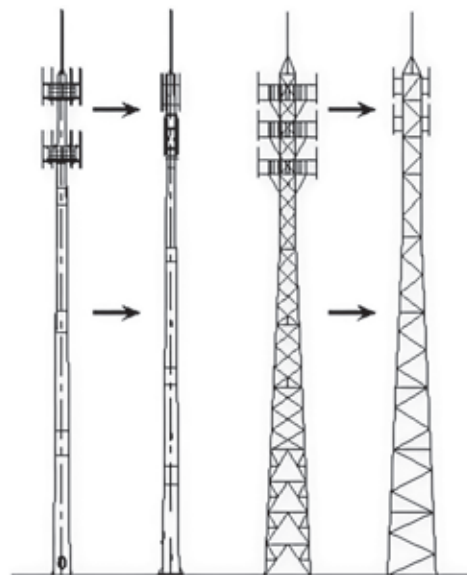


Diagram of Innovative Ground Tower Mast Product

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Case: Innovative towers are applied to meet multiple sharing scenarios

Innovative low-cost towers are applied to meet environmental integration needs, which help reduce handling and installation difficulties. With stronger mounting capacity, they effectively enhance the sharing potential of various types of towers. In 2021, in the Low-cost Tower Standard Atlas V2.0, the single-tube towers have been applied in 20 provinces such as Shandong, Jiangsu, Henan, Guangxi, Jiangxi and Hunan along the high-speed railway and in downtowns and counties, three-tube towers have been applied in 16 provinces such as Chongqing, Hubei, Shaanxi and Sichuan along the high-speed railway and in towns and villages, guyed mast products have been applied in universal service scenarios in eight provinces such as Yunnan, Sichuan and Heilongjiang. By the end of 2021, 529, 359 and 145 of the abovementioned three types of towers have been procured, respectively.



Example of low-cost single tube tower application



Example of low-cost three tube tower application

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Example of low-cost guyed mast application

4. Promotion of the development of industry standards

To promote the development of the industry and improve the core competitiveness of the industry, the Company promotes strengthening of the standard development and technological innovation, product development, test applications and other work in an all-round way, and actively participates in the development of industry standards to promote the development of the industry.

To meet the demand of parallel use of battery packs of different types in the communication base stations and to avoid wasting a lot of resources, the Company took the lead in compiling the industry standard Technical Requirements and Test Methods for Shared Management Equipment for Battery Packs for Communication Base Stations. The technology of battery pack sharing has solved the long-standing problem of isolation in the parallel use of multiple battery packs and provides a technical guarantee for sharing the same set of switching power supply by battery packs of different manufacturers, batches, capacities, types and floating charge voltage differences.

To meet the demand for power storage in base station in severe cold areas in winter and to improve battery safety, stability and green features, the Company took the lead in compiling the industry standard Lithium Titanate Battery Pack for Communication. Lithium titanate battery has the characteristics of low-temperature charging and discharging and high energy density, which can reduce the air conditioning configuration and power consumption of base stations, save floor space and meet the requirements for energy saving and consumption reduction of communication industry and sustainable development of society.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

(III) Digital Innovation for Empowering Development

The Company is building a digital base in accordance with the requirements of the published “14th Five-Year Development Plan Outline” and “14th Five-Year Plan for Digitalization”, leveraging data flow to smooth business flow, capital flow, material flow and talent flow, and promoting the optimal allocation of resources and improvement of total factor productivity by building new capabilities, so as to help the Company build a high-efficiency and excellent-operation core competitiveness. To build a digital pattern with characteristics of China Tower, the Company focuses on the strategic requirements of “one core and two wings” development, leverage the digital system to build an integrated platform-and scenario-based shared service capabilities, export comprehensive information services and new energy application services to the society, and catalyze new business breakthrough points.

In 2021, the Company continued to strengthen platform innovation and shared core capabilities mainly through the “Internet of Videos” application platform to enrich the reserve of capability resources in the digital age. At the same time, the Company strengthened the innovation of operation management and improved the IT support to empower various work and business scenarios and accelerate the integrated and lean management of the Company.

1. Continuously strengthen platform innovation

To better assist in the construction of Digital China and empower digital economy, the Company focused on customer needs, gave full play to the advantages of site resources, tower sharing platform and practical Internet of Things platform, strengthened product development and business model innovation, promoted the evolution of a single solution to a standardized product, and comprehensively launched the “Tower Monitoring” to provide customers with medium and mid – and high-point video information service.

“Tower Monitoring” builds a national unified video platform to realize the professional construction of the platform, unify the standard rules and empower business expansion. It innovatively establishes an open algorithm warehouse, and cooperates with various technology companies to integrate 131 algorithms, which provides users with flexible activation and plug and play customized services to support the continuous innovation and development of smart business.

2. Strengthen innovation of operation management

In 2021, based on its own strategic plan for digitalization, the Company deepened information technology innovation and integrated it into all levels of the Company to promote operational management efficiency. The Company continuously sought innovation based on its IT platform, enhanced its IT support capabilities, and continued to improve the efficiency of various professional management such as market operation, asset management, and supply chain management.

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(1) Intelligent and fine management of electricity bills

In market operation, the Company continues to strengthen fine management of electricity bills, strives to innovate the means of electricity bill management, and adopts the whole-process electronic management mechanism and system platform for electricity bills to realize the informationized, intelligent and systematic electricity bill management, which greatly enhances the fine management of electricity bills of the base stations. At the same time, through electronic management, the Company cooperates with customers to carry out equipment energy saving and helps customers reduce costs and increase efficiency.

(2) Multi-faceted application of artificial intelligence

To enhance its intelligent and fine management, the Company has applied artificial intelligence, machine learning and other technologies in several production and operation areas.

In respect of asset management, the Company has a huge number and a wide variety of outdoor towers and machine rooms. To address the problems of error-prone manual inventory, high costs and low efficiency, the Company introduces artificial intelligence technology in the tower inventory based on AI middle-ground capability, which effectively improves the efficiency and accuracy of asset inventory, greatly reduces labor costs and improves the quality of tower resource data.

Regarding financial management, for a large amount of procedural and repetitive bill auditing work, the Company introduces OCR technology based on AI middle-ground capability to automatically identify and compare structured data in financial bill and realize intelligent financial auditing. Since the system went online in July 2021, more than 88% of the bills have been automatically audited by robots, with an overall recognition accuracy of 92.23%, significantly simplifying the manual auditing process, improving work efficiency and audit accuracy, and promoting the Company's financial digitalization and intelligent transformation.

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II. Efficient management to consolidate foundation

Guidelines for sustainable development of China Tower

Insisting on standardized operation, the Company continuously improves the compliance system, builds a solid risk management system, and strictly enforces discipline to prevent corruption. In addition, it puts efforts into information security, implements patent management measures, strengthens supply chain risk management and conducts inspection to discover hidden dangers, so as to ensure safety and improve service quality based on demand. Through a high standard, high efficiency and high quality management mechanism, we further enhance our risk prevention and control ability, strengthen the foundation of the Company, improve corporate image, and promote the stable and healthy development of the Company.

Actions Taken by China Tower in 2021

Creating a corruption-free ecology to boost the Company's healthy development

- Continuously improved the three lines of defense with respect to the corruption risk prevention and control system
- Smoothed reporting channels
- Avoided corruption risks on the part of suppliers and partners
- Made propaganda and education efforts in honest operation

Strengthening risk management to promote the stable development of the Company

- Built a long-term effective risk and internal control management system
- Established a compliance committee to carry out a comprehensive evaluation of the Company's risks



Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Actions Taken by China Tower in 2021

Safeguarding information security and preventing network and data risks

- Promoted the organization and system construction of information security system and data security system
- Set up a network security and information-based management committee to coordinate efforts in network security and data security
- Built a data security control system
- Carried out security drills for network protection, network security training and various special inspection and assessment activities

Protecting intellectual property rights and shoring up corporate image

- Implemented the Measures for Implementation of Patent Management of the Company
- Made actively efforts in patent application with focus on the business development of the Company
- Ramped up propaganda efforts in compliance and formulated rules and regulations to regulate the use of brand image

Strengthening supply chain management to achieve mutual benefit and win-win situation

- Made continuous and further efforts in intensive procurement and developed the tower online business platform
- Strengthened the environmental and social risk management for suppliers
- Had a comprehensive sort-out of supplier data and promoted negative behavior management and post-assessment management for suppliers
- Adhered to the concept of “zero inventory” to keep the overall inventory size in check and improve inventory turnover

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Actions Taken by China Tower in 2021

Paying attention to work safety and avoiding safety hazards

- Built a safety management system
- Carried out safety education, training and emergency drills
- Carried out hidden risk screening and rectification to eliminate safety risks
- Safety control maintenance among partners

Improving service quality to meet client needs

- Opened up complaint channels and standardized the handling of customer complaints
- Innovated management methods and technical means to empower operation and maintenance work
- Better performance in business operation and maintenance year by year

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

(I) Intensifying efforts in creating clean ecology

The Company attached great importance to compliance operations, intensified efforts in creating clean ecology, complied with the Provisions on the Anti-Money Laundering Law of the People's Republic of China, Anti-Unfair Competition Law of the People's Republic of China, Clean Practice of State-owned Enterprise Leaders, and other laws and regulations, abided by business ethics and conducted compliance operations to protect the common rights and interests of both the Company and its stakeholders and promote the clean and healthy development of the Company.

In 2021, the Company deepened the investigation and rectification of specific related persons, continued to implement the system of the List of Companies Prohibited from Trading of the Company, revised and improved the Regulations on Prohibiting Business Transactions with Enterprises Run by Specific Related Parties of Leaders and Employees in Key Positions of the Company to promote compliance operations of the Company and prevent and control corruption risks. At the same time, the Company analyzed to find the key areas and positions with high prevalence of problems in combination with the special rectification and disciplinary review to constantly promote integrity construction and anti-corruption work.

The Company continued to improve the embedded integrity risk prevention and control system. On the basis of the three lines of defense, i.e., business supervision, audit supervision and disciplinary supervision, the Company has established a supervision committee composed of discipline inspection commission, auditing department, inspection department and other departments to further promote the sharing and coordination of supervision work. At the same time, in order to enhance efficient supervision, the Company has built and launched a "supervision platform" to make the entire process of supervision work visible, manageable and controllable. Through continuous exploration and practice, the supervision effect of the Company's supervision committee has been gradually demonstrated, and the sense of supervision responsibility of business departments has been continuously enhanced to substantially promote the clean and healthy operation and development of the Company.

The Company continued to strengthen the disciplinary inspection-related petitions and accepted reporting by such channels as letters, e-mails, telephone calls, and visits. Following the principle of "division of responsibilities by level, and centralized management", the Company dealt with different situations using four types of approaches, i.e., "interview and letter inquiry", "preliminary investigation", "temporary filing for investigation" and "case settlement", on various kinds of petitions. At the same time, the Company strictly managed the disposal process, requiring that disposal opinions and plans should be issued within one month from the date of receipt of the reported clues and the approval procedures should be fulfilled.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

On the procurement and external collaboration front, the Company required that the Integrity Assurance Contract must be signed before entering into a contract with a supplier, and both parties were required to carry out business collaboration strictly in accordance with national laws and regulations and the requirements of China Tower “Ten Prohibited Practices against Integrity”. Disciplinary inspectors of the Company, as the supervisory party, shall witness and confirm the signing process to ensure the integrity and transparency of procurement and external business cooperation. For cooperative units that violate the provisions of the Integrity Assurance Contract, the Company took disciplinary measures such as warnings, share reduction, and cancellation of shortlist qualifications to strictly prevent illegal business activities.

The Company continuously strengthened the educational activities on business integrity to enhance the employees’ awareness of integrity. The Company kept posting updates on this topic, giving publicity to risk prevention and control regulations, providing holiday anti-corruption reminders in conjunction with special purpose monitoring, and organizing employees to pay visits to integrity awareness building and educational agencies, holding the corruption case analysis conference of business departments and conducting anti-corruption training for new employees to improve the integrity awareness of its employees. In 2021, the Company held the awareness building and educational conference for leaders at all levels and employees in key positions to deeply analyze 11 typical cases as warning to promote rectifications and governance. A total of 5,816 employees participated in the conference. In 2021, eight directors of the Company (accounting for 100% of the Board members) received training on integrity education.



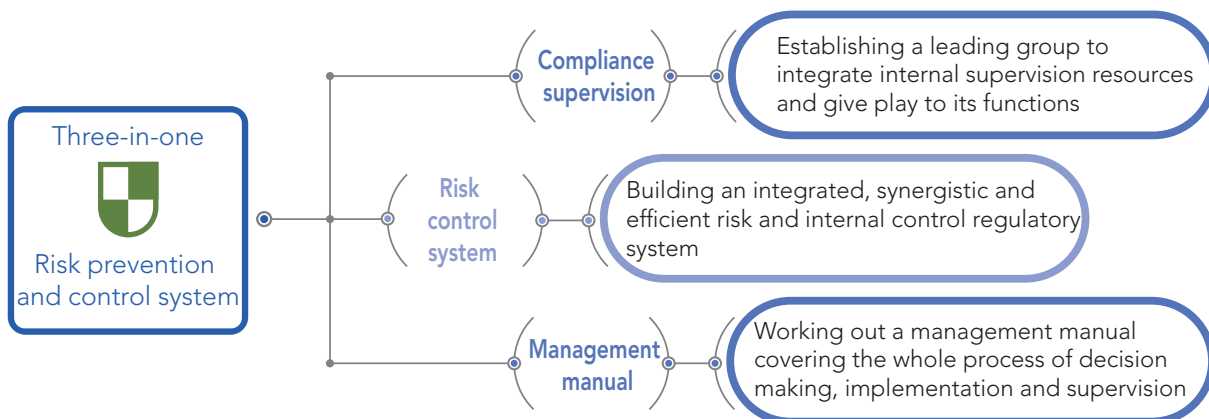
Business Integrity Warning and Education Conference

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In 2021, the Company had a total of two concluded legal cases regarding corrupt practices, and the relevant persons involved had been transferred to the public security organs for disposal in accordance with national laws and regulations.

(II) Enhancing abilities on mitigating and controlling risks

The Company was committed to establishing a long-term effective risk and internal control management system. Guided by risk prevention, and effective internal control and compliance management, and targeted at sustainable and healthy development, the Company strived to promote the integration of risk management, internal control and compliance supervision work systems and built a three-in-one risk prevention and control system. In 2021, the Company established the compliance committee, formulated its Risk and Internal Control Management Measures and Measures for Assessment of Risk and Internal Control Operations, issued its Manual of Risk and Internal Control Management, effectively enhanced the standardization of business control and operational compliance throughout the Company by means of conducting comprehensive assessment, etc., to ensure that the various risks of the Company are “visible, manageable and controllable” and form a long-term effective mechanism for risk management and control. At the same time, the Company carried out 10 special audits, including “tower-related revenue” and “large project management”, conducted regular audits and supervision in 31 provinces on a quarterly basis, prompted operational management risks and kept tracking and improving, further solidifying its risk management pattern.



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(III) Building a strong information security defence

The Company strictly complied with the Network Security Law of the People's Republic of China, Measures for the Management of Information Security Level Protection and other laws and regulations, continued to strengthen the systematic construction of network and information security and data security control, and comprehensively improved the information security protection capability in multiple dimensions, including regulations, organizational structure, technical implementation and education and training. In 2021, the Company's data security standards implementation work was selected by the Ministry of Industry and Information Technology as an "excellent case of overall data security standards implementation in the basic telecommunication enterprise industry in 2021", which was the only group-based standards implementation case among the selected excellent cases. During the year, the Company was rated as a Level 3 data management capability maturity unit by China Federation of Electronics and Information Industry, signifying that our data security management was robust.

1. Network and information security

The Company paid high attention to network and information security and continued to promote the construction of network and information security system. In 2021, the Company formulated the Network and Information Security Construction Plan, which established the overall security objectives and planned the construction direction and path.

In respect of security management system, the Company planned the implementation route in accordance with the overall security objectives, set up a network security and information management committee, and fully implemented the network and information security management responsibilities. Meanwhile, the Company carried out regular security operations, including account security operation and network security inspection, formed a security operation process of inspection, notification, rectification and retesting against vulnerability rectification, emergency response, etc., and continuously improved the network security management system construction.

In respect of the security technology system, in 2021, the Company strengthened the system compliance construction in the headquarters, improved application rules for data backup, password modification, log auditing, etc., and regulated the compliance operation of its security system. Meanwhile, the Company carried out the construction of zero-trust security technology system and security operation center system to continuously improve the Company's capability and level of network and information security.

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2. Data security

In terms of system construction, the Company continuously promoted the institutional development of a data security system to protect the security of its data and safeguard the privacy rights of users. In 2021, based on the industry standards including Data Classification and Grading Method of Basic Telecommunication Enterprises and General Requirements of Telecommunication Networks and Internet Data Security, the Company formulated the Data Security Management Measures (for Trial Implementation), Data Security Classification and Grading Implementation Rules and other institutional norms, which clarified the division of responsibilities of data security management departments, and strengthened the awareness of data security management of the responsible departments.

In terms of organizational construction, the Company attached great importance to the construction of data security protection system and established a data security management organizational structure at the company level, namely, setting up a network and information security management committee responsible for data security decision-making, and an office responsible for data security policies and strategies and handling of major issues. The data security management organizational structure was jointly built and cooperated by a number of departments in the Company, which cooperated with each other, laying a solid foundation for improving data security management.

In terms of system construction, the Company launched the special work on data security control according to the overall planning of network security, and based on actual business characteristics, further clarified the goal of building a data security protection system featuring classified, graded and differentiated security control on data by technology, with data as the core and system as the carrier.

Static data masking

The Company has deployed static masking products in the development and testing of important business systems to ensure that no real data appears in the software development and testing process.

Network DLP⁷

The Company has deployed network DLP on its Internet outlets to prevent sensitive data from being leaked.

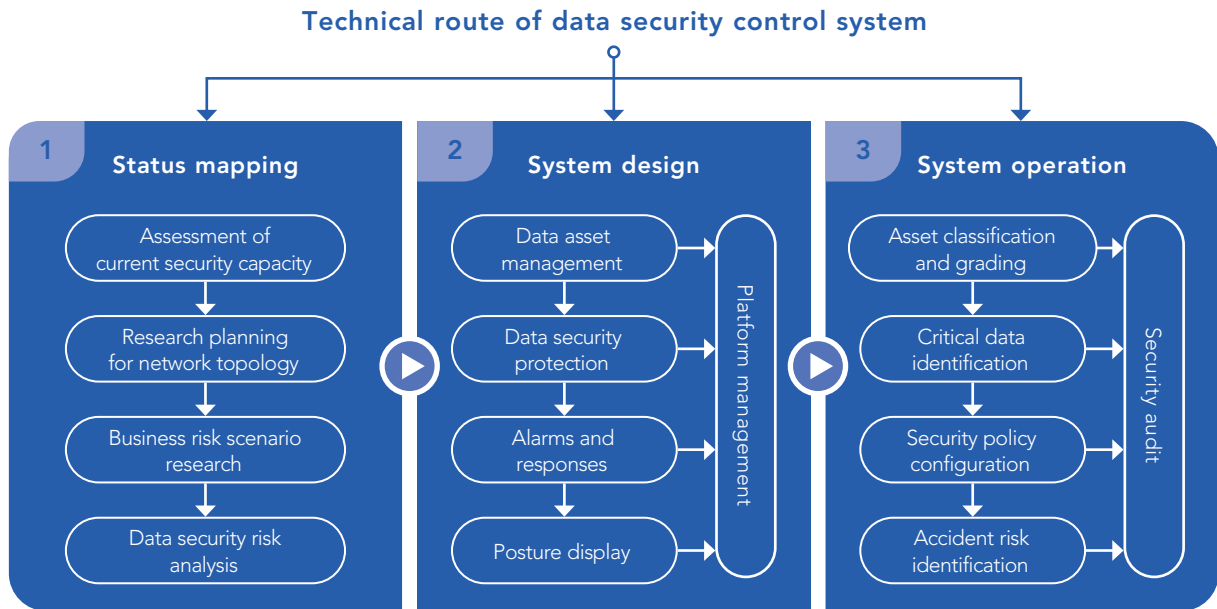
Data security audit

The Company has deployed data security audit products in important business systems to regularly audit data security operations and identify non-compliant operations

⁷ DLP: refers to data leakage prevention

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In 2021, the Company built a data security control system to centrally monitor and control the data security risks of important business, to report abnormal events and security risks in a timely manner, so as to achieve the goals of “visualization, quantifiability, perceivability, traceability, control, operability” of data security.



Technical route of data security control system and implementation steps

(IV) Strengthening patent and brand protection

The Company attached great importance to the protection of intellectual property rights, implemented the Company’s Measures for Implementation of Patent Management, adhered to the principle of efficiency and effectiveness orientation, actively carried out patent applications, and effectively protected the achievements of its own technological innovation.

With regard to patents arising from external business cooperation, commissioned innovative R&D, and other production and operation activities, the Company strictly required that the ownership of patent rights be specified in contracts or agreements. Meanwhile, the Company respected the intellectual property rights of others and specified the scope of patent use in the procurement and cooperation related contracts or agreements, and used the relevant patents strictly in accordance with the agreed scope to avoid legal disputes. The Company actively encouraged and guided the declaration of invention patents, and organized patent applications and patent audits in a unified manner, to safeguard its own rights and interests.

The Company conducted publicity activities on regulatory compliance in accordance with the Advertising Law of the People’s Republic of China, Trademark Law of the People’s Republic of China and the regulations of relevant authorities such as the Ministry of Industry and Information Technology. The Company has formulated the VIS Visual Identification Manual for all business to regulate the use of trademarks and brand images, supplemented by multi-channel external promotions and internal publicity activities, to convey the Company’s purpose of service and capabilities and levels to the public, and to enhance corporate image.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

(V) Promoting professional standard procurement

Adhering to the “open collaboration” philosophy, the Company worked hard to build up a supplier management system to ensure orderly competition and win-win collaboration, strengthened a double-layer (i.e. headquarters + provincial branches) intensive procurement management mechanism, strengthened the refined management of warehousing, explored and improved the overall management of the supply chain, intensified control over the environmental and social risks in the supply chain, and enhanced the standardization of procurement and the professional capacity of procurement.

1. Promoting intensive procurement

In 2021, the Company formulated the Procurement Implementation Rules (for Trial Implementation) and Procurement Document Template (for Trial Implementation) to regulate procurement practices and promote continuous improvement of procurement management.

In 2021, while continuously promoting the procurement model of “intensive procurement + e-commerce operation”, the Company integrated and optimized the Tower Online Business Platform and gradually implemented the whole supply chain management, improving the operational efficiency and achieving the lean management objectives.

In order to ensure the quality of materials sourced via intensive procurement, the Company organized the development of the “Implementation Rules for Quality Management of Intensive Procurement of Supplies”, the “Guiding Opinions on Standardizing Construction Service Procurement” and the “Plan for the Implementation of the Intensive E-commerce Procurement of Construction Services” on the basis of a closed-loop quality control system comprising “standards and specifications + network access testing + testing upon shipment arrival + strict performance management”, to further refine the standards and requirements of quality management, strictly control the quality and kept promoting procurement management.

2. Intensified supplier management

(1) Management of rights, interests and safety of suppliers’ employees

In 2021, the Company continued to enhance protection of the employees’ rights and interests and management of their safety. In the procurement process, the Company verified as to whether suppliers make social insurance contributions for their employees as one of the considerations in the supplier assessment process; continued to enhance safety management and control over construction and maintenance suppliers, required suppliers to obtain work safety licenses and appoint safety officers to regularly conduct routing inspections on supplier safety management, and adopted the veto mechanism against serious work safety incidents during supplier assessment activities.

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The Company also attached great importance to the management of the payment of migrant workers' wages by its suppliers, required them to strictly abide by the Regulations on Migrant Workers' Pay and other rules and regulations, regulated wage payment to migrant workers of them, to ensure that migrant workers were paid on time and in full.

(2) Post-assessment and negative behavior management of suppliers

The Company continued to strengthen the post-assessment management of suppliers. During the performance of relevant contracts, objectively assessed the performance of winning suppliers selected through tender. Upon completion of the contract, the supplier was evaluated on a 100-point scale for technology, quality, delivery, service, cost and settlement. Applying the results of such post-assessment to the next procurement project, we adjusted the quotas assigned to the suppliers based on the results of post-assessment, and granted rewards and imposed penalties on the suppliers based on their actual performance. For non-compliant suppliers, the Company imposed appropriate penalties on them in accordance with the Measures for Negative Behavior Management of Suppliers (for Trial Implementation).

(3) Comprehensive sorting of supplier data

To comprehensively sort out the supplier master data, the Company formulated the Measures for Management of Supplier Master Data (for Trial Implementation).

By Region	Quantity
Number of suppliers (in mainland China)	168,334
Number of suppliers (from Hong Kong, Macau and Taiwan or overseas)	38

Note: Suppliers were divided according to place of registration.

3. *Lean management of supplies*

The Company adhered to the concepts of "zero inventory" to keep the overall inventory size in check, gradually "digested" long-term inventory, improved inventory turnover, continued to recommend inventory clearance, and insisted on inventory structure control. In 2021, the inventory accounted for 3% of the annual purchase amount, 66% of which was inventory within three months.

(VI) *Strictly enforcing safety responsibilities*

The Company's assets are spread all over the country, serving the national economy and the people's livelihood, with a large scale and complex operations. Work safety is vital to the smooth operation of the Company's business, the personal safety of employees and social harmony and stability. As such, the Company has firmly established the concept of safety development and effectively put the concept of work safety into practice to boost its own stable and sustainable development.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

1. *Development of safety management system*

The Company continued to improve its work safety system in accordance with the Law of the People's Republic of China on Work Safety, and other laws and regulations, as well as relevant national and industry requirements, and formulated or revised rules and regulations of the Company such as the Regulations on Fire Safety Management, Implementation Rules for Work Safety Management of Energy Business, and Measures of Work Accident Reporting, Investigation and Handling, which provided system basis for work safety management of companies at all levels and guarantee for safe and quality services.

In 2021, the Company strengthened its organisational structure for work safety, establishing a Division of Security at the head office and setting up safety committees in 31 provincial branches and over 380 local and municipal branches to effectively implement safety management responsibilities and promote work safety management.

At the same time, the Company summarised and drew on advanced management experience in internal and external safety production, and promoted the application of a series of best practice cases tested in practice in a standardised, process-oriented and institutionalised manner throughout the Company, achieving practical results.

Embedding construction and maintenance safety disclosure into the management process

The Company exercised strict control over "entry" and "exit" aspects of site operations, as well as key actions such as online check-in, online disclosure and online verification, and used information technology to strengthen construction process management.

Introducing digital safety quality controls

On the basis of cooperation with Huawei to pilot AI cloud quality supervision, the Company explored and adopted the information management mode, and optimized the function of the safety production platform, to achieve networked information reporting and safety information sharing, stay updated with the construction process and effectively monitor key aspects.

Standardizing contracting management

The Company implemented a filing system for professional subcontracting and labour subcontracting to construction units, to achieve full coverage of employment management in cooperative units, eliminate subcontracting, illegal subcontracting and dependency.

Developing safety device

The Company developed and applied fall protection devices for construction work at height, learned lessons from the pilots, improved details, expanded the scope of application, overcame the difficulties of working on existing towers at height to avoid injuries and deaths from falling heights.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

2. *Development of work safety culture*

The work safety culture plays a vital role in achieving sustainable and rapid development and long-term safety and security in production. Since its establishment, the Company has insisted on holding regular safety committee meetings to deploy work safety priorities and implement safety responsibilities, as well as holding occasional work safety warning education conferences to enhance the safety awareness of all staff. At the same time, the Headquarters signed a letter of responsibility for work safety with all provincial branches to implement safety responsibilities at all levels and strengthen work safety management.

In 2021, the Company held “Work Safety Month” and other themed activities, and performed work safety warning education and campaigns, emergency plan drills, work safety education and training and special activities such as workplace investigation for hidden dangers. These activities improved coordinated response capability and practical skills of staff members, building up a line of defense. In this year, the Company carried out more than 400 trainings and emergency drills of various types, attracting 12,000 participants.



Work safety warning education conference



Fire drill

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements



Work safety emergency drill

3. Strengthen safety risk prevention

In order to strictly investigate potential risks, prevent risks, avoid personal injuries arising from accidents and improve the level of work safety management, in 2021, the Company focused on the deployment of prevention work from the aspects of key potential risks investigation and safety risks in new fields, and made efforts to eliminate safety risks.

In terms of potential risks investigation, the Company made a unified deployment to carry out the activity of “fully identifying and thoroughly investigating and rectifying potential safety risks” in the whole system, and determined a total of more than 220 specific inspection items involving eight professional fields, including communication development, operation and maintenance, industry expansion, energy operation and comprehensive management. Since the launch of the activity, the Company has investigated more than 2 million telecommunications base stations, and completed the rectification of potential fire risks for 37,000 items, rectification of potential tower falling risks for 20,000 items and rectification of potential electric shock risks for 27,000 items, strengthening the Company’s work safety management and effectively preventing major safety risks.

In terms of safety risk prevention in new fields, the Company paid attention to the safety of energy business and Two Wings business platform, strictly implemented maintenance specifications, timely handled all kinds of alarms, and carried out equipment monitoring, management, and maintenance for battery exchange business, power backup business and battery charging business. The Company adhered to problem orientation and result orientation, established the rules and regulations for improving business audit and launch process on the platform, specified the standardized processes such as launch, upgrade and emergency treatment, strengthened the ability of daily maintenance drill, improved team cooperation, and continuously improved the stability and security of the platform.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Case: Rectification of existing towers and strict investigation of potential risks

In 2021, the Company carried out nationwide thorough investigation on the existing towers with a relatively weak safety foundation, organized the investigation and rectification of potential risks for towers, external transmission lines and batteries, truthfully recorded and carried out closed-loop rectification of potential risks, and implemented the renewal and transformation of towers, which greatly enhanced the robustness of existing sites and avoided the safety risks of towers.



Rectification of existing towers

Case: Identifying key hidden dangers and problems to eliminate risks

In 2021, in light of its own condition, the Company continued to identify hidden danger in respect of tower collapse, fire, electric shock and operation safety according to the requirements of safety production management. The Company primarily checked the uninsulated bare wires of the external power lines and the AC equipment loaded by the tower, eliminated fire hazards in 160,000 base stations and transmission and distribution lines located in the forest and grassland area, and focused on key links such as mast reconstruction, external power access and reconstruction, and high-altitude operations for operation safety hazards, to effectively identify key risks to personnel, machinery, and the environment. Through the identification of key hidden dangers, the Company rectified major hidden dangers and eliminated major risks, ensuring stable and safe operation.



Identifying key hidden dangers

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

Case: Identifying hidden dangers in battery exchange, focusing on new business risks

Battery exchange business is deployed in urban streets and densely populated areas, power backup business mainly serves banking, medical care, education, transportation and other key industries, and battery charging business serves community residents. In this regard, the Company required branches at all levels to strictly follow the maintenance specifications and handle all kinds of alarms in time. For battery exchange business, faulty batteries should be separated upon identification and sent for rework; power backup and power generation business is fully integrated into unified monitoring and management, and with regard to the battery charging business, the focus should be placed on ensuring grounding protection of charging piles.



Identification of potential risks for battery exchange cabinets

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

4. *Safety of maintenance personnel among commissioned partners*

The Company continued to strengthen personnel safety management among its commissioned maintenance service partners, and revised and improved the Measures on the Management of Commissioned Maintenance Operations of the Company. In accordance with the requirements of the new measures, companies at all levels strictly implemented safety production operations, and carried out beforehand, in-process and post-operation whole-process management so as to ensure standardized commissioned maintenance operations and effectively prevent safety risks. The Company further required cooperative units to improve the safety production responsibility system for all employees from the person in charge of the enterprise to the front-line employees, and specified the requirements for the responsible personnel, scope of responsibility, content of responsibility and assessment at each level and position to ensure proper safety production organization and management, and safety risk control.

The Company signed the Safety Production Management Agreement with each cooperative unit, and required cooperative units to carry out self-examination and self-correction under the agreement and rectify the problems found in time, in order to promote improvement by rectification and continuously improve the safety production management of cooperative units. The Company continued to require each partner to sign a labor service contract or employment agreement (including safety clauses) with their employees at all levels. The Company has formed a formalized education and training mechanism. By providing on-site training, online training, and accident warning education from operation and maintenance departments at all levels, the Company enhanced the training and in the meantime, organized professional capability assessment in stages to promote the training and learning, continuously enhanced the safety production awareness of the employees of the commissioned partners, and improved the ability of safety production risk control of the employees of the commissioned partners.

For emergency rescue operations, the Company has specified requirements of reinforcing publicity and education and emergency drills during the emergency rescue. The Company made persistent efforts in work safety knowledge reinforcement and standard operation skills training, which included work safety equipment check and work safety clarifications in assembly, work safety briefing, work safety reminders in the process of assurance, on-site assessment of the risk exposure scene, and made an emergency plan for safety production problems to ensure the safety of personnel and property in emergency rescue production operations.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

(VII) Continuous improvement in service quality

The Company adhered to the philosophy of “being consistently client-focused for ongoing improvement of services, eliminating drawbacks, and improvement of client satisfaction”, intensely promoted the transformation of operation and maintenance centering on “service improvement, efficiency improvement, benefit growth, and risk prevention and control.” The Company made every effort to maintain services and site operations, strived to improve the ability and level of refined management, continuously improved customer satisfaction, and improved site operation effectiveness to support the Company’s high-quality development.

1. Handling customer complaints

The Company continued to implement the client service representative and dedicated customer service agent systems in 2021 and implemented routinized communication mechanism both among the leaders and employees to ensure prompt response to client requests.

The Company has continually improved the complaint processing mechanism, established multiple online and offline complaint filing channels. Online, through “China Tower online service” WeChat official account and 10096 hotlines and other filing channels, the Company encouraged all branches to direct their customer complaints for centralized management, supervision, and evaluation. For the Company to have well-structured complaint management and resolve the request of customers in a timely manner, the Company has developed a service upgrade process, from employees to leaders, local cities to headquarters, to ensure a satisfactory and closed-loop solution for every service problem. Offline, the Company implemented communication mechanisms such as regular service meetings and maintenance meetings, regularly submitted service quality reports, learned about customers' needs, provided timely feedback on the progress of solutions, and showed the results to win recognition. In 2021, three telecommunication companies filed 3,063 service complaints through “China Tower online service” platform. As of the end of 2021, the percentage of verification and cancellation was 99%.

The smart tower business was primarily for government and enterprise (G&B) customers. The Company implemented account manager responsibility system, where the account manager visited customers regularly and irregularly to provide one-to-one and face-to-face service for customers, to keep abreast of the customers’ usage of products and changing needs to address customer service issues. Regarding the energy business, the Company implemented the “Management Measures of China Tower Energy Customer Service (for Trial Implementation)”, clarifying the grading of customer complaints, processing principles, processing process and processing time frame. The Company established a regular working mechanism such as monthly customer service briefings, set up Tower Power Swap APP, tower charging service number and other online filling channels, and made tracking management during complaint processing process on the work order platform to improve customer service quality.

Strengthening the Innovation Driving and Boosting Enterprises by Science and Technology to Show Remarkable Achievements

2. Assurance of operation and maintenance support

In order to improve the operation and maintenance capacity and support its high-quality development, the Company innovated management methods and technical approaches that focus on enhancing the ability of clients service, station retention, and digital governance. During the year, the Company adhered to the concept of value creation and innovation, promoted the application of digital and intelligence operation and maintenance functions, improved the level of lean management of station operations, improved production management efficiency, and prevented operational risks. The Company insisted on the problem and risk orientation, analyzed and studied production management problems carefully, and implemented a supervision linkage mechanism to further improve risk prevention and safety production capacity.

In response to an increase in the national power outage rate, the “July 20th” flood in Zhengzhou, and the impact of the typhoon “Fireworks” on communication services in 2021, the Company achieved a 99.0% success rate in terms of power outage and network exit duration in different cities and operators, an average service disruption caused by power failure of 9.0 minutes/station/month, and a service disruption ratio caused by power failure of 5.0%. There was also a significant reduction of stations experiencing super-frequency network exit and super-long network exit on average each month as compared with that of 2020, further enhancing the reliability of maintenance supply. At the same time, the Company was rapidly promoting standardized management. As of the end of 2021, the signing rate of energy commissioned maintenance operations contracts was 100%. For the energy equipment and sites, the allocation rate of order receivers responsible for handling alarm work orders reached 99%, and the timely rate of fault handling exceeded 99%. The maintenance responsibilities of the Company were solidly fulfilled.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Committed to the
formation of ecological
culture

Facilitating the improvement
of public well-being

Caring for employees to
achieve development



Fulfilling Social Responsibilities and Achieving New Results in Green Development

I. Committed to the formation of ecological culture

Guidelines for sustainable development of China Tower

The Company implemented the philosophy of green development in response to the government's requirements on "carbon peak and carbon neutrality". It paid continuous attention to climate change, assisted in the optimization of social energy structure and green and low-carbon development, and made efforts in ecological environmental protection.

In terms of business, the Company reduced energy consumption and emissions through measures such as the use of clean energy at sites, tower co-construction and sharing, asset recycling, echelon battery utilization, and intelligent operation and maintenance; in terms of administration, the Company continuously promoted green office model and improved employees' awareness of environmental protection and conservation; in terms of procurement, the Company actively identified environmental risks in the supply chain and effectively reduced the environmental impact of the procurement process; in terms of ecology, the Company paid attention to pollution prevention and control in the construction process to reduce the negative impact on environment, and fit the sites in the ecological environment through the plan upgrade and technology advancement, to contribute to the construction of a beautiful China.

Actions Taken by China Tower in 2021

Pay attention to climate change and actively respond to risks

- Identify climate change-related risks and opportunities
- Develop climate change countermeasures

Advocate green development, rationally use resources to achieve energy saving

- Use clean energy at tower sites, optimize energy structure
- Deepen the co-construction and sharing of towers to achieve low-carbon goals
- Reduce power consumption by cascade utilization of batteries at base stations
- Promote resource conservation by recycling of dismantled materials
- Develop intelligent operation and maintenance methods to help save energy and reduce consumption



Fulfilling Social Responsibilities and Achieving New Results in Green Development

Actions Taken by China Tower in 2021

Advocate green office and implement the concept of energy saving and environmental protection

- Save office electricity and water
- Vigorously promote paperless office
- Actively green the office environment

Implement green procurement and jointly resist environmental risks

- Continuously monitor carbon emission of major products
- Promote paperless e-procurement application
- Utilize dismantled warehouse materials

Create an ecological environment for a harmonious landscape

- Strictly control construction pollution and reduce the impact on the ecological environment
- Harmonize the construction of base stations with the scenic environment by fully using existing social resources



Fulfilling Social Responsibilities and Achieving New Results in Green Development

(I) Active response to climate change

In addition to changing and affecting the global ecosystem and natural environment, climate change also has a profound impact on social and economic development and enterprise development. In 2021, the Company fully identified the risks and opportunities of climate change from the perspectives of strategy, market, finance, operation, and law, and actively took countermeasures.

Types of Risks and Opportunities	Risk and Opportunity Description	Countermeasures
Acute risk	Extreme weather may damage infrastructure such as tower sites, battery cabinets, and computer rooms, resulting in loss of fixed assets and pollution of the surrounding environment.	The infrastructure is designed to be weather-resistant during the design phase. According to the frequency and scale of natural disasters in that year, timely assess their impact on assets and environment.
	Extreme weather may lead to disruption in construction, longer construction period and increased investment.	In the early stage of the project, fully consider the local climate factors, and include the cost of work delay resulting from extreme weather in the investment accounting during the construction cost stage.
	Extreme weather may damage the health and safety of construction and operation personnel.	Develop emergency plans for extreme weather in the construction plan and operation and maintenance program documents, and provide staff with complete labor protection measures.
Chronic risk	Global warming will lead to an increase in the energy consumption of air conditioning and an increase in the Company's operating costs.	Regularly evaluate and monitor the use time and energy consumption of air conditioners at sites, computer rooms, and offices, adjust regulations on air conditioning use in a timely manner, and evaluate the financial impact of increased energy consumption costs.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Types of Risks and Opportunities	Risk and Opportunity Description	Countermeasures
Transition risk	<p>In terms of science and technology, with the development of 5G technology, the communication infrastructure will be more densely distributed and energy consumption will increase, and enterprises will face greater challenges in the research and development of low-carbon technologies.</p> <p>In terms of laws and regulations, relevant agencies will have higher requirements for energy consumption and environmental protection during construction and operation.</p> <p>In terms of the market, with the promotion of 5G technology, the scale of mobile networks has surged, resulting in an increase in the demand for tower construction, which may have an impact on the Company's overall energy consumption and greenhouse gas emissions.</p>	<p>Eliminate energy-intensive facilities in a timely manner. Cooperate with value chain partners to research how to improve energy efficiency of equipment and hardware to save energy and reduce carbon emissions.</p> <p>Strictly abide by the procedural requirements of environmental impact assessment, energy conservation assessment, water resource assessment in the preliminary stage of the project, and continuously improve the enterprise's environmental and energy management system.</p> <p>Regularly formulate and improve energy consumption plans to control the impact of the surge in infrastructure scale on the Company's overall energy consumption and greenhouse gas emissions.</p>
Product/service opportunities	<p>With the increasing consumption of resources, the market has a more noticeable inclination towards the shared service model and the intelligent operation model</p>	<p>The tower co-construction and sharing mode effectively enhances the efficiency of resource utilization, and intelligent operation and maintenance methods effectively reduce operating costs.</p>

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Types of Risks and Opportunities	Risk and Opportunity Description	Countermeasures
	<p>With the strengthening of the greenhouse effect and the rise in energy costs, the market has a stronger preference for reuse, low energy consumption, new energy and other types of products</p>	<p>The cascade utilization of waste batteries reduces the cost of power backup and waste emissions, which helps achieve efficient deployment of 5G base stations with low energy consumption.</p> <p>Research energy solutions like the cascade utilization of batteries, to enhance the available life cycle of the batteries and have batteries feature economic, environmental and social benefits.</p> <p>Research and develop renewable energy site, use the natural conditions of the location of the sites (such as solar and wind energy) to supply power to the sites so as to reduce commercial power consumption and indirectly reduce greenhouse gas emissions.</p>

(II) A champion of green development

The Company strictly abided by the Law of the People’s Republic of China on Energy Conservation, integrated the concept of green development into its One Core and Two Wings business, deepened sharing and recycling, optimized resource allocation and reduced resource consumption. The Company enriched the energy structure and created the clean energy sites; the cascade utilization of batteries helped realize low energy consumption operation in communication and energy businesses. At the same time, the Company also actively carried out intelligent innovation and devoted itself to reducing consumption of resources in traditional human operation and maintenance mode. The implementation of various energy-saving and emission-reduction measures contributed to the green and sustained development of the Company’s businesses.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

1. Clean energy use at tower sites

The electricity utilization of 5G equipment is about 2-3 times that of 4G equipment, with the rapid deployment of 5G networks, the electricity utilization of base stations increased significantly. To promote the green development of communication networks and key facilities and to facilitate the comprehensive green transformation of social and economic development, the Company took into full account the distribution of renewable resources in different regions and actively promoted the construction of new energy base stations. As of the end of 2021, the Company had 15,000 clean energy sites nationwide, of which solar power sites accounted for 90%, mainly located in areas with good lighting conditions, such as Tibet and Xinjiang.

Case: Solar power stacking and off-grid solution application supporting 5G green construction

In Tianjin, in places with sufficient light conditions, the Company actively explored the use of solar power to build stacked light systems to reduce electricity consumption and save construction investment, supporting the 5G green construction.

In Heilongjiang, for remote stations where outside city grids are unavailable and local wind and light conditions are sufficient, the Company actively utilized abundant solar and wind power resources to build distributed energy supply systems to meet the power demand of base stations, effectively reducing power consumption and helping the industry save energy and reduce emissions.



Tianjin Jizhou Stacked Light Base Station



Heilongjiang Fenghuangshan Wind and Light Base Station

Fulfilling Social Responsibilities and Achieving New Results in Green Development

2. Deepening the joint construction and sharing of towers

Relying on its resource advantages, the Company creatively promoted the two-way transformation of "social towers" and "telecommunication towers", continuously promoted industry sharing towards social sharing and continued to expand the context of sharing. At present, the Company has been deepening cooperation with State Grid and railroad projects, promoting the joint-construction of electricity and railroad infrastructure. At the same time, the Company made full use of social towers to meet the demand for 5G base station construction in most cities.

With the deepening of the joint building and sharing model, the Company's resource saving extent continued to be intensified. In 2021, the Company saved 364,000 tons of steel, 2,912,000 tons of concrete and 6,120,000 A of switching power through joint-construction, which was equivalent to a reduction of 1.99 million tons of greenhouse gas emissions.



The Company planned to continue to promote the joint-construction model in 2022 to achieve the following resource saving targets:

- 260,000 tons of steel used in towers
- 2.08 million tons of concrete
- 3.84 million A of switching power

which was equivalent to a reduction of 1.41 million tons of greenhouse gas emissions.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

3. *Recycling of dismantled materials*

The Company strengthened the whole life cycle management of assets, carried out refined operation management focusing on the availability, efficiency and service life of equipment and facilities, conducted in-depth research on equipment life extension and integrated reusing, standardized the management of dismantled materials, and strived to improve the efficiency and effectiveness of resource utilization.

Case: Innovative tower revitalization solution maximizing the value of dismantled towers

In Anhui, under the premise of ensuring safety and with the principle of the overall revitalization of the towers, the Company explored and implemented two innovative solutions of height increase of quality short tower and height reduction and load increase of low-load high tower by making full use of old resources, namely, increasing the tower height by adding the tower flange connection for certain towers with strong loading capacity, and increasing the tower carrying capacity by reducing the tower section and lowering the height of the first floor for certain towers with insufficient loading capacity, so as to fully exploit the value of dismantled towers. Through these innovative solutions, the Company reduced the resource investment of new station site and improved the efficiency of tower use.



Site of height increasing of high-quality low tower



Site of height reduction and load increasing of low-load high tower

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Recycling the switching power supplies to realize value-added material acceptance

In Anhui, the Company actively achieved the asset life extension and appreciation by dismantling old switching power supplies and integrating switching power supplies for the two scenarios of transforming and replacing switching power supplies, and one-site multi-switching power supplies. It solved problems such as different manufacturers, transformation from single-phase to three-phase, and insufficient capacity, to maximize the value of dismantled switching power supply materials. Meanwhile, the Company standardized the management processes such as storage, inventory, integration, procurement of upgrading and transformation services, as well as ex-warehouse of dismantled switching power supplies, strictly controlled scrapping, strengthened recycling through centralized program control, effectively reduced the consumption of power supply supporting facilities, helped to build resource-saving base stations, and promoted the green development of operators' business.



Transformation test of dismantling the old switching power supply



Recycle site of dismantling the old switching power supply

4. Battery renewal and recycling

(1) Battery renewal and transformation in base stations

The reuse of cascade batteries maximized the use value of products at a lower cost and extended the service life of automotive traction battery products. While reducing the cost of power backup for communication base stations, it also reduced the emissions from waste batteries, which had economic, environmental and social benefits. The Company fully tapped the utilization potential of cascade batteries, published standards for cascade battery enterprises, cooperated with leading vehicle companies, and purchased cascade batteries in a centralized manner for power backup scenarios in base stations to reduce the cost of power backup for base stations.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

In 2021, according to the annual battery renewal and transformation plan, the Company renewed and transformed base station batteries with potential safety hazards, serious damage due to natural disasters and other reasons, and insufficient discharge capacity. Except for scenarios with high fire protection requirements such as subways, airports, party, government and military office buildings, densely populated areas, flammable and explosive areas, etc., the Company prioritized the use of cascade lithium iron phosphate batteries in line with the concept of circular economy as much as possible in the renewal and transformation for base stations and 5G power backup transformation. As of the end of 2021, the Company used 510,000 sets of cascade batteries in 250,000 base stations, totaling 3GWh.

Case: Cascade utilization of retired batteries to save resources while ensuring power supply

China Tower is the only enterprise to pilot the cascade utilization of traction battery, designated by seven ministries and commissions including the Ministry of Industry and Information Technology. Since June 2018, retired cascade batteries have been widely employed in the field of power backup for China Tower's base stations across China. Taking Henan province as an example, retired cascade batteries were covered to 28,000 base station power backup scenarios, producing a total installed capacity of 69.4 MWh, which equaled consuming about the retired batteries for 13,800 passenger vehicles. Used in combination with the existing lead-acid batteries, retired batteries for echelon use can provide continuous power assurance, which reduces the scale of battery procurement and scrapping, resources consumption, and the generation of hazardous waste.



Cascade utilization of retired batteries in Henan base station

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(2) *The use of cascade batteries in energy operation businesses*

The Company focused on the battery exchange and power backup platform research for its energy operation businesses, advanced cooperation in cutting-edge technologies, gradually realized the Company's innovative applications in the area of cascade utilization of retired batteries, explored intelligent technologies for using cascade batteries in peak-to-valley regulation, to better serve the goal of "carbon peak and carbon neutrality" and help communities to optimize energy structure and achieve green and low-carbon development.

Case: Application in user-side energy storage to facilitate green economic development of enterprises

In Henan province, the Company provided integrated solutions of standardized storage of 500 kWh for large manufacturing enterprises with an annual power consumption of 720,000 kWh of electricity, in which retired original package batteries of passenger cars and buses were directly applied to provide 8-hour continuous power assurance. At the same time, the Company adopted the strategy of peak load shaving and load valley filling to both reduce grid load peaks and electricity expenditure of enterprises, so as to help enterprises operate efficiently, reduce costs and increase efficiency, and achieve green development.



Cascade utilization of retired batteries



Standardized reserve cabinet

Fulfilling Social Responsibilities and Achieving New Results in Green Development

5. Green intelligent operation and maintenance approaches

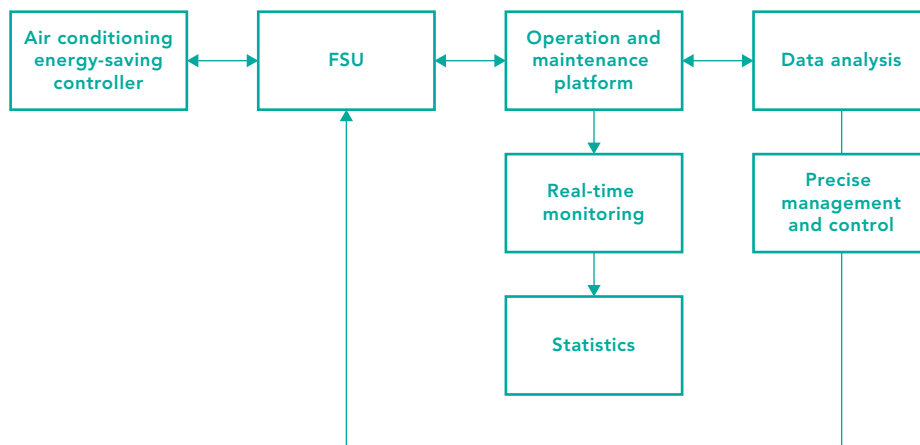
The operation and maintenance of facilities constitute an important part of the Company's cost investment and an essential focus in efficiency improvement. The Company continued to promote intelligent innovation, deepened the work of using the old equipment, and accelerated green and intellectual transformation of facility operation and maintenance.

(1) Intelligent operation and maintenance

The Company adopted approaches including intelligent capital management and inspection and intelligence on the station to greatly reduce the number of times of daily asset inventory, routing inspection on the station and station with the work of maintenance personnel among commissioned partners. At present, the staffing requirement for the front-line personnel of the commissioned maintenance operations is four people per 100 stations. Thanks to the application of intellectual approaches, 0.5 people can be saved per 100 stations. Currently, such technology has been promoted and applied to 5,000 stations, saving a total of RMB21.50 million in labor costs and RMB9 million in gasoline and diesel fuel costs, totaling about 1.2 million liters in 2021.

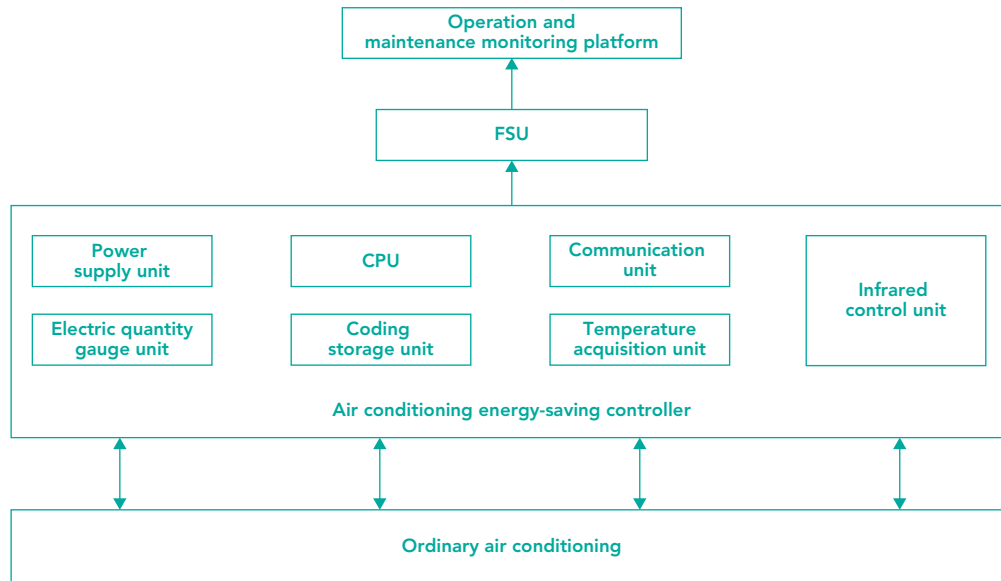
(2) Automatic energy-saving management and control of air conditioning

During the year, the Company carried out the automatic management and control of air conditioning in an all-round way, urged the field supervision manufacturers to fully complete the FSU upgrade, simultaneously launched the automatic management and control functions of various special air conditioners, centrally analyzed the operation status of automatic management and control at the headquarters, and dealt with abnormal problems in operation in stages. Taking intelligent management and control methods to manage the energy consumption of air conditioners, the Company went a step further towards refined and intelligent green transformation.



The diagram frame of air-conditioning adaptive energy saving system

Fulfilling Social Responsibilities and Achieving New Results in Green Development



The schematic diagram of air conditioning energy-saving monitoring



Energy saving goal:

In 2022, the automatic energy-saving management and control rate of air conditioners in the Company's base stations will reach 80%.

(III) Vigorously advocating green offices

The Company strictly complied with the Law of the People's Republic of China on Conserving Energy, implemented the Water Law of the People's Republic of China and promoted energy-saving and emission reduction among employees through various ways. The Company was engaged in office greening. We have been working on tightening up electricity and water consumption control and advocating the use of water-efficient appliances and paperless offices. The Company helped build a green office environment and promoted the sustainable development of enterprises.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

1. *Green office initiatives*

The provincial and municipal branches nationwide all made active efforts. Focusing on improving resource utilization and emphasizing water saving, energy saving, cost saving, and comprehensive utilization of resources, they advocated the active involvement of all employees to maintain a green office environment. Some branches also drew on advanced experience to promote the green and standardized management of comprehensive building for production, developed and issued the company-wide Action Plan of Energy-saving and Emission Reduction in Green Office, and standardized administrative logistics management to create a green, economical, comfortable and safe working atmosphere from energy saving and low consumption, safety and health, comfort and pleasantness and other aspects.

<p>Energy saving</p> <p>Using floor insulation materials, the system is intelligently set to not lower than 26 degrees Celsius in summer and not higher than 20 degrees Celsius in winter, reducing environmental energy consumption.</p>	<p>Electricity saving</p> <p>Use intelligent management and control means such as power operation and maintenance cloud platform to grasp the power consumption of each floor in real time. Use inductive lighting to make the lights go out when people walk away; use solar energy and other energy-saving electrical equipment and strictly control electricity consumption to ensure electricity safety.</p>	<p>Water saving</p> <p>Strengthen the daily inspection of water pipe network and equipment, eliminate the phenomenon of leakage and venting, use water-saving equipment; encourage and advocate all staff to develop good personal water habits.</p>
<p>Paper saving</p> <p>Make full use of the network office, reduce the printing and distribution of paper materials, print on both sides of non-external reporting materials as much as possible, and use black and white printing for non-final reports as much as possible.</p>	<p>Frugal dining</p> <p>Advocate taking meals on demand, practice the "Clear Plate Action", return meal plates by yourself, establish good meal habits, and promote "big civilization" with "small dining table".</p>	

2. *Energy saving and environmental protection in the park*

Since the relocation of the Company's headquarters to China Tower Industrial Park, it has always emphasized the implementation of energy saving and emission reduction and the promotion of environmental protection measures.

(1) *Energy saving and consumption reduction*

The Company prioritized the use of energy-saving electrical equipment in the industrial park and strengthened energy-saving advertisement, arranged special personnel to conduct patrol floor by floor after work, and turned off unnecessary lighting equipment. The Company formulated a time-based operation plan for the air-conditioning in the park: the remote control system is used to ensure that the air-conditioning is turned off during non-working hours, and the wind speed of the air-

Fulfilling Social Responsibilities and Achieving New Results in Green Development

conditioning in the public area is controlled at the lowest level to ensure that the temperature is not lower than 26 degrees Celsius in summer; the air-conditioning in some buildings is turned off three times regularly based on the daily working hours; during the heating season, the air-conditioning in the park is forcibly turned off. At night, the Company arranges special personnel to close the doors and windows to reduce the temperature drop and heating energy consumption. At the same time, the Company prepared softened water for heating system circulation by itself, which greatly prolonged the service life of the heating system and reduced maintenance and replacement costs.



Electricity saving goal:

Based on 2021, by the end of 2022, the per capita power consumption of the Tower Industrial Park will be reduced by 3%.

(2) Water saving

The principle of water saving has been running through the industrial park from the very beginning of its design. Various water-saving advertisements were posted at water sites, sensing water-saving faucets were widely used in toilets, and reclaimed water was used for toilet flushing and park irrigation.



Water saving goal:

Based on 2021, by the end of 2022, the per capita water consumption of the Tower Industrial Park will be reduced by 3%.

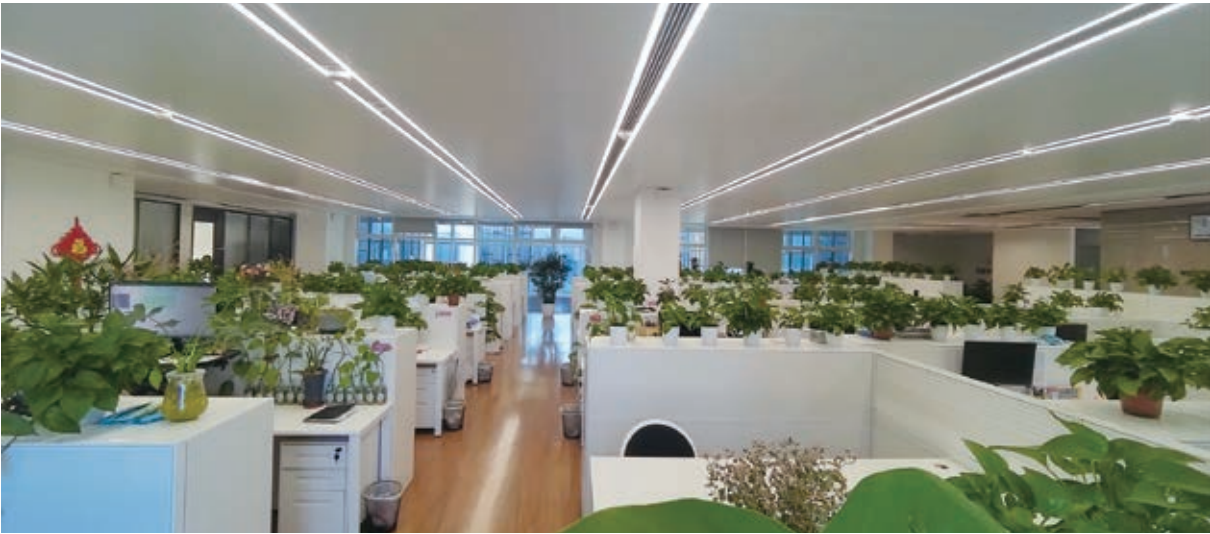


Auto sensing faucets

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(3) *Air purification*

The Company arranged or planted a large number of different kinds of green plants inside and outside the comprehensive building for production to beautify the office environment, purify indoor air, increase oxygen concentration, and reduce indoor pollution. This greatly improved the comfort of the office and provided a beautiful and healthy working environment for employees.



Green plants in the office



Park greening

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(4) Waste separation

In response to the initiative of the Beijing Municipal Government, the Company implemented waste separation in the industrial park. The Company put away, stored and transferred the waste all in a separate manner, thus turning it into public resources, increasing the resource value and economic value of the waste, reducing the amount of waste disposal and the use of disposal equipment, lowering the cost of disposal, reducing the consumption of land resources, and realizing multiple benefits of society, economy and ecology.



Waste reduction target:

In 2022, the Company plans to transfer 100% of the sorted and stored waste in a separate manner in the industrial park within 24 hours.



Classified dustbins in office area

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(IV) Implementation of green procurement

The Company actively paid attention to environmental risks in the supply chain, implemented the work of green procurement, deepened cooperation with suppliers, continuously monitored carbon emissions of major products, promoted a paperless electronic procurement platform, and utilized the used materials stored to promote integration of the concept of environmental protection and conservation in all links of procurement and help the Company fully implement green development.

Continuous monitoring of carbon emissions of major products

The Company actively cooperated with suppliers this year and took the initiative to pay attention to the carbon emissions of tower building materials, battery equipment and other procurement projects throughout their life cycle, establishing a management and statistical basis for the accounting of the Company's greenhouse gas emission reductions and the formulation of carbon reduction targets.

Promotion of paperless e-procurement application

The Company introduced and promoted the application of electronic bidding platform, realizing paperless operation throughout the whole process of publishing announcement, offering procurement documents, electronic bidding response, remote bid opening, online bid evaluation, online clarification, publishing announcement, and data archiving. At present, it comprehensively covers procurement units at all levels in the headquarters and 3 provincial branches, 13,665 suppliers and 40 agencies have completed the registration, and the cumulative number of implemented procurement projects exceeds 10,000. The Company's e-tendering and bidding system, as an excellent case of whole-process e-tendering and bidding of central enterprises, was selected by China Tendering & Bidding Association as an innovative achievement of whole-process electronic trading practice for "Internet+" bidding and procurement.

Dismantling and utilization of storage materials

The Company standardized the management system for warehousing of dismantled assets this year to promote the utilization of used resources and save resources. The dismantled assets identified as usable were included in the unified management of warehousing, and a usable assets storage area was set up in the warehouse. In the design of plans for new construction or renovation projects, priority was given to used and dismantled assets; when receiving construction materials, the warehouse gave priority to dismantled assets. This year, the Company initialized the material code of the dismantled assets, which opened the bottleneck of no code for utilization of used assets, and further optimized and improved the whole process of utilization of used resources among IT systems on the basis of the current functions.

Fulfilling Social Responsibilities and Achieving New Results in Green Development



Dismantling and utilization of storage materials

(V) Independent integration of green landscape

The Company strengthened the management and control of ecological and environmental protection from the source, abided by the Environmental Protection Law of the People's Republic of China, Water Pollution Prevention and Control Law, Solid Waste Pollution Prevention and Control Law, Environmental Impact Assessment Law and other laws and regulations, and enhanced the implementation of the industry standard of Environmental Protection Technology for Communication Engineering, emphasized that in the process of site selection, measures should be taken according to local conditions, and the building body facilities should be actively used and shared according to the actual situation. The Company strictly implemented ecological environmental protection and energy saving and consumption reduction measures in construction and strived to reduce the impact of the Company's business on the natural environment.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

At the same time, in order to better integrate the communication infrastructure such as the towers into the surrounding environment and form a harmonious and beautiful urban landscape and natural picture, the Company continued to expand the construction ideas of the towers, made full use of social resources, applied innovative construction methods and beautification techniques, explored comprehensive construction, precise and flexible configuration, etc., promoted the landscape integration of communication infrastructure on the basis of satisfying the comprehensive coverage of 5G network, and promoted the construction and layout of 5G base stations in a green, economical and efficient manner.

Early stage of the project	Construction stage
<ul style="list-style-type: none"> • According to the principle of early intervention, it optimized the project site selection and process route, reasonably avoided environmentally sensitive targets, minimized the base stations occupation of farmland, woodland and grassland as possible, and used more land such as barren slopes and wasteland • According to the local climate and natural resource conditions, it adopted an energy recycling system to rationally utilize renewable energy • It strictly implemented environmental impact assessment, completion acceptance and other procedures, incorporated environmental protection efforts into the construction plan, and ensured the simultaneous design, construction and commencement of operation of the environmental protection facilities with the main projects • Communication facilities built in scenic areas, beside scenic highways, prosperous urban areas and on both sides of main traffic roads shall be in harmony with the environment in terms of shape, alignment, color and other elements without affecting the landscape 	<ul style="list-style-type: none"> • Waste sands, stones and earth were transported to the designated specified stackyard to avoid dumping into rivers, lakes, reservoirs, etc. • During the transportation of construction earthwork and waste, it strictly planned the route, took vehicle cleaning and protection measures, and implemented local traffic management regulations to avoid municipal road pollution • It took measures to reduce the impact on wildlife and avoided cutting down or endangering the wild plants under national key protection, as well as the forests located in historical heritage sites or revolutionary commemoration • For construction projects within the controlled construction zones around the cultural relic protection unit, it shall not damage the environmental features of the cultural relic protection unit • It strictly prohibited the use of any persistent organic pollutant as pesticides. It prioritized the use of environmentally friendly construction techniques and materials, and avoided any technique and material that did not meet environmental standards

Fulfilling Social Responsibilities and Achieving New Results in Green Development



Pole station in gradient color



Replacement of mid pole lights

Case: Making full use of scenic resources to realize the integrated construction of tower poles and landscapes

Hangzhou West Lake Scenic Spot is a national 5A tourist attraction, full of historic sites, crowded with tourists, and with large-scale network demand, which poses a challenge to 5G construction. In accordance with the guidelines of government policies, the Company penetrated deeply into the scenic area, coordinated with various management committees, continuously innovated construction plan, and realized environmental integration and efficient coverage of 5G construction through bionic poles, special-shaped towers and other ways, without damaging the beauty of the scenic area.



Special Landscape Tower



Bionic Pole

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(VI) Environmental performance Table**1. Emissions of greenhouse gases⁸**

Indicators	Unit	Figures in 2021
Direct greenhouse gas emissions (Scope 1)	Ton	98,084.02
Gasoline	Ton	72,245.82
Diesel	Ton	12,428.88
Kerosene	Ton	169.16
Fuel oil	Ton	19.70
Coal	Ton	287.86
Coal gas	Ton	14.14
Natural gas	Ton	1,648.36
Liquefied petroleum gas	Ton	11,270.10
Indirect greenhouse gas emissions (Scope 2)	Ton	593,407.17
Externally sourced electricity	Ton	580,952.06
Externally sourced heat	Ton	12,455.11
Greenhouse gas emissions (Scope 1&2)	Ton	691,491.19
Greenhouse gas emissions per unit of operating income	Tons/RMB million	7.99

⁸ Note:

- In 2021, the Company optimized the statistical methodology of energy consumption, expanding the statistic scope to cover the consumptions in offices and for operational purposes in all operating units of the Company.
- As dictated by the types of businesses operated by the Company, greenhouse gas emissions are mainly derived from carbon dioxide generated by the use of externally sourced electricity and fuel.
- The statistical scope of greenhouse gas emission data includes the Headquarters of China Tower Corporation Limited, provincial branches and municipal branches.
- Greenhouse gas emission data is presented by carbon dioxide equivalent, calculated based on the 2019 Emission Reduction Projects – Baseline Emission Factors for Regional Power Grids in China published by the Ministry of Ecology and Environment of the People's Republic of China and the 2019 Refinement to the IPCC 2006 Guidelines for National Greenhouse Gas Inventory published by the Intergovernmental Panel on Climate Change (IPCC).

Fulfilling Social Responsibilities and Achieving New Results in Green Development

2. Use of resources⁹

Indicators	Unit	Figures in 2021
Direct energy consumption	MW•h	394,370.07
Gasoline	MW•h	288,555.06
Diesel	MW•h	46,436.88
Kerosene	MW•h	651.27
Fuel oil	MW•h	74.41
Coal	MW•h	841.35
Coal gas	MW•h	87.62
Natural gas	MW•h	8,153.81
Liquefied petroleum gas	MW•h	49,569.67
Indirect energy consumption	MW•h	1,010,697.52
Externally sourced electricity	MW•h	979,245.23
Externally sourced heat	MW•h	31,452.29
Total energy consumption	MW•h	1,405,067.59
Energy consumption per unit of operating income	MW•h/RMB million	16.23
Water consumption	Ton	971,966.57
Surface water	Ton	22,658.55
Underground water	Ton	127,435.00
Tap water	Ton	816,232.06
Other	Ton	5,640.96
Water consumption per unit of operating income	Tons/RMB million	11.23

⁹ Note:

- In 2021, the Company optimized the statistical methodology of energy consumption, expanding the statistic scope to cover the consumptions in offices and for operational purposes in all operating units of the Company.
- The statistical scope of energy consumption data includes the Headquarters of China Tower Corporation Limited, provincial branches and municipal branches.
- The energy consumption data is based on the consumption of electricity and fuel and the relevant conversion coefficient provided by the General Principles on Calculation of Comprehensive Energy Consumption (GB/T 2589-2020) published by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China and the Standardization Administration of the People's Republic of China for calculation.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

3. Waste¹⁰

Indicators	Unit	Figures in 2021
Total hazardous waste	Ton	2,568.39
Discarded nickel-cadmium batteries	Ton	0.09
Discarded mercury oxide batteries	Ton	0
Discarded lead (acid) batteries (packs)	Ton	2,568.30
Hazardous waste per unit of operating income	Tons/RMB million	0.030
Total non-hazardous waste	Ton	4,330.06
Discarded air conditioners from the shelter	Ton	2,211.82
Waste switching power supply in the shelter	Ton	1,467.14
Office paper	Ton	633.47
Discarded electronic products	Ton	11.31
Office supplies consumption	Ton	7.32
Non-hazardous waste per unit of operating income	Tons/RMB million	0.05

¹⁰ Note:

- As dictated by the types of businesses operated by the Company's business, the main hazardous waste is lead-acid batteries (packs) and nickel-cadmium batteries used in the shelters at the sites. The weight of the batteries is estimated based on the equipment model.
- Regarding disposal and use of discarded batteries, the Company strictly complies with the Environmental Protection Law of the People's Republic of China, Law of the People's Republic of China on the Prevention and Containment of Solid Waste Pollution and the Technical Specifications of Pollution Control for Treatment of Waste Lead-acid Battery (HJ 519-2020) and other laws and regulations, and dispose of batteries accordingly.
- The main non-hazardous waste includes office paper, office supplies, electronic products and discarded air conditioners and switching power supply from the shelter.
- The counts of discarded office paper and other office supplies include the data of purchase of paper, rollerball pens and paper clips by the Company's Headquarters, provincial branches and municipal branches, and the weight of such office supplies is estimated based on their models.
- Discarded electronic products include the scrapped desktops, laptops and printers from the Company's Headquarters, provincial branches and municipal branches and the weight of such supplies is estimated based on their models.
- As dictated by the types of businesses operated by the Company, it does not include packaging materials.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

II. Facilitating the improvement of public well-being

Guidelines for sustainable development of China Tower

The Company has taken a responsible and proactive attitude to fulfill its mission. It proactively fulfilled its social responsibilities, made full efforts to ensure emergency communications for natural disasters and major events, continued to facilitate the construction of telecommunications infrastructure in remote areas, fully supported rural revitalization and actively participated in social welfare activities, which contributed a solid force for the improvement of public well-being.

Actions taken by China Tower in 2021

Assisting with unforeseeable incidents and ensuring secure communication

- Emergency communication support against natural disasters and major events
- In 2021, it carried out 2,753 emergent and important communications ensuring missions.

Promoting the provision of inclusive telecom services for remote rural area

- In 2021, it undertook 5,339 pilot projects of inclusive telecom services.

Supporting rural revitalization

- Focusing on providing industry support, monitoring poverty returning, providing telecommunications-based support and rural governance; attaching importance to the development of new rural business forms and supporting the rural economic revitalization

Enthusiastic participation in volunteer services to carry on the spirit of volunteering

- As of the end of 2021, 3,223 employees of the Company were registered youth volunteers. A cumulative total of 1,202 youth volunteer activities were carried out throughout the year, and 3,184 people participated in various volunteer activities on a cumulative basis.



Fulfilling Social Responsibilities and Achieving New Results in Green Development

(I) Providing support for emergency communications

The Company always put people's life and safety first, actively fulfilled its responsibility of providing emergency communication services, providing emergency communication support for disaster relief and important activities. In 2021, the Company invested 448,200 employees, 232,600 vehicles, 451,100 diesel engines in aggregation throughout the year for communication support in emergency relief and important activities, successfully completed 2,753 emergency and important communication support tasks, and won 149 awards and commendations at all levels.

1. *Emergency communication support against natural disasters*

In 2021, the situation of natural disasters was complex and severe, with extreme weather and climate events occurring frequently. Natural disasters were dominated by floods, hails, droughts, typhoons, earthquakes, and other geological disasters, while low-temperature freezing, snow disasters, sandstorms, forest and grassland fires, and marine disasters also occurred to different degrees.

The Company always adhered to the responsibilities of emergency rescue, deployed emergency plans in advance, and carried out emergency drills to effectively respond to natural disasters and emergencies. In 2021, the Company completed a total of 2,587 emergency communication support tasks, including support in 1,344 rainstorm disasters, 447 strong convection disasters, 307 low temperature rain, snow and freezing disasters, and 252 flood disasters.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Careful deployment of emergency rescue and disaster relief to ensure the lifeline of communications

Henan was hit by heavy rainstorms and floods in July 2021. The Company put the interests of the people in the disaster-stricken areas in the first place, immediately launched first-level emergency response, established an emergency support leadership group, commanded emergency rescue and disaster relief work on-site. The Company transferred support resources from Hubei, Shandong, Tianjin and other surrounding provinces to the seriously-affected areas, and spared no efforts to provide basic communication support for flood control and disaster relief. When the disaster occurred, the Company immediately established a linkage mechanism with Telecommunication Service Providers (TSPs) to ensure the normal operation of high-priority base stations and transmission node base stations. In the meantime, the Company strictly required the safety protection of all personnel, requiring all front-line personnel to do insulation protection, beware of water-related electric shock, and strictly prohibiting risky operations in base stations in danger.

Since 17 July, the Company provided 11,974 emergency vehicles and 10,519 diesel engines, conducted 8,077 times of emergency power generation, repaired in aggregate more than 15,500 base stations and donated RMB10 million of emergency relief funds to the disaster-hit areas in Henan. In Zhengzhou, the Company was the first in the infrastructure sector to restore communication in the main urban area; in Xinxiang, a total of 276 base stations out of service were repaired, effectively ensuring the signal coverage of the core urban area.

During the disaster relief period, the good work style of all the emergency rescuers won unanimous praise from the people in the disaster area. The local people provided shelters, delivered meals and water for the rescuers, and helped the rescuers carry the power generators, showing the deep affection of "I help the people, and the people help me".



The Company's employees spared no efforts to assist in flood control and disaster relief



The people in the disaster area helped carry the power generators

Fulfilling Social Responsibilities and Achieving New Results in Green Development

2. *Communication security for major events*

The Company insisted on doing a good job in the communication security for major events by conducting strict inspection and making every effort to ensure the communication security for major events. 2021 marked the first year of the country's "14th Five-Year Plan", during which the Company gave full play to the role of the main force of telecommunications infrastructure in various emergency and communication services support for major events, and successfully completed the tasks of communication security for 135 national major events including the celebration of the centenary of the founding of the CPC, the NPC and CPPCC, the 14th National Games, and the 5G Industrial Internet Conference in the spirit of taking the bull by the horns and indomitable struggle. Meanwhile, the Company completed the tasks of communication security for 31 international major events, including the Winter Olympics Test Event, the 4th China International Import Expo, and the China International Fair for Trade in Services.

Case: Make every effort to ensure smooth communication and celebrate the centennial anniversary together

1 July marks the centennial anniversary of the founding of the Communist Party of China. At this important historical date, the Company practiced its mission of providing communications services, and spared no effort to achieve the target of ensuring "zero major network failure, zero safety production incident and zero complaint from VIPs" under the guidance of the MIIT and Beijing Communications Administration, providing strong network communications support for the smooth holding of the event.

The Company maintained close communication with local government agencies nationwide, established a docking mechanism with various headquarters and the organizer, responsively informed itself of the work arrangements and schedule of local celebration events, and cooperated with local communications administrations and telecommunication service providers to fully understand the communications needs of the organizer, so as to make a list of priority sites and complete various communications tasks in an efficient manner. Over the past year, the Company provided communications support services for a total of 54,000 base station sites in key areas such as areas for commemorative activities, party, government and military organs, transportation hubs, revolutionary museums, historical memorial halls, and cemeteries of revolutionary martyrs across the country, and conducted a cumulative of 62,000 patrol inspections at the stations and more than 1,100 pre-plan drills.



Making a detailed plan of telecommunications support



Successfully completed the mission of telecommunications support for the centennial anniversary

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(II) Facilitating the provision of inclusive telecom services

The company has always fulfilled the mission of social responsibility of state-owned enterprises, continued to promote the inclusive telecom services, and continuously strengthened the construction of communication infrastructure in remote areas and poor villages and towns. With the continuous efforts of the company, various social services and high-quality resources have entered remote villages and helped various rural industries flourish. As of the end of 2021, it had undertaken 52,200 pilot projects of inclusive telecom services and 3,131 border sites. In 2021, we undertook more than 5,339 inclusive telecom service pilot projects and 248 border sites, helping administrative villages across the country to fully open up an information “highway” and eliminate the “digital divide”.

(III) Comprehensively promote rural revitalization

The strategy of rural revitalization is an overall and historic task related to the comprehensive construction of a modern socialist country. The company adheres to the “Three Sufficient” throughout the poverty alleviation works, that is, fully implements the idea of high-quality development, gives full play to the advantages of the company’s “One Core and Two Wings”, and fully integrates into the strategic layout of Hubei province and Hunan province and the prefectures and counties where the poverty alleviation is located, and focuses on industrial development, poverty alleviation monitoring, communication assistance, e-commerce, rural governance, etc., from the aspects of funds, mechanisms, communications, talents, projects, etc., to assist Xuan’en County and Hefeng County in Hubei province, Baojing County, Xiangxi, Hunan Province, the effect of promoting poverty alleviation is stable and sustainable, helping rural revitalization to strengthen the foundation and start a new situation.

Since this year, one person has won the “Outstanding Individual in the Nationwide Tough Battle against Poverty Alleviation”, and two people have been rated as “Outstanding Individual in the Provincial Tough Battle against Poverty Alleviation” of the company’s cadres of poverty alleviation in poverty-stricken areas; One person was rated as “Advanced Prefecture Management Cadre” by Enshi Prefecture Party committee, and one person has won the “Outstanding Individual of Poverty Alleviation in Poverty-Stricken Areas of the central of Xiangxi Prefecture”. Mainstream media platforms such as People’s Daily, Xinhuanet, China News, China Youth Daily, the official website of SASAC and People’s Post and Telecommunications have reported more than 50 times the effectiveness of poverty alleviation in poverty-stricken areas to China Tower.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

1. *Focusing poverty alleviation through industrial development, strengthening the achievement of "tough battle" against poverty*

The company insists on "promoting agricultural development through tea" by making the long-term business plan stronger and better. The Company have expanded green tea planting business in Xuan'en County, Enshi, Hubei Province, which has reached a total of 1,550 mu, and in turns benefiting 1,532 local households, and newly gold tea planting business in Baojing County, Xiangxi, Hunan Province, which has reached a total of 300 mu to driven the development of tea industry. The Company promotes "industrial cooperation", establishes leading enterprises, family farms and cooperative bases in 3 counties and 3 villages, deepens the mode of "factory + base + farmer", "base + talent + farmer" and "company + cooperative + farmer", leads the implementation of 8 industrial projects, continuously expands the collective economy, and the per capita income of the village reaches more than 10,000 yuan.

Case study: Interactive development of agriculture and tourism, take the road of long-term green development

Combining with the development idea of "Interactive development of agriculture and tourism" in Xuan'en County, Hubei Province, the company is committed to building the synthesis of lotus pond and pastorage, developing the rural tourism industry and taking the road of long-term and sustainable green development. With the efforts of the company, the annual reception of tourists in the lotus pond has reached 12,000, with an income of nearly 1 million yuan.



The synthesis of lotus pond and pastorage in Mayangzhai

Fulfilling Social Responsibilities and Achieving New Results in Green Development

2. Focus on falling-back-to-poverty monitoring, effectively control the risk of falling back to poverty

Through investigation and supervision, and the in-depth participation of cadres on temporary posts, the Company has jointly issued a work plan for dynamic monitoring and assistance against falling-back-to-poverty prevention, increased investment in education and medical care in the counties being assisted, improved monitoring and early warning mechanism for falling-back-to-poverty prevention, and effectively controlled the risk of falling back to poverty. At the same time, the Company attached great importance to the construction of local spiritual civilization, mobilized the enthusiasm of assisted targets. With these efforts, a group of advanced models of hard work and good deeds has emerged. A hearing-impaired youth with firm spirit in Baojing County, was so grateful after shaking off poverty that he helped another 410 people towards a prosperous life through hard working with the help of China Tower. The Company also carried out commendation for exemplary deeds and filial piety activities, which has created a healthy and upward atmosphere.

3. Focus on communications assistance by improving network quality and coverage

The Company integrated the promotion of rural revitalization with the implementation of the "Cyberpower" strategy, and took active actions in improving network coverage and narrowing the digital divide. The Company further strengthened the construction of communications infrastructure in the target counties, with the 4G coverage rate in the three counties exceeding 99% and administrative villages achieving 100%, and continuous 5G coverage achieved in urban areas. In one visit to Xuan'en County, Enshi Prefecture, journalists from [guancha.cn](http://www.guancha.cn) 《觀察者網》, accompanying the officials from the Cyberspace Administration of China and the State-owned Assets Supervision and Administration Commission of the State Council, found that the shortcomings of the communications infrastructure in Xuan'en County were completely overcome, which allowed the locals to enjoy efficient and high-quality mobile network.

4. Focus on the development of emerging businesses by fostering economic growth points

The Company organized scientific and technological personnel training in the three target counties, and nurtured and strengthened the building of teams comprising talents in three areas including agricultural economics and management, technologies and professional services. With the efficient and convenient "information superhighway", the bottleneck restricting the promotion of e-commerce and Internet Plus was removed. Emerging businesses such as Internet entrepreneurship, mobile payment, and live-streaming e-commerce developed rapidly, and the magnifying, superimposing, and the function of digital technologies to amplify and multiply in economic development was fully demonstrated.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

5. Focusing on rural governance and improving local digital management capabilities

In promoting the implementation of the rural revitalization strategy, the Company leveraged the extensive network of tower sites at high location to unleash our resources potential. Utilizing the high-point resources of towers, the Company built the Internet of Vision along the Youshui River Basin in Baojing County and Jiangping River in Hefeng County, and established a smart monitoring system for fishery law enforcement to effectively solve the issue of the law enforcement and regulation relating to the ten-year fishery ban on the Yangtze River. Through the tower sharing mechanisms, the Company promoted the development of rural information infrastructure at low cost with high efficiency, supported the development of digital agriculture, and helped tackle issues related to “agricultural, rural and farmers-related” initiatives.

Case study: Application of the Internet of Vision of Tower in rural areas to promote governance effectiveness

In Hefeng County, Hubei Province, the assistance task force on secondment of the Company leveraged the opportunities of the tourism development project of Jiangping River waterway to build the “Internet of Vision” project and develop an information management framework of “Coordination, Central Command and Unified Platform”. Through its functions such as systematic monitoring, effective analysis and intelligent emergency reporting and order dispatching, the Internet of Vision of Tower helped improve the governance effectiveness of fishery ban regulation, effectively tackle the regulatory issues on law enforcement relating to fishery ban along parts of Jiangping River, and save economic input of RMB3 million.



Internet of Vision platform in Hefeng County

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case study: High-level deployment of intelligent monitoring and multi-dimensional assistance in watershed management

The Company deployed high-level monitoring points along the Youshui River Basin in Baojing County, Hunan Province, to effectively support the flood control and disaster alleviation, water resources allocation, water environmental protection, water management services, fishery law enforcement, etc. The smart video monitoring system for fishery administration built by the Company was also highly recognized by the county Party committee and county government of Baojing County.



High-level view of towers in a fishing village of Baojing county

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(IV) Engaging in volunteer services

The Company fulfilled its duties as a state-owned enterprise, engaged in volunteer services and encouraged employees to participate in various volunteer services. As of the end of 2021, 3,223 employees were registered as youth volunteers. A cumulative total of 1,202 youth volunteer activities were carried out during the year, and 3,184 people participated in various volunteer services.

Promoting popularization activities and raising public awareness

The Company aims to raise public awareness for electromagnetic radiation in wireless communication base station, create a better common concerned environment of supporting base station construction and steadily promote the development of communication infrastructure. To this end, in Hunan, the Company publicized the base station radiation knowledge through self-media and other channels and invited technical experts to conduct electromagnetic radiation values detection on site with professional instruments, eliminating misunderstandings about electromagnetic radiation with accurate scientific data and improving the public's correct understanding of communication base station.



On-site electromagnetic radiation values detection

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Engaging in “Caring for the Environment and Contributing to Greenery” through employees’ tree planting

In 2021, the Company carried out tree planting activities with the theme of “Caring for the Environment and Contributing to Greenery” in Liaoning, which not only help beautify the environment , but also made employees fully enjoy the fun and meaning of tree planting. Employees became more aware of the importance of environmental issues, so that they could effectively participate in the action of “Caring for the Environment” and engaged in “Contributing to Greenery” for the shared beautiful home of mankind.



Tree planting of the Company on May Fourth Youth Day

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Telecommunications-themed propaganda activity carried out to resolve doubts of the public

On 17 May 2021, young volunteers of the Company carried out the May 17th telecommunications-themed activity titled “Serving the People with Practical Actions – Propaganda Activity Held in Communities to Resolve Doubts of the Public”. The young volunteers explained the Company’s energy business such as power exchange and power backup to the riders. The Company also visited the communities to disseminate knowledge related to electromagnetic radiation from 5G base stations to the public, eliminating the public’s doubts about electromagnetic radiation from telecommunication facilities and effectively raising their awareness of 5G network development.



A volunteer of the Company is answering questions from the public

Fulfilling Social Responsibilities and Achieving New Results in Green Development

III. Caring for employees to achieve development

Guidelines for sustainable development of China Tower

The Company regards employees as the foundation and a treasure of sustainable development. Adhering to a people-oriented management philosophy, the Company earnestly protected the rights and interests of employees, and created a fair, harmonious, healthy and friendly working environment for employees and took a number of measures to ensure the physical and mental health of employees. In addition, it implemented the strategy of empowering the Company with talent, built a high-quality talent team, and helped employees to continuously improve themselves and develop neck and neck with the Company.

Actions Taken by China Tower in 2021

Protecting legitimate rights and interests and creating a good working environment

- Developed a sound system for protecting the rights and interests of employees
- Improved employee compensation and promotion mechanism
- Provided a scientific performance assessment system and incentive system

Taking multiple measures to ensure employees' physical and mental health

- Achieved full coverage of "basic pension insurance, basic medical insurance, unemployment insurance, work injury insurance, maternity insurance, supplementary medical insurance, critical illness insurance, personal accident insurance, housing fund and enterprise annuity" and generous welfare benefits
- Organized staff activities regularly to improve their physical and mental health



Fulfilling Social Responsibilities and Achieving New Results in Green Development

Actions Taken by China Tower in 2021

Implementing the strategy of empowering the Company with talent and building a high-quality talent team

- Carried out the “Young Talent Plan” of recruiting college students
- Started the “Qingling Program” for technical staff
- Made further efforts in promoting “Tower Academy Open Courses” on quality training, under which 19 courses were launched, benefiting 28,000 attendees in total throughout the year



(I) Protecting the rights and interests of employees adhering to a “people-oriented” philosophy

The Company attached great importance to protecting the rights and interests of employees and strictly followed the Labor Law of the People’s Republic of China, Labor Contract Law of the People’s Republic of China, Social Insurance Law of the People’s Republic of China, Provisions on the Prohibition of Using Child Labor and other relevant laws and regulations. The Company formulated the Measures of China Tower Corporation Limited for Management of Staff Attendance and Leave, Labor Contract Management Measures, Training Management Measures (for Trial Implementation) and other rules and regulations to standardize the management in staff recruitment and dismissal, remuneration and welfare, attendance, performance, working hours and vacation, to provide a fair-competition, anti-discrimination and diverse working environment for employees. The Company prohibited unequal treatment based on race, age, gender, ethnicity, religious belief, etc. and banned use of child labor and forced labor. Any of the above-mentioned violations will be investigated and punished by the Company to effectively protect the rights and interests of employees.

The Company adhered to the innovation of employee development mechanism and management mode, continuously promoted a highly flat organizational structure, and created a high-quality, efficient and dynamic work team. With post value as the core, the Company determined the rank and remuneration of employees according to their performance and ability. Through a flexible and dynamic promotion mechanism, the Company continued to provide multiple development paths for talents to attract, motivate and retain talents more effectively.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

In addition, the Company will provide stock incentives to core technical talents who make positive contributions to the Company's overall performance and sustainable development to encourage them to continue to give full play to their enthusiasm, initiative and creativity. At the same time, the Company will give spiritual encouragement to employees who have made outstanding contributions to the development of the Company through circulation of notice of commendation and honorary titles, so as to enhance their subjective initiative to further participate in the development and construction of the Company.

Case: A path to China Tower – 2022 Autumn Campus Recruitment

The Company continued to carry out online recruitment campaign with job postings published on major recruitment websites in the autumn of 2022. Adhering to the theme of "Tower for the Young, Passionate Growth", senior managers introduced the Company, and staff representatives elaborated on their work experience, demonstrating China Tower's concern for the new generation of fresh graduates and showing the corporate culture and industrial characteristics of China Tower. This online campaign involved the Headquarters and branches in 31 provinces, autonomous regions and municipalities. The videos were played 350,000 times. In addition, the Company publicized in the employment network of 95 colleges and universities, reaching 820,000 candidates, and achieved satisfactory propaganda effect. The Company won "Annual China Best Employer Award" and "School Recruitment Demonstration Award" granted by Zhaopin.com for three consecutive years from 2019 to 2021. The Company won "Model Employer Award in China" granted by 51job.com for two consecutive years in 2020 and 2021.



Campus Recruitment Poser in the Autumn of 2022

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Employee hiring and turnover performance table¹¹

	Indicator	Unit	2021
Total headcount		person	20,509
Number of employees by nationality	Ethnic minorities	person	1,959
	Ethnic Han	person	18,550
Number of employees by gender	Male	person	15,106
	Female	person	5,403
Number of employees by category	Managers	person	3,926
	Non-managers	person	16,583
Number of employees by age	29 and below	person	4,786
	30-39	person	9,396
	40-49	person	5,326
	50 and above	person	1,001
Number of employees by region	East China	person	5,130
	Central China	person	2,398
	North China	person	3,115
	South China	person	2,134
	Northwest China	person	2,419
	Northeast China	person	1,804
	Southwest China	person	3,496
	Hong Kong, Macau and Taiwan	person	4
Overseas regions (except Hong Kong, Macau and Taiwan)	person	9	

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Indicator		Unit	2021
Employee overall turnover rate		%	2.0
Employee turnover rate by gender	Male	%	1.8
	Female	%	2.7
Employee turnover rate by age	29 and below	%	4.7
	30-39	%	1.8
	40-49	%	0.5
	50 and above	%	0.0
Employee turnover rate by region	East China	%	2.4
	Central China	%	0.9
	North China	%	2.0
	South China	%	3.1
	Northwest China	%	2.1
	Northeast China	%	1.4
	Southwest China	%	2.0
	Hong Kong, Macau and Taiwan	%	0.0
Overseas regions (except Hong Kong, Macau and Taiwan)	%	0.0	

¹¹ Notes:

1. The employee's statistic data for this year covers formal employees who entered into employment agreements with the Company.
2. The employee turnover rates in each category= total number of employee turnover in the category/total headcount in the category.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

(II) Care for employees by various measures

The Company regards employee health and safety as an important foundation for its own development, and strives to provide employees with comprehensive benefits and a safe working environment, which enhances employees' sense of belonging and security.

The Company effectively protects the physical and mental health of employees, and continuously enriches the employee welfare security system. In addition to providing all contract employees with "eight insurances and two funds", which include basic pension insurance, basic medical insurance, unemployment insurance, work-related injury insurance, maternity insurance, supplementary medical insurance (including immediate family members), critical illness insurance, personal accident insurance, housing provident fund and corporate annuities, the Company not only provides employees with additional benefits on important festivals and employees' birthday, but also offers employees various subsidies for communication, transportation, business travel, heatstroke prevention, meals and heating, and health examinations and psychological tests, to give them warm care and ensure the physical and mental health of employees.

Adhering to the people-oriented philosophy, the Company continues to do a good job of caring for employees under the background of normalized pandemic prevention and control, and carries out activities such as caring for and consoling sick employees and female employees and arranging fellowship for single employees, and specially sets up baby care rooms for female employees and offers refrigerators, disinfection cabinets, sofas and other facilities to make employees truly feel the Company's warmth and home-like corporate culture. At the same time, the Company actively organizes colorful and healthy cultural and sports activities to further enhance employees' sense of belonging and happiness on the basis of ensuring the physical and mental health of employees and the combination of work and rest.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Recording moving Tower's stories by the third photography contest

In 2021, the Company organized the third China Tower Photography Contest, collecting a total of 3,180 works, and selecting 55 winning works in the mobile phone category and 60 winning works in the camera category. These works are the true portrayals of the Tower's people. They showcase moving "Tower's Stories" recorded by the Company through photos in the process of implementing new development concepts and creating a new development situation based on new development stages, and left today's precious footprints of innovation, reform and struggle of China Tower for tomorrow's China Tower.



Winning works in the Company's third photography contest

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Table tennis competition highlighted the high spirits of Tower's people

In 2021, the Company organized employees to participate in the "Table Tennis Competition for Employees of Central Enterprises of National Defense, Posts and Telecommunications System to Celebrate the 100th Anniversary of the Founding of the Party". In the competition, 8 team members from 7 provinces fought with unity and tenacity, and won the champion of the middle-aged women's group, the fifth place in the team competition, and the fifth place in the middle-aged men's group, which fully embodied the spirit of the Tower's people to struggle courageously and forge ahead.



The Company achieved excellent results in the table tennis competition in 2021

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: The youth outreach fellowship activity to enrich employees' spare time life

In May 2021, the Company launched the youth fellowship activity with the theme of "We are all dream chasers", focusing on the needs and expectations of the youth, strengthening humanistic care for young employees, building a communication platform for young employees, and fully promoting communication among employees in the communications industry. Over 60 young people participated in this activity with lively atmosphere. The participating members completed various activities in groups through teamwork and everyone could show their self-style and deepen mutual understanding in a relaxed and pleasant environment. The young people who participated in the activity expressed that they felt the care and warmth of the organization.



The youth fellowship activity of the Company was successfully carried out

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Normalized management of the epidemic to ensure the health and safety of employees

Under the normalization of epidemic prevention and control, the Company has always put the life safety and health of employees in the first place, and deployed epidemic prevention work with the goal of “zero infection”. The Company has established the epidemic prevention and control headquarters, which is fully responsible for the emergency response to the epidemic, and has formulated and issued the On-site Emergency Response Plan for COVID-19 Epidemic Prevention and Control, the Notice on Redeployment, Re-implementation and Re-requirement of Epidemic Prevention and Control and other institutional documents. The Company coordinated with branches in various provinces and cities to jointly do a good job in epidemic prevention, and established a unified and efficient command and dispatching system throughout the Company to ensure that the prevention and control of the epidemic is carried out in a strong, orderly and effective manner.

In terms of epidemic prevention and control measures, the Company strictly implemented various prevention and control measures in the office, such as providing masks, disinfection supplies and other materials; strictly implemented the prevention and control work such as temperature monitoring of employees and visitors, environmental disinfection, and off-peak dining to effectively ensure the epidemic prevention health of employees in the workplace. Meanwhile, the Company strictly controlled personnel gathering activities, strengthened the reporting and approval of personnel travel, paid close attention to the close contacts, sub-close contacts and quarantine personnel of its own employees and cooperative units, carried out nucleic acid testing for all employees in epidemic-related areas, organized employees to be vaccinated and comprehensively prevented and controlled the epidemic.



The Company organized nucleic acid testing for employees



The Epidemic Prevention and Control Headquarters of the Company

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Employee performance table for work injury and fatality¹²

	Indicator	Data
Number of work-related fatalities	Number of work-related fatalities in 2019	1
	Number of work-related fatalities in 2020	1
	Number of work-related fatalities in 2021	1
Rate of work-related fatalities	Rate of work-related fatalities in 2019	0.005%
	Rate of work-related fatalities in 2020	0.005%
	Rate of work-related fatalities in 2021	0.005%
Lost days due to work injury	Lost days due to work injury in 2021	1,437

(III) The “Talents Make Business Strong” strategy

The Company insisted on making plans for deploying and promoting the building of talent team and enterprise reform and development at the same time. Adhering to the principle of a flat organizational structure and a highly capable personnel team, the Company scientifically set up the organization system and the structure of leaders and talents, built a talent team featuring “appropriate total quantity, reasonable structure, efficient configuration and appropriate ability”, and deeply implemented the requirements of priority development of talent resources, priority adjustment of talent structure, priority accumulation of talent capital and priority investment in talents, so as to drive its high-quality and sustainable development.

In 2021, the Company launched the “Qingmiao Program” for talents recruited from schools, continued to improve the “recruitment, training, management and utilization” work mechanism for new employees in line with the strategic planning and business development, and established a system from employer brand building, campus talent introduction to induction training and development to further strengthen the construction of its talent team. The Company continued to broaden the promotion and development channels for talents, and helped young university graduates successfully become corporate backbone, making talents grow with the company.

For business and technical sequence employees, the Company launched the “Qingling Program” to give play to the role of talent leadership, further increase the efficiency of talent allocation and core competitiveness and continue to build a high-quality talent team compatible with its strategic layout and business development by improving the staff training and development work system, perfecting the multi-channel promotion mechanism for employee career development and establishing the expert talent management mechanism.

¹² The employees’ work-related fatality and injury data are subject to the official written documents such as the decision of the local social insurance administrative department on the acceptance of the application for work-related injury identification

Fulfilling Social Responsibilities and Achieving New Results in Green Development

The Company continued to strengthen education and training, and established the Tower Academy, a dedicated institution responsible for employee training. The academy, focusing on the Company's employees, revamps the Company's training system, and carefully designs its training product systems for different groups, giving full play to the role of training in promoting employee growth. In 2021, taking root in the "Open Courses of Tower Academy" quality training brand for all employees, the Company launched 19 courses and trained 28,000 people in total.

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Grassroots management training was offered to cultivate Tower successors

The Company has insisted on carrying out training for grassroots management for many years. The Company offered a training course for general managers of companies at prefecture-level cities to provide one-week off-the-job training for general managers of branches at prefecture-level cities nationwide to continuously strengthen the grassroots management ability. At the same time, the Company held training for the second-level management of provincial branches to further expand the scope of training for the management, and invited famous teachers from famous schools to give lectures to enhance the training level and enrich the training courses. In 2021, the Company held 6 training sessions for management, with a total of 470 participants.



Training for grassroots management of the Company

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: Internal trainer team was built to inherit valuable Tower experience

The Company paid attention to the improvement of employees' quality and ability and the training of internal teachers, and constantly enhanced the effectiveness of courses in order to provide high-quality courses to all the employees. The Company strengthened the building of the internal trainer team, formed a teacher team consisting of 26 intermediate internal trainers and 78 junior internal trainers, and developed more than 150 courses in total, which promotes the precipitation of knowledge and the heritage of experience.



Training course for intermediate internal trainers of the Company

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Case: The “Set-Sail Program” training camp indicated a campus-to-career path of transformation

In order to improve the professionalism of new employees and strengthen their professional ability, in 2021, the Company held the “Set-Sail Program” new employee orientation training camp for two weeks, which was offline training for over 300 employees in different regions of the country. The “Set-Sail Program” helped new employees adapt to the requirements of their positions as soon as possible, and smoothly complete the role change from students to employees, so as to cultivate a team of new employees who have high quality and are conscientious and meticulous, united and cooperative, pioneering and innovative, and dedicated and further implement the Company’s “Talents Make Business Strong” strategy.



The “Set-Sail Program” New Employee Induction Training Camp

Fulfilling Social Responsibilities and Achieving New Results in Green Development

Employee training performance table

	Indicators	Unit	Data
The number and percentage of employees trained by gender	Number of male employees trained	person	14,972
	Number of female employees trained	person	5,358
	Percentage of male employees trained	%	99.1
	Percentage of female employees trained	%	99.2
The number and percentage of employees trained by employee category	Number of managers trained	person	3,895
	Number of non-managers trained	person	16,435
	Percentage of managers trained	%	99.2
	Percentage of non-managers trained	%	99.1
The average training hours per employee by gender	Average training hours per male employee	hours/person	67.3
	Average training hours per female employee	hours/person	65.6
The average training hours by employee category	Average training hours of managers	hours/person	84.1
	Average training hours of non-managers	hours/person	62.8

Prospects for Sustainable Development

The Company will embark on a new journey with vigorous and tireless efforts. The year 2022 serves as the key connecting link for the implementation of the 14th Five-Year Plan, and marks a critical period for the Company's entering a new stage of high-quality development. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics in the New Era, China Tower will fully obey the spirits of the 19th CPC National Congress and all the plenary sessions of the 19th CPC National Congress, playing a part from the spirits, we will apply the new development philosophy in full, in the right way, and in all fields, and actively serve the new development pattern. The Company will also pay attention to its pandemic prevention and control while taking its operations into consideration, and strike a balance between development and safety. The "One Core and Two Wings" strategy will be anchored in the development objectives of the 14th Five-Year Plan. We will comprehensively fulfill our political, economic and social responsibilities, giving full play to the role of the state-owned economy as the strategic pillar.

We will hold aloft the banner of sharing, adhere to the customer as the fundamental, service as the key, based on the positioning as the "Main Force" and "National Team" in the construction and operation of telecommunications infrastructure, unswervingly make the sharing business greater and better, in order to fully meet the needs of telecommunications enterprises for 5G construction, support the economical and efficient deployment of 5G construction, and help the effective implementation of the "cyberpower" and "Digital China" strategies. We will make on-going efforts in the innovation of transformation of construction, services and development models, and the implementation of "Four Special Initiatives" in a deep-going way to help the industry reduce costs and increase efficiency with "low-cost, high-efficiency and excellent services", thus making new contributions to the development of the industry.

We will continuously build "Digital Towers" to help the digital economy and governance. We will give full play to our whole site resource endowment, and leverage our strength in the medium and high point resources to provide special informatization application services with differentiated competitive advantages, and refine Smart Tower business. We will transform traditional "Telecom Towers" into "Digital Towers", carry out three special campaigns on "Blue Sky", "Clean Earth" and "Clear Water", provide informatization services for agriculture, water resources, environmental protection, forestry, earthquake, meteorology and other industries and departments. We will help various industries accelerate their digital transformation and modernize social governance capacities, and contribute with the power of Tower in the new journey of digital economy.

We will specialize in the energy business to help achieve the "Dual Carbon" goals. We will make on-going efforts in improving our professional ability, our platforms, services, brands and security, speed up the deployment of two business segments of new energy mobility and electric energy services, and explore new energy service solutions to boost green energy development. We will leverage our role as a pilot enterprise for the recycling of new energy vehicle power batteries to further explore the efficient recycling of used power batteries, form a benchmarking scheme for cascade utilization, and serve the implementation of the national strategies of "Carbon Peak and Carbon Neutrality".

Prospects for Sustainable Development

We will strengthen innovation-driven development and solidly implement the strategy of promoting enterprises through science and technology. Adhering to the guidelines of the “14th Five-Year Development Plan Outline”, we will make a solid progress in implementing our 14th Five-Year Digital Construction Plan to build us into a digital enterprise. We will enhance our scientific and technological innovation capabilities, increase investment in technological breakthrough R&D, establish a sound organizational system for scientific and technological innovation, strengthen institutional innovation, and build a three-in-one scientific and technological innovation featuring “strategic and forward-looking research, one core and two wings scientific and technological innovation, and general common scientific and technological innovation”. We will deepen the reform of institutional mechanisms, continue to promote quality and efficiency change and power change, and stimulate endogenous power vitality. We will continue to forge the ability to integrate resources, develop innovation, serve customers and support a unified IT system and platform, continue to build a professional, intensive, delicate, efficient and digitalized operation system, and continuously create a sharing, service, technology, innovation and value creation enterprise.

We will support the national economy and people’s livelihoods, and adhere to the “people-centered” development philosophy. We will actively pay attention to climate change, respond accordingly to the national requirements in terms of “Carbon Peak and Carbon Neutrality”, further the joint construction and sharing model, adopt green energy technologies, promote the integration of infrastructure construction with the environment, improve energy efficiency, accomplish the goals of energy-saving and emission reduction, reduce resource consumption, mitigate environmental impact, and contribute to the construction of ecological culture. We will continue to promote the universal access to mobile networks in remote areas, and promote a more balanced network layout in the eastern, central and western regions, bridging the “Digital Divide”. The Company will secure the achievements of poverty alleviation, help achieve rural revitalization, and fulfill our corporate social responsibility. We will deliver good emergency communication guarantee work in case of major events and natural disasters to ensure a smooth communication network and contribute to safeguarding people’s lives and property. We care about the growth of employees, promote the initiatives of strengthening enterprises with talents, accelerate the implementation of the talent plan, constantly optimize the talent structure, and build a multi-channel, multi-level and multi-form training system to continuously stimulate new momentum for the Company’s development.

Appendix

HKEx “ESG Reporting Guide” – Index Table

Mandatory disclosure	Chapter disclosure	
Governance structure (Board statement)	Management System of ESG, Statement of the Board of Directors	
Reporting principles	About the Report	
Reporting boundary	About the Report	
“Comply or Explain”		
Aspects	Performance indicators	Chapter disclosure
A1 emission	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and nonhazardous waste.	Committed to the formation of ecological culture
	A1.1 The types of emissions and respective emissions data.	Committed to the formation of ecological culture
	A1.2 Direct (Scope 1) and energy indirect (Scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Committed to the formation of ecological culture
	A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Committed to the formation of ecological culture
	A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Committed to the formation of ecological culture
	A1.5 Description of emission target(s) set and steps taken to achieve them.	Committed to the formation of ecological culture
	A1.6 Description of how hazardous and nonhazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.	Committed to the formation of ecological culture

Appendix

Aspects	Performance indicators	Chapter disclosure
A2 Use of resources	General Disclosure Policies on the efficient use of resources, including energy, water and other raw materials.	Committed to the formation of ecological culture
	A2.1 Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	Committed to the formation of ecological culture
	A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	Committed to the formation of ecological culture
	A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	Committed to the formation of ecological culture
	A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.	Committed to the formation of ecological culture
	A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	As dictated by the types of businesses operated by the Company, it does not include packaging materials
A3 Environment and natural resources	General Disclosure Policies on minimizing the issuer's significant impacts on the environment and natural resources.	Committed to the formation of ecological culture
	A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	Committed to the formation of ecological culture
A4 Climate change	General Disclosure Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	Committed to the formation of ecological culture
	A4.1 Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	Committed to the formation of ecological culture

Appendix

Aspects	Performance indicators	Chapter disclosure
B1 Employment	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	Caring for employees to achieve development
	B1.1 Total workforce by gender, employment type (for example, full – or part-time), age group and geographical region.	Caring for employees to achieve development
	B1.2 Employee turnover rate by gender, age group and geographical region.	Caring for employees to achieve development
B2 Health and safety	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	Efficient management to consolidate foundation, caring for employees to achieve development
	B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	Caring for employees to achieve development
	B2.2 Lost days due to work injury.	Caring for employees to achieve development
	B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.	Efficient management to consolidate foundation, caring for employees to achieve development

Appendix

Aspects	Performance indicators	Chapter disclosure
B3 Development and training	<p>General Disclosure</p> <p>Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.</p> <p>Note: Training refers to vocational training, which may include internal and external courses paid by the employer.</p>	Caring for employees to achieve development
	B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	Caring for employees to achieve development
	B3.2 The average training hours completed per employee by gender and employee category.	Caring for employees to achieve development
B4 Labor standards	<p>General Disclosure</p> <p>Information on:</p> <p>(a) the policies; and</p> <p>(b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labor.</p>	Caring for employees to achieve development
	B4.1 Description of measures to review employment practices to avoid child and forced labour.	Caring for employees to achieve development
	B4.2 Description of steps taken to eliminate such practices when discovered.	Caring for employees to achieve development

Appendix

Aspects	Performance indicators	Chapter disclosure
B5 Supply chain management	General Disclosure Policies on managing environmental and social risks of the supply chain.	Efficient management to consolidate foundation
	B5.1 Number of suppliers by region.	Efficient management to consolidate foundation
	B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	Efficient management to consolidate foundation
	B5.3 Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	Efficient management to consolidate foundation
	B5.4 Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	Efficient management to consolidate foundation
B6 Product Responsibility	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labeling and privacy issues and remedies regarding the products and services offered.	Efficient management to consolidate foundation
	B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	Based on the nature of the Company's business, it does not involve recycling for safety and health reasons.
	B6.2 Number of products and service related complaints received and how they are dealt with.	Efficient management to consolidate foundation
	B6.3 Description of practices relating to observing and protecting intellectual property rights.	Efficient management to consolidate foundation
	B6.4 Description of quality assurance process and recall procedures.	Efficient management to consolidate foundation
	B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	Efficient management to consolidate foundation

Appendix

Aspects	Performance indicators	Chapter disclosure
B7 Anti-corruption	General Disclosure Information on (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	Efficient management to consolidate foundation
	B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	Efficient management to consolidate foundation
	B7.2 Description of preventive measures and whistle-blowing procedures, and how they are implemented and monitored.	Efficient management to consolidate foundation
	B7.3 Description of anti-corruption training provided to directors and staff.	Efficient management to consolidate foundation
B8 Community Investment	General Disclosure Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	Facilitating the improvement of public well-being
	B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	Facilitating the improvement of public well-being
	B8.2 Resources contributed (e.g. money or time) to the focus area.	Facilitating the improvement of public well-being



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