

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 2020



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 2020. 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 the Company. 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 the headquarters of China Tower Corporation Limited, as well as its branches and subsidiaries. The scope of data, and statistics and calculation methods are specified in the Report.

Reporting period

The reporting period of this Report is from 1 January 2020 to 31 December 2020 (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, as indexed in the appendix of this Report.

Confirmation and approval

This Report was approved by the Board of Directors on 8 March 2021.





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Certain phrases in this Report are translated from proper nouns in Chinese. The English translation is for your reference only.



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Chairman's Statement

The year 2020 was the last year for China in building a moderately prosperous society in all respects and concluding the 13th Five-Year Plan. It was also the year of the extensive commercial rollout of 5G networks, and the crucial year for China Tower to implement its business transformation and upgrading and the "One Core and Two Wings" strategy. This year has been a challenging year, not only because of the impacts from the COVID-19 epidemic, but also major changes in internal and external situations. Against such a backdrop, China Tower strives to create a new development pattern for high quality growth by accelerating its business transformation and upgrading, working tirelessly to promote the sharing of telecommunications infrastructure, and facilitating the deployment of 5G networks. The Company adhered to its mission of "serving the industry and the society through sharing" at all times. By integrating into the national development strategy, the Company endeavored to serve the society and support the economic development. The Company also fulfilled its social responsibilities and demonstrated commitments while contributing to the collaborative development of the industry.

Tong Jilu

*Chairman of the Board
China Tower Corporation Limited*



Strengthening resource sharing to support the implementation of the "Cyberpower" strategy.

The development of telecommunications infrastructure is the cornerstone for implementing the strategy of "Cyberpower" and for advancing the national economic growth as well as for the informatization of society. As the "national team" and "main force" in the construction and operation of telecommunications infrastructure, the Company upheld the principle of "prioritizing co-location and sticking to sharing philosophy in building up new site", focused on shared growth, fully utilized existing sites and social resources, and unified development with coordinated sources to prop up the construction of the world's largest mobile broadband network in China. As of the end of 2020, the Company had completed a total of 2.8 million tower construction projects, improving the co-location ratio of newly-built towers from 14.3% to 80%, and facilitating the 1.3-fold increase in the total number of sites available to Telecommunication Service Providers (TSPs). Meanwhile, the Company had achieved network coverage over high-speed railway tunnels and subways of more than 26,000 kilometers, and the area of buildings covered by indoor Distribution Antenna System (DAS) business was approximately 4.1 billion square meters. Since the commercialization of 5G networks a year ago, we effectively seized opportunities arising from the implementation of the 5G and new infrastructure strategies, overcame the impacts caused by the epidemic, generously shared existing resources, widely leveraged social resources, innovated flexible service models, worked to lower construction and operating costs, we were hereby able to reduce costs, improve efficiency and create values for the industry. We had received an aggregate of 766,000 5G base station projects demand, 97% of which were satisfied by sharing of existing sites, laying a solid foundation for the large-scale commercial use of 5G networks.

Focusing on key sectors to boost the development of digital economy.

The new digital economy is taking shape with the advancement of information and communication technologies. The development of a new generation of information and communication technologies represented by the mobile Internet, big data and artificial intelligence, are in full swing, demonstrating that the digital economy is merging with the real economy at an accelerating pace. Leveraging our site resources and strong service capabilities, we firmly seized opportunities created by economic and social transformation and the increased applications of information technology. Through relying on tower resources and the Internet, we were able to transform "telecommunication towers" into "digital towers". Thus, we managed to develop our capabilities on providing nationwide video surveillance and digital information services, to support the national economy and people's livelihoods, and to continuously empower the development of the digital economy. We proactively built a platform for socialized energy application through utilizing site resources and expertise in ensuring power supply. We provided "green, safe and convenient" energy services, including battery exchange and power backup to all walks of life, contributed to the optimization of the social energy structure and supported the green and sustainable development of the energy economy.



Chairman's Statement

Deepening reforms and innovation to lead high-quality development.

Embarking on a new development stage, we committed to a new development philosophy and built a new pattern of development. Adhering to high-quality development, by setting innovation as our essential driving force, we built on deepening transformation and market-oriented reforms, implemented the "One Core and Two Wings" strategy, extended the philosophy of resource sharing, and steadily promoted the Company in being an enterprise with the best potential for growth and value creation. Leading by promoting innovation, we concentrated on improving technologies, products, services, procurement and management innovations, escalated the transformation from investment-driven to innovation-driven, and made effective efforts to enhance our competitiveness. We accelerated digital transformation to improve our capabilities of digitalized asset management and achieved intelligent management of assets and operations. Moreover, we established a novel organization system, optimized and innovated the management system, and focused on attracting and training innovative talents to constantly boost innovation within the Company.

Practicing the green development philosophy to fully fulfill corporate responsibilities.

We took the initiative to practice the philosophy of green development, to form ecological harmony, and to support green development and the formation of ecological culture. The Company responded actively to the government's requirements on peaking emissions in carbon dioxide and reaching carbon neutrality. With a keen eye on climate change, we continued to work on promoting the use of clean energy. Through adopting innovative solutions, optimizing products and improving processes, we enabled more naturally and seamlessly integration of telecommunication towers into the environment. We proactively fulfilled our social responsibility, facilitated the construction of wireless communication networks in remote areas, supported TSPs to provide inclusive services, and helped eliminate the "digital divide". We actively responded to the policy of targeted poverty alleviation, supported poverty eradication through industrial development, communications and e-commerce, etc. In addition, we made full efforts to secure smooth communications, and proactively took responsibilities in various emergencies such as natural disasters and epidemics.



Caring for employee development and enhancing talent fostering.

Adhering to the people-oriented philosophy, we effectively protected the rights and interests of employees, paid due attention to their physical and mental wellbeing, and shared the fruits of the Company's sustainable development with them. We were committed to supporting employee's personal development, seeking to improve our competitiveness through effective human resources strategy. We consistently developed our training system and innovation incentive mechanisms and continued to improve our employee training program. We provided a clear path for career progression and continuously invested in fostering talents, to improve employees' competencies.

2021 is the opening year for China to implement the "14th Five-Year Plan", and is also the crucial year of the three-year action plan for the reforms of state-owned enterprises. We will continue to uphold the philosophy of high-quality and sustainable development, focus on building a new development pattern, and stick to the innovation-driven development approach and the market-oriented reforms, to enhance core competences, strengthen and optimize our one core business, and further promote the Two Wings business. All together, these will lay a solid foundation for our high-quality development during the "14th Five-Year Plan" period. In conclusion, we will work hard to usher in the new chapter for our transformation towards being an enterprise with the best potential for growth and value creation.



Tong Jilu
Chairman of the Board



Introduction to China Tower

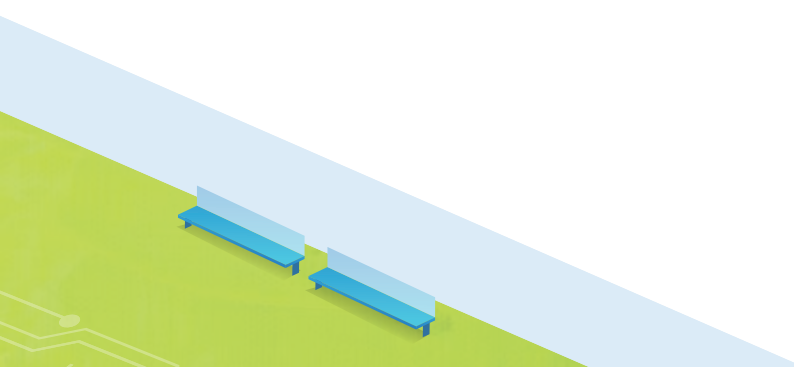
China Tower, a large enterprise that provides telecommunications tower infrastructure construction and operation services, was incorporated with investments from China Mobile Communications Co., Ltd., China United Network Communications Co., Ltd., China Telecom Corporation and China Reform Holdings Corporation Ltd., against the backdrop of implementing the “Cyberpower” strategy, deepening the reform of state-owned enterprises, and promoting the sharing of telecommunication infrastructure resources. Based on tower site resources and expertise in construction and maintenance, the Company specializes in the development of telecommunication towers and supporting infrastructure for TSPs, public network coverage over high-speed railway tunnels and subways, the construction, maintenance and operation of large indoor DAS. We also provide trans-sector site application and information services.



Introduction to China Tower

Founded on 15 July 2014, and headquartered in Beijing, the Company has provincial and prefecture-level branches in 31 provinces across China, and has grown into the world's largest telecommunications tower infrastructure service provider. The Company was listed on the main board of the Hong Kong Stock Exchange on 8 August 2018 (stock code: 0788.HK). As of the end of 2020, the Company's total assets exceeded RMB330 billion, with over 2 million tower sites under operation and management, covering 31 provinces, municipalities and autonomous regions across China.

The Company practices the philosophy of resource sharing and green development, unleashes the full potential of its role as the "national team" for the construction and operation of wireless communications infrastructure, and another role as the "main force" for 5G infrastructure. Leveraging the core advantage of providing "low-cost, high-efficiency and services", the Company economically and efficiently supports the infrastructure development of 5G and other wireless communications, saving a substantial amount of investment across the industry and improving economic and social benefits, to provide strong support for the development of "Cyberpower" and "Digital China" strategy. While managing the collaborative construction and centralized operation of communications infrastructure, the Company leverages its unique advantages in resources, promotes industrial sharing and expand social sharing. Furthermore, the Company has established wholly-owned subsidiaries of 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), to accelerate the deployment of "One Core and Two Wings" strategy. The Company is committed to becoming a world-class general telecommunications infrastructure service provider, as well as a service provider of information application and new energy operation with core competitiveness. Smart Tower Corporation Limited promotes the transformation of "telecommunication tower" into "digital tower" by relying on its nationwide telecommunications infrastructure resources and specialized capabilities. Focusing on emergency response management, land, agriculture and forestry, ecological and environmental protection, transportation, petroleum, satellite positioning, edge computing, etc., Smart Tower Corporation Limited provides Trans-sector Site Application and Information (TSSAI) services, serving the wider national economy and people's livelihoods, with efforts to becoming an information application service provider backed by "digital towers". Relying on site resources and expertise on securing power supply, Energy Tower Corporation Limited proactively expands its energy operation services with focuses on finance, transportation, medical care, and low-speed electric vehicle sectors, steering towards the healthy development of the platform-based sharing economy, and striving to become a service provider of new energy applications with core competitiveness.



Introduction to China Tower

Honors awarded to the Company in 2020 includes:

*June
2020*

China Tower won the honorary title of the enterprise with “China Accounting Management Practice Innovation Platform” from China Association of Chief Financial Officers.

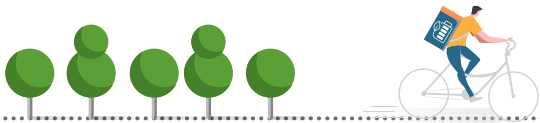
The Ministry of Industry and Information Technology circulated a notice of commendation regarding 102 outstanding teams and 305 outstanding individuals in the pilot program of inclusive telecommunications services, and China Tower’s 6 prefecture-level branches and 20 frontline employees won the awards.

*October
2020*

China Tower Hubei Wuhan Branch was commended as an excellent team in the Award of Excellence Conference and Honor of the Brave Conference for Central Enterprises in the Fight against COVID-19, organized by SASAC.

*December
2020*

China Tower Corporation Limited won the first Best Practice Award of China Intelligent Finance.



Introduction to China Tower

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.

China Securities
Golden Bauhinia
Award

"Top 100 Listed
Companies by
Comprehensive
Strength"

"Hong Kong
Bronze Award"

for ESG report in
the ARC International
Annual Report Competition

China Tower won the
"National Outstanding
Poverty Alleviation Unit
in the Information and
Telecommunications
Industry" award

"APAC
Excellence Award"
for ESG report in
the ARC International
Annual Report Competition



Management System of ESG

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” and “5G infrastructure”, to promote the healthy development of the platform economy and the sharing 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.

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 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.

Stakeholder communication and substantive analysis

The Company pays close attention to and actively responds to the needs of stakeholders. We identified our major stakeholders according to the features of business operation and acquired their major concerns on ESG through multiple communication channels. The key stakeholders that we have identified, 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		• Meetings with government and regulatory authorities
		• Environmental protection		• Disclosure of compliance reports
		• Climate change		• Relevant conferences and forums
Shareholders and investors		• Legality and compliance		• General meetings
		• Transparent governance		• Annual reports and announcements
		• Climate change		• Investor meetings
Customers		• Customer service		• Dedicated customer managers
		• Quality maintenance		• 10096 service hotline
		• Customer complaints		• Customer complaint management mechanism
		• Privacy protection		• WeChat service account
Employees		• Employee interests and benefits		• Employee representatives conferences
		• Remuneration system		• Employee activities
		• Labor standards		• Employee training
		• Training and development		• Performance review mechanism
Communities		• Health and safety		• Employee appeal mechanism
		• Targeted poverty alleviation		• Volunteer activities
		• Social welfare		• Poverty alleviation plans
Suppliers		• Transparent procurement		• Procurement activities
		• Equal competition		• Supplier evaluation
		• Business ethics		• Supplier portals
		• Win-win and mutual benefits		• Supplier hotlines

In 2020, 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 identified important topics of the year, i.e. “Product Responsibility”, “Use of Resources”, “Health and Safety”, “Climate Change”, “Employment” and “The Environment and Natural Resources”. Relevant topics included “Emissions”, “Development and Training”, “Labor Standards”, “Supply Chain Management”, “Anti-corruption” and “Community Investment”. The Company will elaborate on each topic individually in this Report.

Embarking on a New Journey to Support China's "Cyberpower" Strategy



Effectively supporting the 5G infrastructure construction

Empowering digital economy on multiple fronts

Serving people's livelihoods with smart energy operation

Embarking on a new journey to support China's "Cyberpower" strategy

Effectively supporting the 5G infrastructure construction

Guidelines for sustainable development of China Tower

The development of telecommunications infrastructure is fundamental to practicing the "Cyberpower" strategy and for advancing the national economic growth and the development of an information-oriented society. The Company, adapting itself to the "digital economy" and "sharing economy" campaigns, deepens the philosophy of shared development, and upholds the principal of "prioritizing co-location and co-construction over new and single construction", taking the initiative to coordinate and utilize own resources and social resources, and accelerate innovation and transformation of existing construction and service models, effectively support the intensive and efficient construction of 5G networks, to rapidly promote the network capability of China. Building on the 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 2020

Promoting sharing to reduce redundant construction and waste of resources

- The co-location rate of newly-built towers reached 80%, with a tower tenancy ratio of 1.66
- The total number of towers spared from building was 840,000, resulting in a saving of RMB150.5 billion of investment and 44,000 mu of land

Fully leveraging the carrying capacity of existing tower sites, effectively improving the efficiency of resources use, and effectively promoting the economic and efficient deployment of 5G networks

- In 2020, the Company undertook 501,000 5G base station projects, a total of 766,000 5G base stations construction demand received to date, 97% of which were satisfied by renovating existing sites



Embarking on a new journey to support China's "Cyberpower" strategy

Actions Taken by China Tower in 2020

We have been continuously enhancing our ability to coordinate social resources, promote the sharing of public resources, and deepen industry resources collaboration with the aim to accomplish sufficient network coverage while simultaneously reducing the construction of new towers, and to make every effort to ensure the low-cost and high-quality development and operation of 5G networks

- Proactively promoting the sharing of public resources such as public institutions, state-owned enterprises, tertiary institutions, hospitals and scenic spots, making full use of industrial resources such as railways, electric power and postal services to accelerate construction and save investment and land occupation.
- Around 87% and 15% of newly-built small cells and macro cells were built by using social resources, respectively

Since its establishment, the Company has greatly sped up network construction by coordinating resources, unifying construction and promoting sharing. We prevented redundant construction of telecommunication facilities by consistently deepening industry-wide sharing and collaboration, improving the co-location rate of newly-built towers from 14.3% to 80%, of which, 97% of 5G base station projects were satisfied by sharing of existing sites, saved considerable amount of investment for the industry and significantly improved the utilization efficiency of resources. Furthermore, the Company continued to innovate its construction model to meet the needs of network construction at low cost and high efficiency, and for ongoing improvement of site co-location. As of the end of 2020, the tower tenancy ratio had increased from 1.62 in late 2019 to 1.66, which has largely improved economic and social benefits.

Embarking on a new journey to support China's "Cyberpower" strategy

(I) Rapid 5G Network Deployment

To address the challenges involved in 5G network construction such as the density of sites, difficulties in indoor coverage and large investment, the Company conducted in-depth examination of existing site resources by leveraging its resources coordination advantage, and effectively prevented redundant construction. Meanwhile, we proactively promoted 5G power supply, shared DAS and other technological innovations to strongly support the economic and efficient construction of 5G networks, helping clients to lower costs and enhance efficiency along with the synergistic development of the industry.

In response to the COVID-19 outbreak in early 2020, the Company, as a state-owned enterprise, actively fulfilled its social responsibility, completed telecommunication network construction for key epidemic prevention and control facilities such as the Huoshenshan Hospital and Leishenshan Hospital within a short span of time. We also ramped up the coordination with the prevention and control headquarters and TSPs, and effectively fulfilled our obligation for ensuring communications throughout the epidemic.

» Construction of macro cells and DAS in Winter Olympic venues to achieve rapid network coverage

Since the commencement of preparations for the Winter Olympics, the Company has upheld the ideal of the Game, which is "green, sharing, open, and anti-corruption", to provide high-quality wireless communication services of best standards during the Winter Olympics. As of the end of 2020, we had completed the construction of outdoor macro cells and indoor 5G distribution in Winter Olympic venues, including the National Speed Skating Oval, Shougang Ski Jumping Platform and the National Alpine Ski Center, as well as outdoor 5G network facilities and tunnels along the Beijing-Lijiang Expressway and Beijing-Zhangjiakou High-speed Railway. We have also successfully completed communications support tasks such as the Winter Olympics tests.



▲ Indoor setting of a Beijing Winter Olympics venue



▲ DAS construction in an Olympic venue

Embarking on a new journey to support China's "Cyberpower" strategy

Collaborative construction of 5G networks in metro lines enabling swift rollout at reduced cost

Facing with the 5G construction needs of the Fuzhou metro, the Company overcame challenges in construction, including the large scale of augmentation, difficulties in coordination and the short project timeframe, to create a low-cost 5G upgrade plan and fully coordinate TSPs in the use of the existing 13/8 leaky cables for 5G joint-construction. The Company also constructed active DAS equipment in the dense calls areas of the platforms and station concourse to resolve the issue of insufficient network capacity. Alongside with the TSPs, the entire project of 5G upgrade in the subway was completed within a month, saving more than RMB20 million in investment, and making Fuzhou the first city in China to provide full 5G signal coverage in operating subway.



▲ Application of leaky cable technology in subway



▲ Layout site of leaky cables in subway

Low-cost and high-efficiency passive 5G DAS coverage in the business complex building in Beijing Shougang Park



▲ Business complex in Shougang Park, Beijing



▲ Distributed antenna inside the building

A passive 5G DAS network was installed in the general business complex (formerly known as Beijing Shougang Desulphurization Workshop) in the Shougang Park, Beijing. As a supporting facility for the 2022 Beijing Winter Olympics, the building is designed primarily to provide creative office spaces, supplemented by retail and industrial heritage display facilities. In the process of completing the network construction in the venue, the Company adopted a passive distribution plan combining 5G passive components and antennas with wide-angle leaky cables to support multi-standard simultaneous access to 2G/3G/4G/5G networks. The average download and upload speed are above 500Mbps and 50Mbps, respectively. The construction and operating costs were substantially reduced compared with active DAS approach.

Embarking on a new journey to support China's "Cyberpower" strategy

(II) Promoting the sharing of public resources

The Company took full advantages of opportunities presented by China's "Cyberpower" and "5G Infrastructure" strategies, and coordinated with the industry to actively seek support from ministries and commissions of the state and from local governments at all levels. We coordinated with the local governments in 31 provinces and 381 prefecture-level cities to sought policy support and promoted the sharing of public resources, simplified administrative approval procedures, and reduced electricity charges, to address various issues in the current 5G network construction. We worked with most of the provincial governments nationwide to set out compulsory regulations on telecommunication construction on buildings, and enhanced our resources coordination capability. We managed to set up offices in the government service halls in 360 prefecture-level cities to promote the sharing of resources in public institutions, state-owned enterprises, tertiary institutions, hospitals and scenic spots, which has significant implications for accelerating the construction of 5G infrastructure.

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

▲ Deployment of 5G facilities on the rooftop of Jiangsu Provincial CCP Committee



▲ Deployment of 5G facilities on the rooftop of Henan government

The Company entered into a strategic cooperation agreement with the Jiangsu government, whereby Jiangsu Province opened up the office buildings in the Provincial CCP Committee compound for 5G construction with the base station rent and electricity charges waived. The Company took full advantages of its integrated capabilities of "network planning, network optimization and network construction", to quickly complete 4G/5G network signal testing, scheme design, on-site construction and connection of devices to the network in the Provincial CCP Committee compound.

The Company also entered into a strategic agreement with the Henan government, whereby the government agreed to open up its office sections and contracted China Tower to carry out coordinated construction of 5G infrastructure facilities. We successfully achieved 5G networks coverage of all the locations within and surrounding the government's office building, nearby buildings and roads, by building rooftop base stations and through 5G DAS deployment.

Embarking on a new journey to support China's "Cyberpower" strategy

(III) Furthering social resource sharing

The Company has taken full advantages of social resources to meet the needs of telecommunications network construction, and keeps enhancing partnership with the China State Railway Group to promote the construction of telecommunications infrastructure along railway lines. Through parallel planning, design, implementation and commencement of operation, we are building a high-quality railway-based public network coverage project focusing on higher efficiency, lower cost and better services. We strengthened our strategic collaboration with China State Grid and China Southern Power Grid, for the sharing of "electricity towers" and "telecommunication towers" across China, effectively saved land resources and avoided redundant construction. We had made full use of various social resources such as lamp poles, surveillance poles, traffic signs and billboards, with over 87% of the newly-built small cells satisfied by utilizing social resources, reducing redundant construction and waste of resources, and effectively lowering investment and construction costs.

►► Comprehensive coverage through sharing of road and bridge resources

Wufeng Mountain Bridge in Zhenjiang, Jiangsu Province is the first suspension road-rail bridge in China and the world's first suspension bridge integrating high-speed rail and road. Through the shared use of six 12-meter tall lamp poles on the highway of the bridge and two gantries on the main bridge, the Company enabled TSPs to mount the newly added 4G and 5G smart antennas to realize 4G and 5G network coverage on the road. We also used leaky cables and approach bridge sections in the river-crossing section of the railway for pilot collaboration with the China State Grid, and mounted the telecommunications antenna on the river-crossing 220 kV power tower, solved the coverage difficulties on approach bridge, and ultimately realized full coverage along the bridge's railway section.



▲ Shared use of street light poles and single-tube towers



▲ Mounting telecommunications antennas on the river-crossing 220 kV power tower

Embarking on a new journey to support China's "Cyberpower" strategy

➤ Accelerating network rollout in urban areas by sharing social poles and towers

The Company communicated with the Shanghai Municipal Government regarding its "Multiple Poles in One" and "From Overhead to the Ground" requirements, and effectively utilized around 14,000 existing social poles and towers in the city by integrating local poles, boxes, pipelines and external power resources. These poles have been either reinforced or replaced to meet the needs of 5G construction. At this stage, more than 600 points have been identified in the core road section within the urban area.



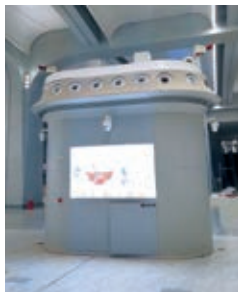
▲ Improving 5G coverage in core areas by using city integrating local poles



▲ Simultaneously completing 4G+5G coverage by using urban overpass – gantry

➤ Sharing of railway resources to achieve comprehensive network coverage

In order to achieve overall coverage of 4G and 5G networks in the Daxing International Airport – Xiong'an section of the Beijing-Xiong'an Intercity Railway, allowing passengers to have access to high-speed mobile broadband networks, and to support the operation of smart high-speed railway, the Company adhered to the principle of "prioritizing co-location over new construction", made use of 13 power box transformers, 29 equipment cabinets, around 100 kilometers of conduits and other social railway resources, to build 234 macro cells and 10 sets of tunnel/station DAS. More than 80% of the telecommunications infrastructure was built through joint-construction and sharing. At the same time, when building these base stations, the Company has made full use of station resources such as ventilation pillars and readily available cabinets for the construction of telecommunications infrastructure, optimizing the appearance of related facilities while minimizing cost.



▲ Using ventilation pillars to deploy antennas in the station



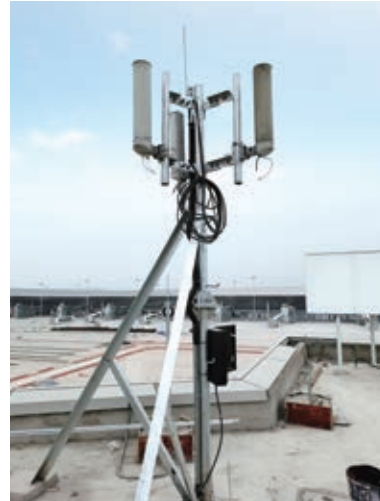
▲ Deploying antennas in built-in structures in the station

At the same time, when building these base stations, the Company has made full use of station resources such as ventilation pillars and readily available cabinets for the construction of telecommunications infrastructure, optimizing the appearance of related facilities while minimizing cost.

Embarking on a new journey to support China's "Cyberpower" strategy

Comprehensive network coverage achieved by sharing airport resources

Amidst the construction of Chengdu Tianfu International Airport, in order to make telecommunication service available throughout the airport's outdoor and surrounding supporting areas, the Company adopted the philosophy of "Multiple Poles in One" and "One Pole for Multiple Purposes", to jointly build and share telecommunication towers by adequately using social resources like the 239 light poles in the airport and the covered bridges. We converted 72 "telecommunication towers" into "social towers", and provided 72 monitoring points for the airport, realizing the dual-way availability and sharing of "social towers" and "telecommunication towers", effectively saving the overall social investment cost.



▲ Building a telecommunication tower by making use of a covered bridge



▲ Schematic diagram of Tianfu International Airport

Embarking on a new journey to support China's "Cyberpower" strategy

Empowering digital economy on multiple fronts

Guidelines for sustainable development of China Tower

Leveraging its site resources and capabilities, the Company seizes opportunities from economic and social transformation and increasing IT applications. Centering around resource sharing and data information, we transform "telecommunication towers" to "digital towers", fully integrating resources and promoting shared values, to support the national economy and people's livelihoods. In particular, we are keen on demonstrating the advantages of resource sharing and coordination in the fields of water resources, forestry, agriculture, environmental protection, transportation, earthquake alert, etc., facilitating the construction and development of the digital economy.

Actions Taken by China Tower in 2020

Based on site services and the "platform + application + ecosystem" paradigm, we continued to broaden the range of our services to cover comprehensive data information, and extended the definition of digital towers to enable a wide range of industries while supporting the implementation of "Cyberpower", "Digital China" and "Smart Society", promoting the development of the digital economy. Typical industries that we are serving include:

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



Embarking on a new journey to support China's "Cyberpower" strategy

Focusing on high-quality development, the Company was dedicated to social resource sharing and further developed its core products by paying particular attention to platform operations. Over the past years, we have supported industries that concern the national economy and people's livelihoods, such as water resources, forestry, agriculture, environmental protection, transportation and earthquake alert, etc. We have continuously expanded the definition of digital towers, boosted the development of the digital economy, and were committed to becoming an information application service provider backed by digital towers.

(I) *Facilitating the smart development of water resources*

In January 2021, the Company entered into a strategic collaboration agreement with the Ministry of Water Resources to jointly promote the full coverage of communications over water resources and the construction and application of video surveillance for water resources, and facilitate the modernization of the water resources governance systems and governance capacity building. The site resources of China Tower were highly aligned with the demands of digitalizing water resources supervision and monitoring. Thus far, the Company has carried out more than 400 water resources projects in 28 provinces and municipalities across China, focusing on the video monitoring of reservoir water levels, intelligent video monitoring of water flow in ecological basins, maintenance and security of hydrological observation equipment, and the sharing of underlying resources and facilities to promote smart water resources, and providing real-time forecast, projection and early warning.

Smart reservoir management optimized command and control capabilities

In Shandong, the Company made full use of the video monitoring platform for water resources, utilized the high-point resources of towers around the reservoirs to conduct panoramic monitoring of important reservoir facilities such as dams, spillways (gates) and water release tunnels. The establishment of "the overarching map for commanding and coordination" covering 253 large- and medium-sized reservoirs in 17 prefecture-level cities across the province provided strong support for ensuring the safety of flood control in Shandong, enhancing the capability of commanding and coordination in water resources defense.



▲ Shandong water resources video surveillance platform

Embarking on a new journey to support China's "Cyberpower" strategy

Hydrological monitoring along the Yangtze River

In July 2020, the water level in the Tianxingzhou section of the Yangtze River spiked, making it necessary to open the dyke for flood discharge. Government departments video-monitored the entire process via cameras mounted on the towers, enabling local officials to monitor the entire resident evacuation process as well as flood discharge operations to ensure the safety of people and the flood discharge under control. Our support has received many complements from local government officials.



▲ Yangtze River Tianxingzhou flood control and monitoring in Hubei

Embarking on a new journey to support China's "Cyberpower" strategy

(II) Supporting forest and grassland disaster prevention and alleviation

In May 2020, the Company entered into a strategic collaboration agreement with the State Forestry and Grassland Administration. The Company utilized the base station tower resources across China, and used big data, cloud computing, artificial intelligence and other technologies to create a data collection system based on video surveillance and the Internet of Things. We worked with the State Forestry and Grassland Administration to build an integrated monitoring system based on "sky, space and land" to prevent and alleviate natural disasters in forests and grassland. Currently, 29 provincial and municipal branches are collaborating with local governments to ensure effective fire prevention in forests.

» Video surveillance for forest and grassland fire prevention, covering all high priority locations

In Hebei, the Company implemented a special solution integrating "high-point tower leasing + front-end camera + back-end command platform + dedicated transmission line + maintenance services". Real-time monitoring for forest fire prevention was made available in more than 85% of the priority areas in Hebei. The alarm and action linkage mechanisms were established based on AI analysis. The weather remained windy in North China in March 2020, and several forests in Hebei caught fire. Benefited from the effective early warning issued by the China Tower system, the fires were contained in time and the loss of lives and property were minimized.



▲ The video surveillance platform for forest fire prevention in Hebei



Embarking on a new journey to support China's "Cyberpower" strategy

»» Further improving the forest fire monitoring and early warning system to ensure effective disaster prevention and alleviation

In Anhui, in order to further improve governance capabilities in forestry resources protection and disaster prevention and alleviation, the Company made full use of its advantageous resources such as base station towers, electricity and maintenance services, and applied big data, cloud computing, artificial intelligence and other technical means to actively support the governance in forest disaster prevention and alleviation, improved the forest fire prevention, monitoring and early warning system, pest monitoring, wildlife monitoring, and forest resources monitoring.



▲ The forest disaster prevention and alleviation management system in Anhui



(III) Supporting the development of digitalized agriculture

In January 2021, the Company entered into a strategic collaboration agreement with the Ministry of Agriculture and Rural Affairs. Through the tower sharing mechanisms, we 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. In particular, around 155,000 tower sites had been built within 500 meters from the banks of "One River, Two Lakes and Seven Rivers" along the Yangtze River Basin, which gave relevant entities access to high-point video surveillance data, helping them overcome the long standing regulatory challenges following the Yangtze River fishery ban. So far, collaboration projects have been implemented in the waters covered by the fishery ban to improve seven types of operations – law enforcement and supervision, fishery regulation, rural governance, farmland and agricultural machinery monitoring, new agricultural infrastructure development, rural human settlements, and informatization of financial and insurance services in rural regions.

Embarking on a new journey to support China's "Cyberpower" strategy

» Monitoring of fishery ban on the Yangtze River to protect local water ecosystems

The "fishery ban on the Yangtze River" is a major decision made by China for the overall nationwide planning and the good of future generations. It is a significant move to implement major protection measures for the Yangtze River Economic Belt and to reverse the deterioration of the Yangtze River's ecological environment. In order to help the ecological protection and governance of large rivers and major lakes and wetlands, the Company promoted the development of China's first "water, land and air" inclusive real-time dynamic fishery monitoring system, to deal with "electrocution, poisoning and explosion" and unregistered ships involved in fishing and illegal fishing on the banks through automatic AI detection and warning as well as law enforcement and evidence collection, realizing remote monitoring, centralized command and deployment, to effectively improve technical defense means to secure the outcome of the Yangtze River fishery ban.

In Chongqing, the Company planned to set up more than 100 line-of-sight video monitoring equipment, so as to establish an AI dispatch system for fishery administration and law enforcement, and created a clear frame for fishery administration and law enforcement based on the high-point resources on the towers along the Yangtze River, Jialing River, Wujiang River and other important river sections under its jurisdiction.

In Anhui, the Company selected high-points on towers along the trunk and tributaries of the Yangtze River in nine cities and counties, including Wuhu, and set up radars and high-definition binocular cameras to detect and track targets on the surface of the water, so as to realize the seamless coverage of no-capture management throughout the day.

In Hubei, the Company conducted real-time monitoring of illegal fishing in Xiliang Lake, the mainstream of the Yangtze River, and set up low-point monitoring at important docks and checkpoints to identify and record vehicles and personnel and publicize the laws on fishing prohibition.



▲ The fishery ban monitoring platform on the Yangtze River



Embarking on a new journey to support China's "Cyberpower" strategy

Smart field monitoring ensured agricultural product quality and safety

In Heilongjiang, the Company used local base station sites to perform grid-based monitoring of agricultural fields, and adopted the "high-point monitoring + Internet of Things monitoring + data center" model to cover 8 towns and 4 townships in Ning'an City, with approximately 1.96 million mu of agricultural land, forests, major highways and key water bodies, facilitating the informationization of farmland with high standards, further ensuring the quality and safety of agricultural products, and promoting the advancement of agricultural science and technology.



▲ Informationized agricultural station site in Ning'an City, Heilongjiang Province



Embarking on a new journey to support China's "Cyberpower" strategy

(IV) Supporting the governance of ecological and environmental protection

The Company built up an integrated smart environmental protection and monitoring system with core products such as straw incineration ban monitoring, grid-based atmospheric monitoring and water pollution prevention and control, and has developed a comprehensive and integrated environmental protection and monitoring solution, which has been commended by the Ministry of Ecology and Environment and local environmental protection departments (bureaus), helping to improve the environmental protection and governance capabilities of local governments, and contributing to the successful implementation of the "Beautiful China" initiative.

»» Straw incineration monitoring covering all high-priority fire safety locations

In Hubei, with a view to ensuring effective enforcement of the straw incineration ban through rigorous monitoring, the Company and the local ecological and environmental bureaus launched the "clairvoyance" project against straw incineration, and established an intelligent early warning platform to perform 360-degree 24/7 real-time monitoring of the key locations. In the event of a fire, the early warning platform would immediately alert responsible staff via WeChat, SMS, etc., which greatly improved work efficiency and minimized losses.



▲ Early warning of straw incineration ban on the platform

In Hebei, the Company seized the opportunity of "winning the battle to protect the blue sky" and built up an environment-friendly straw incineration monitoring and service platform for the local environmental protection authorities, and imposed the AI function of "scattered bituminous coal recognition" on the platform, which effectively improved the service capability of the monitoring platform. As of the end of 2020, more than 4,900 "black smoke" incidents had been investigated and verified.

Embarking on a new journey to support China's "Cyberpower" strategy

» A unique tri-purpose environment monitoring station was developed to explore new models of air pollution governance

The Company has integrated the economic methodology of atmospheric pollution control, ASPI model, and statistical methodology of atmospheric environmental resources, to create unique tri-function environmental monitoring tower sites that are capable of performing "atmospheric natural purification capability real-time monitoring", "atmospheric environmental capacity monitoring" and "pollutants regional transmission boundary sentinel", to accurately identify the largest pollution sources in the region, calculate the regional atmospheric environmental capacity, and formulate a reasonable plan of pollutant emissions and analyze the impact of external pollutants in the region.

In Beijing, Tianjin and 26 other surrounding cities ("2 + 26" cities), the Company used existing resources to deploy more than 3,000 monitoring sites in the region. It has effectively established monitoring coverage in various locations such as roads, parks, rural areas and mountainous areas, enabling the local governments to carry out precise technology-based pollution control.



▲ "2+26" urban air pollution grid-based monitoring

Embarking on a new journey to support China's "Cyberpower" strategy

(V) Supporting the smart development of transportation

Regards road and railway surveillance, the Company used technologies such as smart monitoring, IoT sensing, AI and AR to perform real-time monitoring of road conditions, traffic condition assessment, intelligent plan management, emergency response police coordination and other functions, facilitating "smart transportation" by providing fully integrated information solutions. From the smart logistics perspective, the Company used the high-altitude panoramic observation system to track and locate logistics vehicles and, in combination with cloud platform and big data analysis, to carry out real-time monitoring of data concerning the location and status of the vehicles.

▶▶ Rail transit monitoring effectively ensured passenger safety

In Zhengzhou, Henan province, the Company conducted high-level monitoring on the 161-kilometer track area of the operating subway by making full use of the Company's unique advantage of elevation to deliver real-time monitoring of ground conditions above the track, which in turns ensured the safety of railway transit operations and safeguarded passengers against safety hazards.

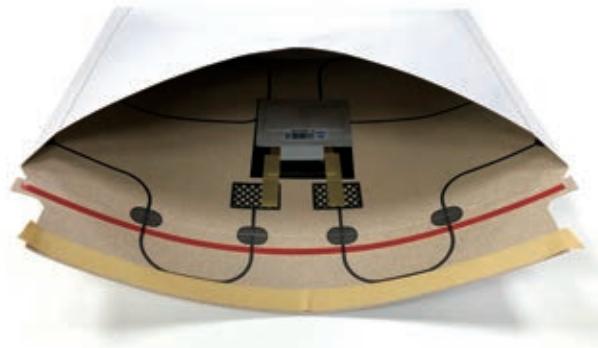


▲ The high-level intelligent video surveillance system

Embarking on a new journey to support China's "Cyberpower" strategy

Package tracking and locating optimized safety and security in logistics

In Guangxi, the Company provided customers with location tags by building an extensive IoT network and establishing a locating cloud platform to allow customers to track their valuable packages effectively, preventing losses of parcels in transit and reducing the cost of parcel locating services in the modern logistics service industry. The application of big data in package locating services laid the foundation for the integrated development of big data for the service industry.



▲ Package locating tags in logistics

(VI) Providing early warnings against earthquakes and disasters

The Company proactively shared its nationwide site resources and its professional and efficient construction and maintenance capabilities to provide site and information services for earthquake emergency warning, as well as a complete range of supporting services for the fast establishment of earthquake early warning platforms, in line with the Company's commitment to shouldering social responsibility, and facilitating the national campaign of earthquake prevention and alleviation.

Embarking on a new journey to support China's "Cyberpower" strategy

Supporting earthquake emergency management by deploying AI-enabled seismic intensity devices

The Company has assisted the CEIC in deploying intelligent seismic intensity devices, completed the construction of the National Earthquake Intensity Quick Reporting and Early Warning Project, so as to achieve nationwide quick reporting of earthquake intensity by minute-level instruments and early warning on earthquake by second-level instruments in key areas. In December 2019, a magnitude 5.2 earthquake occurred in Zizhong County, Neijiang City, Sichuan Province. The Sichuan Earthquake Administration issued an early warning message 8 seconds before the arrival of the earthquake wave, and transmitted the earthquake information to the Sichuan Emergency Management Department in real time. The project had proved the effectiveness in supporting earthquake emergency response and allowed the public more time to avoid danger.



▲ Demonstration station for earthquake monitoring

Early warning of earthquakes for building complexes

The Company selected the Beijing metropolitan region for its special status, the Sichuan-Yunnan area with a relatively high frequency of earthquakes, and the Guangdong-Hong Kong-Macao Greater Bay Area with high frequency typhoons, to implement the project of "Earthquake Risk Intelligent Detection and Disaster Assessment Platform Building and Engineering Application for Urban Large-scale Building Groups" in 9 cities within the aforementioned regions, i.e. Beijing, Tianjin, Tangshan, Kunming, Dali, Xichang, Kangding, Shenzhen and Heyuan. We selected buildings with typical characteristics, installed structural intelligent monitors, widely demonstrated applications before large-scale deployment. Taking into account the occurrence of earthquakes, typhoons and other extreme natural disasters, performed comprehensive testing and validation of the earthquake risk monitoring system for its feasibility, reliability and advancement.



▲ "Research and Development of Intelligent Detection Systems for Earthquake Risks of Urban Large-scale Building Groups" Onsite Investigation of Beichuan Earthquake

Embarking on a new journey to support China's "Cyberpower" strategy

Serving people's livelihoods with smart energy operation

Guidelines for sustainable development of China Tower

The Company adheres to the philosophy of sharing and coordinated development. Relying on its site resources and expertise on securing power supply, the Company takes the initiative to deploy energy operation services, builds up an energy social sharing platform, and helps optimize the social energy structure around battery exchange, power backup, power generation and battery charging service, and supports the sustainable development of energy economy and green economy.

Actions Taken by China Tower in 2020

Facilitating the expansion of energy operation business, and actively exploring a broader range of energy services

Battery exchange service:

- The battery exchange service has been rolled out in 248 cities across China, and more than 20,000 battery exchange sites have been built to benefit more than 300,000 food and parcels delivery drivers

Power backup service:

- Power backup service has been provided to traffic lights in 309 cities
- Power backup service has been provided to medical institutions in 196 cities
- During the 2020 high school and college entrance examinations, the Company undertook power backup projects for the National College Entrance Examination in 22 provinces and 90 prefecture-level cities across China



Embarking on a new journey to support China's "Cyberpower" strategy

There has been an 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 deepened sharing and collaboration, and strived to extend the Company's base station-reliant power security capability to local communities. By relying on the core resources and capability advantages such as its rich site resources, extensive property relationships and visible, manageable and controllable monitoring platforms, the Company provided communities with highly diversified energy services such as battery exchange, power backup, power generation, battery charging and so on. The Company seeks to develop into a new energy operation service provider with exceptional core competitiveness.

(I) Smart and secure battery exchange

China currently has more than 5 million food and parcels delivery drivers nationwide, providing essential security for social life. During the COVID-19 epidemic, they shuttled through the streets and alleys daily and played a crucial role in protecting people's livelihoods. In response to issues with the delivery vehicles of the deliverers, such as slow charging, lack of safety and short battery duration, the Company has launched smart battery exchange service by utilizing of the existing site resources in full scales, and deployed battery exchange networks on a large scale, for full coverage of hot spots such as core business districts. As of the end of 2020, the Company operated battery exchange service in 248 cities across China, and set up a total of more than 20,000 battery exchange stations, benefitting more than 300,000 food and parcel delivery drivers. We worked hard to create a safe and efficient power consumption mode for low-speed electric vehicle users in the era of sharing economy.



▲ Accessible official store for battery exchange



▲ The Riders' Home provides a convenient rest place for riders

Embarking on a new journey to support China's "Cyberpower" strategy

» Establishing strategic partnerships with leading companies to boost the development of the battery exchange and power backup businesses



▲ ▼ Signing strategic collaboration agreements with China Post, Meituan and SF Express



Following the principle of "achieving complementarities through resource sharing, win-win collaboration and mutual development", the Company integrated its resources, and established comprehensive, long-term and stable strategic partnerships with clients such as China Post, Meituan, and SF Express, to carry out in-depth collaboration in various fields such as battery exchange, power backup and so on.

Embarking on a new journey to support China's "Cyberpower" strategy

(II) *Reliable power backup service*

The demand for continuous and stable power supplies in various industries has been on the rise in line with socioeconomic development. Based on its well-established power security capability to support telecommunication base stations, the Company provided integrated power security solutions to clients with uninterruptible power supply demand, covering "power backup + power generation + monitoring + maintenance". These solutions have been widely applied in financial service outlets, transportation, medical care, education and government services alike. As of the end of 2020, the Company has provided power backup service for traffic lights in 309 cities and medical institutions in 196 cities.



▲ Traffic signal light power backup cabinet

Embarking on a new journey to support China's "Cyberpower" strategy

Power backup for medical vaccine cold chains, effectively ensuring vaccine safety

With a view of resolving the issue of unexpected power outages that plague medical institutions, especially primary medical institutions with relatively outdated electricity supply facilities, and ensuring the quality and safety of vaccination, the Company has worked with local health authorities in Ma'anshan, Anhui Province and other cities, to create an "uninterruptible power backup + emergency power generation" system to deliver full coverage of 24-hour uninterrupted power supply for the medical vaccine cold chains.



▲ Medical vaccine storage refrigerators

Embarking on a new journey to support China's "Cyberpower" strategy

▶▶ Stable power supplies during the National College Entrance Examination

In July 2020, due to COVID-19 and heavy rains in many places across China, the stability and security of power supplies at some examination halls during the National College Entrance Examination became a major public concern. In order to ensure the smooth conduction of examinations in these places, China Tower's local branches at various levels set up a power security teams for the college entrance examination in advance, and proactively contacted local enrolment authorities to formulate detailed power security solutions for the college entrance examination, which involved the use of portable lithium battery packs and sound-proof generator vehicles and the building of backup lithium battery system to provide power backup service for major test centers, test command centers, test paper secrecy rooms, test room broadcasting and wireless signal shielding systems across China. During the high school and college entrance examinations in 2020, the Company undertook power security projects for the National College Entrance Examination in 22 provinces and 90 cities across China, ensuring "zero outage" during the examination period.



▲ Silence maintenance and power backup for the National College Entrance Examination in Hebi

Embarking on a new journey to support China's "Cyberpower" strategy

(III) User-friendly battery charging service

Revolving around the strategic positioning as a new energy operation service provider with exceptional core competitiveness, the Company proactively invested in the research and development of charging pile platforms and equipment for low-speed vehicles, and conducted detail-oriented management on the construction of battery charging piles, leveraging its core competitive advantages, actively promoted relevant initiatives that concern people's livelihoods.

▶▶ User-friendly battery charging service in residential communities

In Anhui Province, the Company actively responded to the government's call by fulfilling its social responsibility as a state-owned enterprise, and worked closely with local governments, districts and communities to actively tackle challenges of battery charging safety facing community residents. Our employees went to the front line of the property to promote the use of the IoT among local residents for battery charging safety and to improve services and customer experience. As of the end of 2020, battery charging service operated by the Company in Anhui Province had covered 16 cities and 3,500 local communities.



▲ Community battery charging piles

Generating New Energy for High-quality Development

Stepping up innovation-driven development

Striving for consistent improvement in
management

Focusing on enhancing service quality



Generating new energy for high-quality development

Stepping up innovation-driven development

Guidelines for sustainable development of China Tower

The Company has always been insisting on innovation-driven development, and takes into account the Company's reality to continuously improve independent innovation capabilities, to encourage innovation, and to promote high-quality development through innovation of technology, business, management and institutional mechanisms. Through innovation of technological management, we enhance the Company's capability of technological innovation and build on core technological competitiveness for the Company. Innovation of products and technologies allows the Company to better meet the needs of clients and society to facilitate social information exchange and economic development, and the continuous enhancement of innovation of IT construction and management supports the Company's business development and management improvement.

Actions taken by China Tower in 2020

Innovation of technological management to enhance the Company's capability of technological innovation

- Strengthening top down collaborative innovation to improve the effectiveness of R&D operations
- Paying greater efforts in the promotion and application of innovative achievements, and enhancing technology to enable the Company to carry out high-quality and sustainable development

Innovation of product technology to meet the needs of clients and society

- Promoting the renovation programs for existing sites and lowering the product cost to meet the construction need effectively and efficiently
- Innovating 5G shared DAS, 5G power supply and other products to support 5G development
- Promoting the formulation of industry standards to boost industry development



Generating new energy for high-quality development

Actions taken by China Tower in 2020

IT construction and management innovation support the Company's business performance and enhance management practices

- Implementing the "One Point Construction to Provide Nationwide Support" model to independently develop and build up an IT platform to support business development
- Initially applying IoT, big data and cloud computing technologies in base station field supervision monitoring management system
- The battery exchange platform applies an independently designed Internet platform architecture to support the Company's innovative development in the energy operation service sector

The Company actively seized development opportunities arising from national strategies such as "Cyberpower", "Digital Economy", "5G Infrastructure" and "Integration of Digital Economy with the Real Economy", to enhance the driving force of innovation for ongoing improvement of independent innovation capabilities and encourage employees to carry out innovation. By actively bringing into play the leading role of innovation, the Company fully supported the business development of "One Core and Two Wings". In 2020, the Company continued to revamp the top-level design of the innovation system, optimized the institution and mechanism of innovation, built on the Company's technological innovation and effectiveness, and proactively promoted the innovation, R&D and standardization of 5G power products, promoted the innovation and application of 5G passive DAS, carried out plans and product innovations for existing tower sites and new towers, promoted the standardization of energy operation business products, and pushed ahead with IT development and management innovation to speed up business development.

Generating new energy for high-quality development

(I) Innovation of technological management

The Company consistently improved the technological management innovation mechanism to drive the implementation of the national innovation-driven strategy, enhance the Company's capability of technological innovation, and boost high-quality development driven by technological innovation.

Top down collaborative innovation: Enhance the collaborative innovation between the Headquarters and the Zhengzhou 5G Technological Innovation Center and the Hangzhou Internet of Things Technological Innovation Center. The Headquarters strives to make technical breakthroughs, develops relevant plans, and sets standards. Relying on their territorial resources and active involvement in front line operations, the technological innovation centers test and apply technological innovations in pilot initiatives, with the aim of enhancing the Company's overall capability of innovation.

Achievement promotion and application: The Company adheres to the orientation based on the effect of application, optimizes the evaluation mode for innovative projects, includes project benefits and efficiency, innovation and generalizability into our standards, and enhances the organic connection between achievement evaluation, application and promotion. We pay greater efforts in the promotion of outstanding innovation results, compile collections of outstanding cases, guidance and technical standards, organize Company-wide technical training, formulate promotional plans for the rapid replication and application of innovation results throughout the Company, and enhance technology to enable the Company to carry out high-quality sustainable development.

(II) Product technology innovation

Adopting a value-creation-oriented approach to technological innovation, the Company has stepped up efforts to make technical breakthroughs and collaborative innovations based on the actual needs of the market and technology applications and development, and ramped up technology R&D to boost business development, focusing on key areas such as cost-effective DAS solutions, power solutions and tower products.

Innovative R&D of 5G DAS products

In view of the relatively limited outdoor 5G coverage and the absence of DAS products that match the high frequency of 5G, the Company has conducted in-depth research on 5G technology and the evolution of TSPs' networks, taken into account the coverage requirements of different indoor application scenarios, enhanced technological innovation, and stepped up R&D efforts along the industrial chains, to launch a complete range of passive DAS products and cost-effective sharing solutions such as 5G POI, new leaky cables, enhanced feeder connectors, etc., fully supporting TSPs in 2/3/4/5G full-band sharing. These have been put into large-scale application across China on buildings and tunnel DAS covering projects.

Generating new energy for high-quality development

In 2020, the Company continued to promote the implementation and application of 5G passive DAS, released the Technical Guidance on 5G Passive DAS and typical cases of application scenarios, completed network access testing on a complete range of 5G passive DAS products, provided technical training on 5G DAS across China, and worked with the TSPs' headquarters to carry out a 5G DAS pilot program covering four typical scenarios, i.e. large buildings, ordinary commercial buildings, residential estates and subways. Application results showed that the peak download rate of 2T2R 5G shared passive DAS exceeded 800Mbps, which was 5-8 times of the existing 4G, reaching 70% of the 4T4R active small cells, saving about 60% in construction cost, and about 70% in annual electricity cost, which was sufficient validation of the technical feasibility and cost-effectiveness of 5G shared passive DAS.

R&D of 5G power products

In response to 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 and release a series of technical solutions and products such as modular power supply, differentiated power backup and low-temperature power backup to support the fast and cost-effective construction of 5G power supply. Among them, modular power supply is highly scalable and is therefore suitable for detail-oriented management, allowing rapid response to the need for shared capacity expansion of TSPs and the need for new business development of the Two Wings companies. Differentiated power backup equipment enables 5G independent power backup, power metering and the refined management functions of power generation, and low-temperature power backup is designed for use in low-temperature and cold areas, broadening the range of application scenarios of base stations.

Modular power supply

In order to better meet the needs of 5G construction and capacity expansion, to resolve the issue of inflexibility in the capacity expansion of traditional power switches and over-redundancy and under-redundancy in configuration, and to reduce the cost and operational difficulty of 5G power capacity expansion and renovation, the Company has innovated, researched into and developed modular power supply products and unprecedented modularized and compact DC power distribution units, enabling power supply to be increased phase-by-phase in line with the growth in the number of users, avoiding over-redundancy and under-redundancy in system configuration. According to calculations, the modular design has realized a 4% saving in hardware cost of the power supply system and a 36% saving in installation space.

Generating new energy for high-quality development

▶▶ Modular power supply solution saved construction cost

To resolve the inflexibility problem of traditional power supply configuration, the Company, in Zhejiang, applied a modular power switch solution to base stations to meet the demand for precise capacity/power distribution configuration, saving space and substantially reducing the initial construction cost.



▲ Example of modular power supply solution

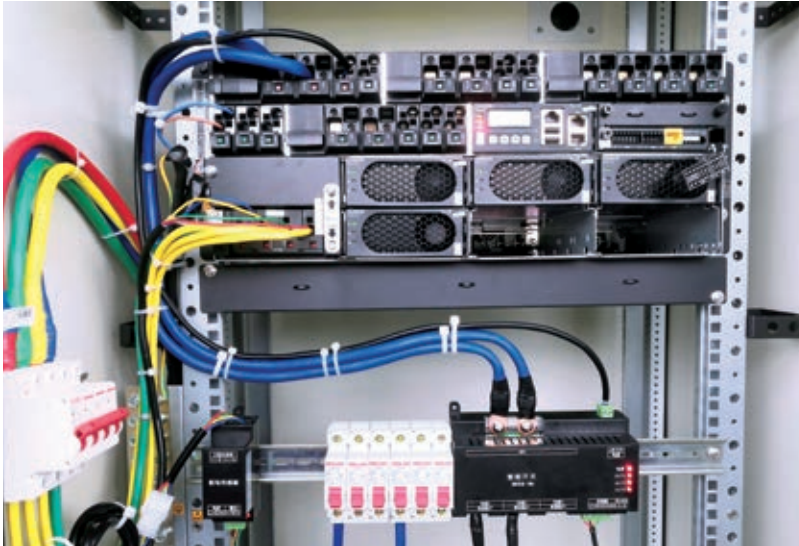
Differentiated power backup

In order to meet the differentiated power backup needs on base stations and resolve the current issues of high power consumption and lengthy backup for 5G base stations, the Company used smart power distribution equipment that utilized existing batteries to meet the different power backup needs of 4G and 5G base stations, to ensure effective implementation of cost-effective construction measures. Differentiated power backup solutions were applied in existing base stations built for 5G and 2/3/4G networks, enabling independent power backup and power consumption metering for 5G equipment, saving investment by 17% relative to solutions involving the addition of new sets of power supply. Furthermore, the time required for 5G power backup was reduced to 1 hour, slashing battery investment by 66%. In order to continuously promote the application of differentiated power backup solutions, the Company published the Technical Requirements and Testing Specifications for Differentiated Power Backup Equipment for Base Stations (Q/ZTT 2239-2020) in 2020, and released standardized differentiated power backup products.

Generating new energy for high-quality development

▶▶ Transformation of differentiated power backup solution led to significant cost saving on 5G construction

To address the issue of existing batteries on base stations incapable of meeting the power backup requirements for the addition of new 5G equipment, the Company adopted a differentiated power backup transformation plan for base stations in Chongqing, increasing the number of the differentiated power backup equipments to achieve accurate battery power supply and minimize new battery installation, substantially reducing the cost of 5G construction.



▲ Transformation of differentiated power backup solution

Generating new energy for high-quality development

Lithium titanate battery

Lithium iron phosphate batteries are currently used in many base stations in severely cold areas where they cannot be re-charged below 0°C. In order to meet the needs of power backup in low temperature and cold areas, the Company has formulated the Technical Requirements and Testing Specifications for Lithium Titanate Battery Packs (Q/ZTT 2239-2020) on the basis of preliminary pilot application, to meet the power backup requirements of base stations at a low temperature of -40°C or below, meeting the needs of multi-scenario applications.

» Application of lithium titanate batteries for power backup in low temperature areas

In order to tackle disconnection issues of base stations caused by cold weather, the Company has installed lithium titanate batteries in base stations that are exposed to extremely low temperature, such as the Everest Base Camp in Tibet, greatly improving the support capability of the base stations and ensuring uninterrupted communication.



▲ Application of lithium titanate battery

Generating new energy for high-quality development

Innovation of tower structure and construction models

In view of the fact that most of the 5G equipment was carried by existing towers, the Company focused on clients to promote the transformation of its construction model, relying on coordinating advantages of existing resources and social resources, as well as considering application in different scenarios to renovate and innovate existing towers and innovate low-cost towers, to create value for the industry and clients, and achieve a win-win outcome for all parties.

Augmentation of existing towers

In view of the fact that some existing towers do not have sufficient carrying capacity to achieve 4/5G sharing, the Company promoted the innovation of existing tower transformation in Zhejiang, Sichuan and Fujian, among other provinces. By adopting methods such as gumming carbon fiber, pasting steel plate and ring-grooved lockbolts, the existing tower loading capacity was increased by 20%-30%, significantly improving the utilization of the existing towers.

▶▶ Enhancing tower loading capacity through augmentation

In collaboration with Tongji University, the Company applied vertical carbon fiber plates externally on inner flange joints of single-tube towers, and used hoops to make the carbon fiber plates and the original single-tube towers closely fit and bear the load together, so that the loading capacity of single-tube towers increased by 20% to 40%, effectively tackling the challenge that 5G mounting and construction could not be performed on more than 70% of the inner flange single-tube towers amid 5G construction.



▲ Reinforcement of existing tower sites with carbon fiber

Generating new energy for high-quality development

Cost-effective structural mast product innovation

In order to promote cost-effective construction and create value for clients, the Company officially released its internal standards of Cost-effective Tower Standard Atlas V1.0 in 2020. The Standard includes 69 sets of standardized design drawings for 6 categories of towers. The Company innovated low-cost steel tower products by adopting measures such as the refinement of carrying requirements, simplification of ancillary structures, and optimization of tower structure, in order to effect general reduction of 20-30% in steel consumption for steel towers given the same mounting height and wind pressure. As of the end of 2020, nearly 800 towers from the atlas had been built across China.



▲ Application examples of structural mast innovations

Generating new energy for high-quality development

Facilitating the development of industry standards

While continuing to strengthen independent core technologies, the Company has carried out extensive technical exchanges with external experts to actively promote the formulation of industry standards and drive market development.

With a view to ensuring effective implementation of China's technical and economic policies on the structural mast design for steel towers of wireless communication projects, ensuring technological advancement, cost-effectiveness and a high level of safety and quality of related products, the Company promoted and got involved in the revision of industry standard "Code for the Design of Structural Masts for Steel Towers in Wireless Communication Projects", which incorporated results of the systematic wind tunnel experiment and research performed by the Company for telecommunication towers, to further improve the theory for calculating wind load on telecommunication towers, playing an important role in improving the carrying capacity of existing towers for 5G network construction and reducing steel used for new towers.

In order to standardize and guide the orderly recovery and application of cascade traction batteries for vehicles, and promote the extensive rollout of battery recycling, the Company took the lead in compiling "Section 1: Lithium Iron Phosphate Batteries of the Technical Requirements and Testing Methods for the Cascade Utilization of Traction Batteries in Communication Base Stations", which sets out technical requirements, safety requirements and testing methods for the application of decommissioned traction batteries in base stations, and plays an important role in driving the use of decommissioned traction batteries.

In order to standardize the infrastructural design requirements including power supply, monitoring and temperature control for base stations, the Company took the lead in compiling the industry standard *Technical Requirements on Infrastructure for Communication Base Stations*, which effectively regulates the infrastructural design and installation for base stations including power supply, monitoring and temperature control, playing an important role in promoting the standardization of base station construction. It is conducive to the intensive development of the industry and the saving of social resources.

Generating new energy for high-quality development

(III) Building on IT platform capacities and innovation

The Company continued to innovate the IT platform construction system, and implemented the “One Point Construction to Provide National Support” model adhering to coordinated planning based on the characteristics of its own businesses, aiming to independently develop and build up an IT platform that comprehensively supports the Company’s construction, maintenance, procurement, revenue and other business development and management efforts.

The Company’s operation and maintenance monitoring system unprecedentedly applied the Internet of Things, big data and cloud computing technologies in base station power environment monitoring system management, making it the first company in the industry to achieve smart operation and maintenance and targeted support for base station field supervision systems, as well as interconnection with intelligent emergency reporting and intelligent order dispatching. These efforts facilitated the establishment of a nationwide base station field supervision framework.

The Company’s battery exchange platform features an independently designed Internet platform architecture, and splits services across the dimensions of business, division of responsibilities and moderate service granularity, with such features as grey release, cloud disaster recovery and agile software development. It is a million-grade high-performance 2C business platform under the Company’s independent control, which supports the Company’s innovation and development in the energy operation business sphere.



▲ China Tower operating and maintenance platform

Generating new energy for high-quality development

Striving for consistent improvement in management

Guidelines for sustainable development of China Tower

The Company maintains effective regulation of its business operations, consistently improves the quality and efficiency of its management practices, continues to improve the compliance system, and proactively builds up a corporate culture that encourages incorruptible and fair practices. We step up anti-corruption efforts, adhere to integrity and discipline, and enhance information disclosure; continuously improve the risk management system and enhance risk resistance; strengthen information security protection, continue to promote the development of the information security system, and improve the information security management system; continue to promote the implementation of internal patent management measures, to protect our own intellectual property rights and avoid infringement upon the intellectual property rights of others; and continue to promote policy implementation and improvement, and improve the management of suppliers' environmental and social risks, to achieve win-win results with suppliers.

Actions taken by China Tower in 2020

Stepping up anti-corruption efforts to support the Company's development

- The Company continued to improve its three lines of defense, i.e., business supervision, audit supervision and disciplinary supervision, to boost the Company's development
- The Company carried out business integrity education, and created a clean and fair workplace

Strengthening risk management and promoting the Company's sustainable and healthy development

- Set up an organizational system for risk and internal control to improve risk prevention capability
- Continuously improved the risk control and management system



Generating new energy for high-quality development

Actions taken by China Tower in 2020

Strengthening information security to protect privacy

- Established a complete information security management system
- Proactively implemented control measures to prevent information security risks

Strengthening intellectual property protection and fostering corporate image

- Formulated measures on patent management to coordinate and standardize patent management
- Conducted compliance education, formulated rules and regulations, and standardized the use of brand image

Strengthening supply chain management to achieve win-win results with suppliers

- Continuously promoted intensive procurement
- Strengthened the suppliers' environmental and social management
- Promoted post-assessment management of suppliers

Generating new energy for high-quality development

(I) Effective anti-corruption campaign

The Company has always strictly complied with the Provisions on the Clean Practice of State-owned Enterprise Leaders and the Anti-Money Laundering Law of the People's Republic of China, Anti-Unfair Competition Law of the People's Republic of China and other relevant anti-corruption and anti-money laundering laws and regulations, abided by business ethics, conducted business operations in compliance with the regulations and, through the ongoing development of a comprehensive risk management system, focused on compliance operations, effectively protected the common rights and interests of both the Company and its stakeholders, and provided support for the Company's development.

The Company continued to improve its three lines of defense, i.e., business supervision, audit supervision and disciplinary supervision, and consistently stepped up anti-corruption efforts by means of multiple supervision, coordination and interconnection. The Company revised the Measures for Procurement Management, Measures for Maintenance Fee Management and Measures for Funds Management, among other management systems and procedures, in 2020, refined key requirements for risk prevention and control, conducted inspections on risk-prone businesses, and supervised related parties in effectively rectifying issues detected. In addition, in line with the rectification of specific related parties, the Company "looked retrospectively" on a comprehensive scale and investigated specific related parties for ongoing implementation of the List of Companies Prohibited from Trading. With a view to ensuring effective discipline enforcement and supervision, the Company formulated the "Notice on Strengthening and Standardizing Related Supervisory Work" and "Opinions on the Implementation of Overseas Risk Prevention and Control for Integrity" and other disciplinary and supervisory rules.

In order to standardize and enhance the Company's disciplinary inspection-related petitions, and push ahead with the integrity and anti-corruption campaign, the Company accepted reporting by letters, e-mails, faxes, calls, visits and other channels and, following the principle of "division of responsibilities by level, and centralized management", dealt with the different situations accordingly, using four type of approaches, i.e., interview and letter inquiry, preliminary investigation, temporary filing for investigation and case settlement, on various kinds of petitions. The disposal of clues shall not be delayed or overstocked. Disposal opinions shall be put forward within 1 month from the date of receipt of the clues, a disposal plan shall be formulated and the approval procedures shall be fulfilled.

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 of the Integrity Assurance Contract and improve the integrity management in the procurement process.

Generating new energy for high-quality development

In 2020, the Company actively organized educational activities on business integrity, and kept posting updates on this topic in the OA integrity section, giving publicity to risk prevention and control regulations, providing holiday anti-corruption reminders in conjunction with special purpose monitoring, and paying visits to integrity awareness building and educational agencies, among others. It also held an awareness building and educational conference that was attended by 16,628 employees.



▲ Warning and education conference

(II) Strengthening risk management and control

The Company attached great importance to risk and internal control management. In 2020, the Company established an organizational system for risk and internal control oriented toward risk prevention, and effective internal control and compliance management, which was characterized by clearly defined responsibilities, interconnection and effective checks and balances, with a focus on two core elements, i.e., system construction and executive capacity building, highlighted key risks with major influence, strengthened supervision, evaluation, etc., and updated and improved the “Measures for Assessment of Risk and Internal Control Operations”, “Manual of Risk and Internal Control Management”, among other internal rules and regulations, for the long-term sustainable and healthy development of the Company through continuous improvement of corporate governance capabilities and management.

Generating new energy for high-quality development

(III) Rigorous information security protection

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 relevant laws and regulations, and conducted data governance in compliance with the Big Data Security Management Guidelines, Big Data Security Risk Control and Implementation Guidelines and other relevant national, ministerial and commission requirements as well as relevant national standards. The Company has formulated a series of regulations including the Measures of Network Security Management, Measures of Data Security Management, Measures of Information System Construction Management, Measures of Third-Party Personnel Information Security Management and the Security Incident and Emergency Response Plan, among others, to standardize internal data and information security management. In order to reduce the risk of information leakage at the use of public cloud storage, the Company has built up an enterprise cloud drive to implement management functions such as content submission for review and inspection, sensitive content lockup, shared file access control and the watermarking of preview files. Furthermore, all outsiders who have access to the application system server were required to sign the Confirmation of Information Security and Confidentiality Obligations to prevent information leakage. In addition, in a bid to raise the employees' awareness of the importance of security, the Company organized relevant activities such as anti-phishing system exercises and attack and defense exercises.

In order to strengthen cloud security management and test the effectiveness of various security measures, the Company organized a three-month drill covering the headquarters and various provincial and municipal branches. During the attack and defense phases of the drill, a total of 241 incidents were tackled, 11,737 malicious IPs were blocked, and 2,570 vulnerable user passwords were rectified. Through the drill, the Company's overall cyber security awareness has been improved, and a standard "three-step" emergency response process has been established, including blocking, actioning and source tracing, and a network security protection system has been set up, covering network and host security and intermediary components, applications and data. In response to the issues found in the drill, the Company focused relevant operations on sorting out the system accounts and access, cleaning up the login portal, and improving the network and information security inspection system. We also performed regular vulnerability repairs and penetration tests on the information system to further enhance the Company's safety management capabilities.

Generating new energy for high-quality development

➤ Raising staff's security awareness through an anti-phishing system drill

In order to raise the employees' awareness of the importance of information security, the Company carried out a drill on the anti-phishing system, sent phishing emails to internal email accounts for targeted tests and direction, with a view to enhancing the employees' awareness of email security, and avoiding information leakage caused by human errors.



▲ Anti-phishing drill data visualization platform

(IV) Strengthening patent and brand protection

The Company amended the "Measures for Implementation of Patent Management" in 2020, which set out the specific responsibilities of each department with respect to patent management, and outline strict review procedures to effectively protect its own technological innovations. With priority given to the effectiveness of application, efforts were made to explore areas of technological innovations that can generate economic benefits, improve work efficiency or enhance competitiveness, and conducted rigorous information filing for patents. The Company required all units to respect the intellectual property rights of others before releasing new technologies, techniques, materials or products onto the market, using them strictly in accordance with the regulatory requirements in order to prevent legal risks. During the entire technology lifecycle consisting of project initiation, R&D process, testing and validation, promotion and application, all units and staff members were required to perform their confidentiality obligations strictly in accordance with the Company's administrative measures on related operations. Furthermore, the Company centralized the management of patent filing and maintenance, and performed sound patent management.

Generating new energy for high-quality development

In addition, 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 "Identification System Manual" 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 behaviors and functions to the public, and to enhance corporate image.

(V) Standardizing procurement control

The Company adhered to the philosophy of collaboration for win-win results with the suppliers, built up strong supply chain management with the goal of "strengthening procurement management and reducing procurement costs", continuously reinforced its foundation of management, kept promoting intensive procurement, enhanced the suppliers' environmental and social risk management, with the aim of building a "sunshine company", promoting open information and establishing "close yet transparent" partnerships. It implemented post-assessment management of the suppliers to jointly build up a sustainable development model for business collaboration.

Promoting intensive 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, made exploratory efforts to innovate existing procurement models, and promoted the procurement model of "intensive procurement + e-commerce operation", which has achieved impressive results with significant savings of procurement costs, effectively preventing procurement risks and improving efficiency of procurement actions. The Company revised the "Measures for Procurement Management" in 2020, and introduced a double-layer (i.e. headquarters + provincial branches) intensive procurement management model to strengthen centralized management of procurement, optimized the procurement process, and standardized procurement management operations.

Generating new energy for high-quality development

In order to ensure the quality of materials sourced via intensive procurement and promote the healthy and sustainable operation of the Company, the Company formulated the “Implementation Rules of for Quality Management of Intensive Procurement of Supplies” on the basis of a closed-loop quality control system comprising “standards and specifications + network access testing + shipment arrival testing + strict performance management”, to regulate the standards and requirements of quality management, and implemented specific work at key stages such as the formulation of product quality standards, network access testing, and testing upon shipment arrival.

In order to coordinate and manage the procurement of construction services, the Company formulated the “Guiding Opinions on Standardizing Construction Service Procurement” and the “Plan for the Implementation of the Intensive E-commerce Procurement of Construction Services” to continuously promote intensive procurement, and continued to standardize the procurement of construction services via “centralizing review details, review standards and operational requirements”, for the ongoing improvement of procurement management.

Management of rights, interests and safety of suppliers’ employees

In 2020, 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. We continued to enhance safety management and control over construction and maintenance providers, 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. During the COVID-19 epidemic, in order to ensure work safety of the suppliers, the Company paid work safety fees upfront.

The Company also attached great importance to the payment of migrant workers’ wages, strictly abided by the Regulations on Migrant Workers’ Pay and other rules and regulations, regulated wage payment to migrant workers of the suppliers, to ensure that migrant workers were paid on time and in full. Some provincial companies also set up special payment accounts for migrant workers and transferred migrant workers’ wages directly to their bank accounts.

Generating new energy for high-quality development

Post-assessment management of suppliers

2020 saw the Company optimizing the post-assessment management of suppliers and, during the performance of relevant contracts, and objectively assess 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.

Category of indicator	Quantity
Number of suppliers (in mainland China)	136,866
Number of suppliers (from Hong Kong, Macau and Taiwan or overseas)	38

Note: Suppliers were divided according to place of registration.

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. The annual average monthly inventory turnover was 144% in 2020, indicating that warehouses were effectively used.

List of scrapped materials for valuation

In order to coordinate the management of scrapped materials, the Company released a list of scrapped materials for valuation in 2020, which centralized and foregrounded the assessment of scrapped materials to improve efficiency and reduce costs. We also proposed recommended price ranges on a province-by-province basis for the disposal of main materials within the Company. Each of our provincial, prefecture and municipal entities determined the opening bid using the list of scrapped materials for valuation to save the assessment cost and improve disposal efficiency.

Generating new energy for high-quality development

Focusing on enhancing service quality

Guidelines for sustainable development of China Tower

The Company always emphasizes quality and safety as the top priorities, builds an effective safety defense line to uphold the bottom line of work safety, and continuously improves services revolving around clients' major concerns, with a focus on providing safe, high-quality and reliable services, for the ongoing promotion of the sustainable and healthy development of the Company's business. Furthermore, the Company provides its employees with a good and safe work environment in line with its commitment to ensuring work safety and keeping employees safe.

Actions taken by China Tower in 2020

Paying attention to work safety and avoiding safety incidents

- Standardization of safety and quality management
- Development of work safety culture
- Safety control maintenance among partners

Improving service quality to meet client needs

- Created a new service model
- Standardized customer complaint handling
- Established a nationwide unified Internet-based platform to monitor operations and maintenance



Generating new energy for high-quality development

(I) Rigorously enforced work safety accountability

The Company strictly abided by the Law of the People's Republic of China on Work Safety, Administrative Regulations on the Work Safety of Construction Projects, and the Provisions on the Administration of Work Safety of Telecommunication Construction Projects, among other laws and regulations. Meanwhile, abiding by the Operation Specification on Work Safety During Telecommunication Construction and other national standards, the Company strictly implemented the requirements of quality and work safety management of the Ministry of Industry and Information Technology. The Company has formulated the "Work safety Management Manual", "Regulations of Work safety Management", "Implementation Rules for Work safety Assessment", "Comprehensive Emergency Response Plan for Work Safety Accidents", "Measures on Investigating and Handling Work Safety Accidents", etc. A work safety system has already been established, and a work safety responsibility system has been put in place to provide a basis for work safety management in the Company at all levels and support the provision of safe and quality services.

Standardization of safety and quality management

With a view to effectively standardizing construction safety and quality management operations, the Company has formulated the "Construction Quality Standardization Manual and the "Manual of Construction and Maintenance Safety Management, etc. and established primary professional processes such as the tower foundation, tower installation, shelters and cabinets, power support installation and introduction of external power. Safety and quality requirements for each process are clarified to ensure effective standardization of project safety and quality management practices.

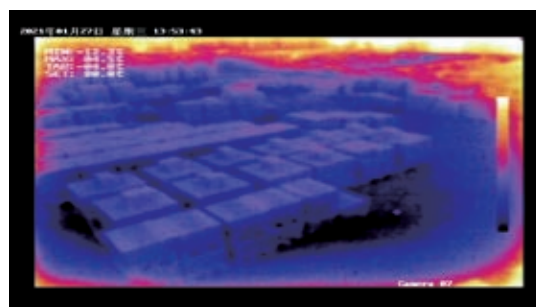
Furthermore, the Company strictly abided by the relevant institutional requirements related to the reporting of work safety accidents established by national ministries and commissions, and formulated the "Measures of Work Accident Reporting, Investigation and Handling" to standardize the accident reporting and handling process. As regards the common types of workplace accidents such as falling from heights and electric shocks, we have stepped up comprehensive management focusing on and prioritizing accident prevention in high-priority businesses and operations, and strictly implemented the level-by-level reporting system and procedures for workplace accidents. For partners and outsourcing entities, the Company has improved the relevant supervisory, rewarding and penalty mechanisms, enhancing the assessment of workplace accidents with an accountability system that covered all accidents.

Generating new energy for high-quality development

In 2020, we continued to strengthen warehouse safety management, especially for the safety management of lithium battery storage, and formulated the “(Interim) Application Norms and Measures of Safety Management for Lithium Batteries in Base Stations”, to refine warehousing, logistics and packaging requirements, and infrared thermal imaging monitoring equipment was installed in warehouses that store lithium batteries, and measures of the safety management, monitoring and early warning of lithium battery storage have been formulated to effectively improve the safety of warehouse management.

Self-developed infrared thermal imaging devices were applied to ensure work safety

The Company has deployed infrared thermal imaging devices in all the high-priority sections of the emergency supply storage area for lithium battery packs and regular lead-acid battery, cascade battery and lithium battery storage areas, adopting the “thermal imaging + video surveillance” model to perform 7*24 surveillance, and has set up temperature thresholds to provide real-time alarm functions and safety assurance.



▲ Infrared thermal imager devices ensure warehousing safety

Development of corporate culture focusing on work safety

The Company attached great importance to the development of a corporate culture revolving around work safety issues, coordinated and organized various theme events such as the “Work Safety Month” and “Miles’ Walk for Work Safety”, and performed work safety warning education and campaigns, national network competition of safety awareness, emergency plan drills, work safety education and training and special activities such as workplace investigation for hidden dangers, enhanced the construction of a workplace safety management team and the education and training, to raise the awareness of the rule of law, sense of responsibility and risk prevention among employees.

Generating new energy for high-quality development

Created a favorable environment for work safety through relevant education and training activities

The Company actively performed education and training activities in various forms, such as lectures given by external specialists and participation in external events. The branches organized education and training activities in different forms, such as safety learning certification, work safety training seminars and fire safety training. Through training activities, the “Work Safety Month” campaign was incorporated into routine work safety management to routinize Work Safety Month events and created a strong work safety environment.

The Company organized a range of educational and publicity activities to remind staff members of the importance of work safety. The Headquarters broadcasted theme-based educational videos and publicity pictures through its video broadcast control platform and the OA office network. Branches at all levels actively responded to such campaigns by producing self-media and public media programs, setting up work safety bulletin boards, distributing publicity materials and welcoming public consultations, as part of their work safety awareness building, education and publicity, so that they would think safe, act safe and stay safe. In 2020, the Headquarters and branches at all levels produced more than 1,500 bulletin boards, more than 2,000 banners, and distributed more than 110,000 copies of promotional materials.



▲ Education and training activities on work safety

Generating new energy for high-quality development

▶▶ Focused on emergency response capacity – emergency plan drilling

The Company organized an emergency plan drill, building up its knowledge of emergency response for continuous improvement in emergency response planning. During the Work Safety Month, branches at all levels carried out emergency plan drills covering a wide range of topics such as fire safety, evacuation, emergency rescue and emergency communication maintenance during the flood season. A total of more than 600 emergency drills of various types were carried out in 2020, attracting around 18,000 participants. These activities effectively improved coordinated response capability and practical skills of staff members at all levels, building up a line of defense.



▲▼ Work safety training and emergency response plan drills



Generating new energy for high-quality development

Safety of maintenance personnel among commissioned partners

The Company attached great importance to personnel safety management among its commissioned maintenance service partners, and has formulated the “Measures on the Management of Commissioned Maintenance Operations”, which required work safety as an important part of the introductory training to standardize commissioned maintenance operations. All provincial branches were required to assign work safety duties to partners by entering into a statement on work safety commitments, etc. and the partners should sign a labor service contract or employment agreement (including safety clauses) with their employees at all levels. By requiring the operation and maintenance departments at all levels to provide on-site training and online training, the Company made sure that the employees of the commissioned partners were effectively trained on work safety-related skills. The Company also organized professional capability assessment in stages in order to promote the training and learning. Furthermore, the Company has specified its requirements of reinforcing publicity and education and emergency drills during emergency rescue, especially the 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, to ensure that the front-line personnel can perform safety procedures with exit clearance and adequate equipment.

(II) 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”, and worked hard to improve services provided for clients, with fully-established client service processes, diverse client service channels and an effective client service assessment mechanism in place.

Creation of a new service model

With a view to make our services more targeted and align with clients’ actual needs, the Company rolled out the “client service representative” and “dedicated customer service agents” systems in 2020, and pushed ahead with the implementation of the routinized communication mechanism both in the leadership and employees, to ensure prompt response to client requests. The leadership has focused on the essential demands of the clients for cost reduction and efficiency improvement, and has formulated an integrated service plan delivering win-win results for both the Company and the clients through consultation and joint efforts. Relying on the online service platform of China Tower, the employees collected and synthesized requests, issues and suggestions raised by individual customers through various channels for one-by-one tracking, monitoring and processing, and welcomed customer feedback. Also, an upgrade mechanism has been developed to ensure that every service issue can be resolved in a satisfactory manner from employees to leaders, and from local branches to Headquarters.

Generating new energy for high-quality development

Handling customer complaints

The Company has established multiple online and offline complaint filing channels, including its WeChat official account, the China Tower app, 10096 hotline, etc., and has put in place a routinized working mechanism that involved convening regular service meetings and maintenance meetings, to encourage all branches to direct their customer complaints to China Tower online service, for centralized management, supervision and evaluation. In order to improve the efficiency of complaint processing, the Company required that ordinary complaints must be settled within three business days, and urgent and major complaints must be concluded within one business day. For the Company to have well-structured complaint management, it has established a system to do the work. Each complaint was recorded on a single business platform, tracked and managed all the way through, and the results of customer complaint management assessment of provincial and municipal branches were circulated and included as one of the considerations in their work performance appraisal, with the aim of effectively improving the service quality of the Customer Service Department. As of the end of 2020, a total of 52,000 complaint-related work orders had been issued nationwide, with a resolution rate of 99.3% and custom satisfaction rate of 99.9%.

Assurance of operation and maintenance support

The Company has established a centralized national online platform for operation and maintenance monitoring, which monitored the millions of sites across China, and managed the maintenance staff nationwide, forming an operation and maintenance system based on “primary platform, centralized management and local maintenance”. It enabled intensive and efficient operation and maintenance, and provided a solid foundation for the normal operations of the sites. In 2020, the Company further optimized its operation and maintenance system, pushed forward the establishment of provincial network operation centers, and further enhanced its intensive and efficient operation and maintenance capabilities. The network exit rate fell by 9.6% to 4.7% in 2020 compared to 2019.

In 2020, during the “Teams of Trustworthy Quality” contest organized by the China Quality Association for telecommunication companies, China Tower’s branches in Anyang, Yuxi, Yantai, Nanning, Chongqing and Qiannan won the “2020 Telecommunications Industry Team of Trustworthy Quality” award, and two team leaders won the “Excellent Team Leader in the Telecommunications Industry” award.

Starting a New Chapter for Harmonious Development

Committed to promoting ecological integration
Proactively fulfilling social responsibility
Caring and empowering employee development



Starting a new chapter for harmonious development

Committed to promoting ecological integration

Guidelines for sustainable development of China Tower

The Company adopts the philosophy of green development to achieve ecological harmony and support green development for the creation of ecological civility. The Company always puts great emphasis to climate change and remains active in continuously increasing the use of clean energy to act in accordance with the national campaign of hitting carbon emission peak and neutrality. By adopting innovative solutions, optimizing products and improving processes etc., we are able to blend telecommunication towers into the urban in a more natural and harmonious way, thereby reducing the threshold of resources reuse and improving the efficiency of joint-construction. The recycling of waste materials and the application of skills and technologies have effectively minimized the impacts of business development activities on the environment. Furthermore, the Company pays due attention to employees' awareness on environmental protection, and works hard to reduce the negative impacts of tower construction on the surrounding environment, contributing to the construction of a "Beautiful China".

Actions Taken by China Tower in 2020

Calling for green development with active energy saving and emission reduction in base station maintenance and operations

- Use of clean energy at tower sites
- Use of cascade batteries at base stations
- Comprehensive recycling of waste materials
- Detection of electromagnetic radiation in base stations



Starting a new chapter for harmonious development

Actions taken by China Tower in 2020

Contributing to the national strategy of building a “Beautiful China”, reducing construction costs and saving land use

- Green site selection to reduce impact on the ecological environment
- Fitting base stations into the landscape

Green offices for the continuous implementation of energy saving and emission cutting philosophy and ideas in office work

- Electricity and water saving and making offices paperless
- Greening of new office buildings

(I) A champion of green development

The Company strictly abided by such laws and regulations as the Environmental Protection Law of the People’s Republic of China, Law of the People’s Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste, and the Law of the People’s Republic of China on Energy Conservation, and formulated Guidelines on Energy Conservation and Emission Reduction and other rules and regulations to actively fulfill its environmental responsibilities, promoted green development and reduced negative impact of its operations on the environment.

Clean energy use at tower sites

China Tower built base stations based on local conditions, taking into full account the local reality with active use of clean energy sources such as solar and wind energy to meet the power supply needs. In order to reduce the greenhouse gas emissions generated during operation, we promoted the clean and efficient development of telecommunications infrastructure.

Starting a new chapter for harmonious development

» Building new-energy base stations to drive structural energy transformation

The communication base stations in Najiu Township, Zhongba County, Rikaze, were built with solar power supplies, resulting in an annual saving of 32,400 kWh of electricity after the stations went into operation. The wind-solar hybrid power generation technology adopted for the base stations in Naqu saves 54,000 kWh of electricity per year.



▲ A photovoltaic communication base station in Rikaze



▲ A wind-solar hybrid power base station in Naqu

Utilization of cascade battery at base stations

The reuse of cascade batteries maximized the value and cost-effectiveness of products, and extended the service life of automotive traction battery products, reducing the cost of power backup for communications base stations, reducing emissions from waste batteries, leading to great economic, environmental and social benefits. In February 2020, China Tower issued standards for cascade battery companies, and started centralized procurement of cascade batteries in May to provide power backup for base stations, greatly reducing the cost of base station power backup supply. The Company has taken the lead in incorporating “cascade utilization” elements, e.g. modular specifications and rated voltage, into battery system design, for “future” application in communications base stations, reducing decomposition in subsequent modules. As of the end of December 2020, China Tower had used 1.02 million sets of cascade batteries in 500,000 base stations in 31 provinces, totaling 6GWh, in partnership with more than 40 cascade battery suppliers.

Starting a new chapter for harmonious development

▶▶ Application of cascade battery supported power backup to effectively increase battery runtime for base stations

In view of the poor performance and low capacity of dated lead-acid batteries installed in the original base stations and to deal with the insufficient power backup runtime, the Company replaced cascade batteries at the base stations in Ziyang District, Yiyang, Hunan, in April 2020. The application has extended power backup runtime to 5.5 hours. In addition, at the base stations in Heyuan, Guangdong Province, the Company replaced cascade batteries in October 2020, which extended power backup runtime to 4 hours, to better meet the needs of TSPs for power backup.



▲ Scenario of cascade utilization of power batteries for base stations

Comprehensive recycling of waste materials

The Company issued the "Guidelines on Accelerating the Disposal of Waste Materials (Interim)" to promote the use of dismantled materials and accelerate the disposal of waste materials. Relevant operations included further revitalization of idle materials to save social resources and reduce construction costs, speeding up the disposal of waste materials for centralized disposal of waste lead-acid batteries, and ensuring compliance with environmental protection policies, reduce pollution, and protecting the natural environment for society.

On advocating the revitalization of idle materials, the Company adhered to the principle of "recycling over scrapping" and applied this principle to its operations across China. The Company, structured the process of repairing and reusing wastes, and coordinated departments within the Company to ensure effective storage, identification, maintenance and use of waste materials, in such ways, to maintenance and recycling operations. This year, the Company proactively brought its creativity in the rollout of this campaign across China, with remarkable results achieved in Henan, Hebei and other places.

Starting a new chapter for harmonious development

In addition, the Company has also sped up the disposal of waste materials, and achieved remarkable results from the centralized sales of lead-acid batteries wastes, leading to successful standardized and efficient disposal of waste materials. Considering that lead-acid batteries wastes were included into the national catalog for hazardous waste management this year, to ensure the Company comply to legal and regulatory compliances during operations, the Company set up criteria for selecting waste processing vendors that are in line with relevant environmental requirements, and organized manufacturer inspections to ensure such disposal and transfer complied with environmental protection regulations.

Base station electromagnetic radiation detection

China Tower has earnestly fulfilled its social responsibility, played a leading role in the overall planning, conformed to the requirements of the Memorandum of Environmental Protection Work for Communication Base Stations, and prompted relevant parties to detect electromagnetic radiation in communication base stations based on the dimensions of the physical sites. Such efforts have been recognized and supported by the competent government authorities, reducing the testing costs of TSPs, which has objectively reflected the electromagnetic radiation in communication base stations.



▲ Education activities on electromagnetic radiation in base stations

The Company worked jointly with TSPs in many provinces and cities to organize volunteers to hold promotional activities such as the popularization of electromagnetic radiation and the home application of 5G technology, accelerating the construction of 5G base stations and further reducing radiation disputes.

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(II) A champion of green offices

The Company strictly complied with the Law of the People's Republic of China on Conserving Energy, 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. An e-commerce procurement system has been established within the Company to reduce resources consumption in the procurement process.

When the Headquarters' industrial park was put into use, the Company devoted to create a green workplace for its employees. Each building was equipped with an independent air conditioning system, central ventilation system and floor heating system to ensure suitable temperature and humidity in the offices. During the procurement of office furniture, priority was given to environmentally-friendliness and durability. Also, a substantial amount of green plants were placed indoors and outdoors to improve air quality, increasing oxygen concentration both indoors and outdoors and reduce indoor pollutants.

The Company has enhanced the management of energy conservation in the park, with issuance of relevant management rules and appointment of building managers. Regarding electricity saving, priority was given to the use of environmentally friendly and energy-efficient electrical appliances and equipment. Employees were required to ensure lights are turned off as they leave the office, and special personnel was appointed to patrol the building daily to turn off any unused illumination and air-conditioning devices. For water conservation, employees were required to form a habit of saving water. Water-saving signs were placed in toilets and other places, and sensor faucets were installed to reduce the amount of water wasted. Efforts were made to enhance the maintenance and management of water equipment to prevent water waste. In terms of the paperless office initiative, it was recommended to make full use of the online office system, adding the visitor reception application function to the OA system, reducing the printing of hardcopies and the use of fax machines so as to minimize paper consumption.

(III) Building a Beautiful China

Eco-friendly site selection

China Tower has strengthened the management and control of ecological and environmental protection operations from the source. By referencing to the recommendations in the Interim Regulations on Environmental Protection Technology for Communication Engineering promulgated by the Ministry of Housing and Urban-Rural Development on 1 January 2020, we introduced ecological environment protection measures at each tower site, and optimally reduced the impact on the ecological environment during site selection activities.

These measures are as follows:

- Incorporating environmental protection efforts into the construction plans, with implementation of the "Three Simultaneous Practices", which means simultaneous design, construction and commencement of operation of the main projects.

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- Giving priority to the use of energy and water saving, and recycle products that are conducive to environmental and resources protection. Minimize the occupation of farmland, woodland and grassland.
- Waste sands, stones, and earth generated in construction are transported to the specified stackyard to avoid dumping into rivers, lakes, reservoirs or ditches other than the designated stackyards. After completion of the project, trees and grass should be planted on the borrow sites to prevent soil erosion.
- Taking measures to reduce the impact on wildlife during the construction period. It is forbidden to felling and endanger plants and wild animals that are under state protection or trees that located in historical heritage sites or revolutionary commemoration.
- For projects that concern the protection of cultural relics, construction should be conducted within the controlled construction zones, so that to preserve the environment of the units of cultural the relics protection. For communication facilities built in or nearby tourist attractions, scenic highways, metropolitans or major route of transportation, the construction projects should consider matching elements like the shape and color with the surrounding environment, to avoid affecting the aesthetic look of the landscape.
- Strictly prohibiting the use of any persistent organic pollutants as pesticides. Prioritize the use of environmental friendly construction techniques and materials, and avoid any techniques and materials that do not meet environmental standards.

Construction of landscaped towers

To ensure the harmony between telecommunications infrastructure facilities, such as 5G towers, and urban development, the Company has increased its efforts in innovation and R&D operations. By introducing new tower types and delicate beautification, the Company has managed to efficiently support 5G construction. By aligning tower types and construction plans with the environment, the Company managed to blend telecommunications infrastructure aesthetically into the surrounding environment, contributing to the development of a resource-efficient and environmental friendly society. Our performance was recognized by TSPs, governments and community residents.



▲ Aesthetic antenna in the residential community

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» Harmonization of towers with the natural environment using existing social resources in scenic spots

The Zijin Mountain Park in Nanjing is a national 5A tourist attraction. The Xiaoling Tomb in the park was built in the Ming Dynasty and is a world cultural heritage site. During the rollout of the construction project of 5G network coverage, the Company worked with local TSPs to make full use of existing facilities such as security monitor poles, cultural relics monitor poles and pipelines, etc. to put together a comprehensive coverage plan based on the characteristics of the tourist attractions and crowd flow and density. In order to avoid redundant construction and waste of resources, the original 4G base station poles and the towers, roofs, walls, surveillance poles and other resources were shared and used to set up 67 5G macro cells and 117 5G small cells, thereby enabling the integration of 5G construction with the scenic environment and the protection thereof.



▲ Setup of landscape poles on Zijin Mountain

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(IV) Environmental performance Table*Emissions of greenhouse gases*

Indicators	2020 Summary	2019 Summary
Indirect greenhouse gas emissions (Scope 1&2) (tons)	21,845.23	36,209.45
Direct greenhouse gas emissions (Scope 1) (tons)	728.90	1,751.96
Natural gas (tons)	728.90	1,751.96
Indirect greenhouse gas emissions (Scope 2) (tons)	21,116.33	34,457.49
Externally sourced electricity (tons)	21,116.33	34,457.49
Greenhouse gas emissions per unit of operating income (Scope 1 and 2) (tons/RMB million)	0.27	0.47

Notes:

- 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 natural gas in offices.
- 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).

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Energy consumption

Indicators	2020 Summary	2019 Summary
Energy consumption (MWh)	37,815.43	62,794.54
Direct energy consumption (MWh)	3,727.71	8,959.79
Natural gas (MWh)	3,727.71	8,959.79
Indirect energy consumption (MWh)	34,087.72	53,834.75
Externally sourced electricity (MWh)	34,087.72	53,834.75
Energy consumption per unit of operating income (MWh/RMB million)	0.47	0.82
Water consumption (tons)	573,380.31	1,030,940.46
Water consumption per unit of operating income (tons/RMB million)	7.07	13.49

Notes:

- The main types of energy consumed by the Company shown in the statistics above are natural gas and externally sourced electricity.
- 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 2589-2008) 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.

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Waste

Indicators	2020 Summary	2019 Summary
Total hazardous waste (tons)	108,673.20	91,160.40
Discarded lead-acid batteries (tons)	108,673.20	91,160.40
Annual total hazardous waste per unit of operating income (tons/RMB million)	1.34	1.19
Total non-hazardous waste (tons)	3,898.87	4,304.49
Total non-hazardous waste from the shelter at the site (tons)	3,330.84	3,638.38
Discarded air conditioners from the shelter (tons)	1,852.14	2,205.19
Waste switching power supply in the shelter (tons)	1,478.70	1,433.19
Total amount of non-hazardous waste in office space (tons)	568.03	666.11
Office paper (tons)	550.63	661.38
Discarded electronic products (tons)	14.93	0.84
Office supplies consumption (tons)	2.47	3.89
Annual total non-hazardous waste per unit of operating income (tons/RMB million)	0.048	0.056

Notes:

- As dictated by the types of businesses operated by the Company's business, the main hazardous waste is lead-acid batteries used on sites. The weight of discarded lead-acid batteries is estimated based on the equipment model.
- Regarding disposal and use of discarded lead-acid 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 Lead-acid Battery (HJ 519-2009) and other laws and regulations, and dispose of discarded lead-acid batteries accordingly.
- Office paper counts only include the current year's data of purchase of A3 and A4 papers by China Tower Corporation Headquarters, provincial branches and municipal branches, and the weight of paper is estimated based on the paper model.
- Discarded electronic products include mainframe microcomputers, laptops and printers.
- As dictated by the types of businesses operated by the Company, it does not include packaging materials.

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Proactively fulfilling social responsibility

Guidelines for sustainable development of China Tower

The Company has always fulfilled its social responsibility and duties, actively pushed forward the construction of wireless communication networks in remote areas, and assisted TSPs in providing inclusive services. The Company also involves in public welfare undertakings with passion, and plays an active role in the targeted poverty alleviation campaign to help win the tough battle against poverty. The Company spares no efforts in fulfilling its obligation to ensure communication is secure in case of emergency for providing strong support to enable uninterrupted communication over the network in unforeseeable incidents such as natural disasters, epidemics and so on.

Actions taken by China Tower in 2020

Assisting TSPs in successfully completing the inclusive telecom services pilot program as scheduled, and facilitating the construction of wireless networks in remote areas

- In 2020, the Company undertook the fifth batch of 13,000 inclusive telecom service pilot projects

Assisting with targeted poverty alleviation and building up a poverty alleviation system that involved different supporters and participants

- In 2020, all 3 counties in assistance were lifted out of poverty, involving an investment of RMB6.2 million in targeted poverty alleviation funds



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Actions taken by China Tower in 2020

Ensuring secure communication and assisting with unforeseeable incidents such as natural disasters, epidemic and other major social events

- Emergency communication support against natural disasters, e.g. floods, etc.
- Communication service support

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

- As of the end of 2020, 2,894 employees of the Company were registered youth volunteers. A cumulative total of 863 youth volunteer activities were carried out throughout the year, and 8,826 people participated in various volunteer activities on a cumulative basis



(I) Actively supporting COVID-19 prevention and containment

In the fight against the epidemic, the Company made active investments and efforts to ensure high-quality and efficient communication facilities are in place to sustain efficient and stable operations for emergency response, and to ensure employee safety and physical well-being as its top priority. The Company had great confidence and provided strong support for winning the battle against COVID-19 by implementing well-targeted policies.

Support for COVID-19 emergency communications

Since the outbreak of COVID-19 in early 2020, the Company effectively fulfilled its responsibility of providing telecommunication services during the epidemic, and made every effort to strictly implement the COVID-19 reporting system to ensure support is well in place. While ensuring effective epidemic control and staff protection, the Company organized maintenance

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departments at all levels to prepare a well-coordinated plan for the resumption of work after the holiday. During COVID-19 period emergency communication support involved a cumulative total of 357,000 staff members, 188,000 vehicles, and 246,000 diesel engines, and provided emergency support covering 24,000 base stations in high-priority locations for epidemic prevention and control. Our action has fully demonstrated the ideal of “speed, strength and warmth” of China Tower on the front line fighting against COVID-19.

▶▶ Assisting hospitals in effectively handling the virus outbreak through rapid base station construction and deployments

In January 2020, as part of the Xiaotangshan Hospital reconstruction project in Beijing, existing local base stations must be transformed to increase their capacity in a short time, so as to facilitate effective handling of the epidemic. The Company responded immediately and completed transformation of the existing resources for three sets of hollow covers in one day and added three new sets of supporting derricks, ensuring successful completion of capacity expansion and launch of 4G and 5G base stations for TSPs.



▲ Support for COVID-19 emergency communications

▶▶ Care for riders during the mass campaign against COVID-19

With a view to effectively implementing and promoting the battery exchange discount and support policy, the Company provided protective equipment, service support and heart-warming information for many riders who chose to remain on duty during the epidemic. Through a series of campaigns to show its care for riders, the Company won widespread recognition among clients, effectively promoted its brand image, thereby laying a solid foundation for business development.



▲ Caring for riders during COVID-19

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»» On-site power backup inspections conducted to ensure reliable power supply in hospitals

During the COVID-19 epidemic, the Company donated two small UPS power backup generators to Jingzhou Second People's Hospital in Hubei Province. Our employees collected, sorted and classified power usage information of more than 300 devices in key areas including the ICU wards, hemodialysis center, operating rooms, quarantine wards, etc. within the shortest time possible despite the risk of infection, providing important support for the hospital to rescue infected patients.



▲ On-site power backup check in the hospital

Employee health and safety support

In 2020, the Company made every effort to ensure the health and safety of its employees during the COVID-19 epidemic, implemented well-planned prevention and control measures, encouraged the resumption of work and production in a sensible manner, focused on source prevention and control, logistical support, and routine monitoring, ensured effective accountability enforcement level-by-level and effective implementation of the prevention and control measures.

The Company enhanced health management for employees returning to work, and used an integrated system to manage its own staff members and external personnel, with strict protective measures put in place. Preventive and control measures, e.g. enhanced ventilation and disinfection in workplaces and production sites, were introduced with consolidated management and virus elimination applied to office areas, especially elevators, canteens, toilets, etc. The Company provided employees with sufficient preventive materials against COVID-19, and individually packaged lunches to ensure they were consumed separately, and properly managed the prevention and containment of COVID-19 in even small details.

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The Company paid great efforts to the mental health of employees during the COVID-19 epidemic, provided specific psychological counseling and health consulting services for the employees, to reassure them against rumors and prevent panic. We also enhanced management of meetings, public events and business trips, and made full use of the video conference system, teleworking, and the communication office system, to minimize human gathering and contact, strictly prevent cluster infections, and contribute to the prevention and control of COVID-19.

(II) Consolidating progress made in poverty alleviation

The Company undertook poverty alleviation tasks in poverty-stricken areas assigned by the central and local governments. Building on our advantages in resources and business characteristics, the Company established and adopted a general strategy of “One drive, Two Alignments, Three Integrations, and Four Basics”. In details, focus on providing industry support as the drive; align the action plans of poverty alleviation and rural revitalization with local development strategies; integrate industry projects that are in assistance with enhancement of self-sustaining capacity, integrate telecommunications-based poverty alleviation with e-commerce-based poverty alleviation, and integrate talent support with leadership development; and based on poverty alleviation through industry development, telecommunications, e-commerce and talent support both intellectually and spiritually, to establish a multi-dimensional assistance and support model. After the three counties assigned to the Company had been lifted out of poverty in 2020, the Company invested RMB 6.2 million in targeted poverty alleviation despite the impacts caused by COVID-19 epidemic, to steadily push forward alleviating poverty through telecommunications. In 2020, the Company is officially recognized as a “National Outperforming Entity for Poverty Alleviation in the Telecommunications Industry”, 28 employees and 10 grassroots units received the honorary titles of national outperforming individuals and organizations at grassroots level for poverty alleviation in the telecommunications industry.

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Poverty alleviation through industrial development

The Company successfully adapted to suit conditions and has made long-term business plan. The Company introduced green tea planting business in Xuan'en County, Enshi, Hubei Province, a county assigned to the Company for poverty alleviation. In the year of 2020, the Company increased 500 mu of cultivated land, which contributed to the increased to a total of 1,250 mu cultivated land. Combined with strategy of "Interactive development of business and tourism", the Company aimed to build Enshi County into a characterized organic tea Garden by investing in the establishment of a new tea processing plant. This new tea processing plant is capable of processing 5,000 mu of tea leaves, and in turns benefiting 1,532 local households. The Company also invested into Hefeng for the building of an integrated processing plant in Banliao Village, specialized in the processing of indocalamus and Chinese herbs, whose annual average picking volume exceeded 100,000 jin (1/2kg). In Zhongxi Village, Baojing, the Company promoted the transfer of 111 mu of tea garden land, and assisted in the construction of an automated tea plant in Kezhai Village, which helped get 3,000 impoverished people out of poverty.



▲ Green tea planting in Enshi County

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The Company developed the “One Village One Product” paradigm based on the “company + cooperative + farmer” and “factory + base + farmer” models to stimulate the development of collective economy. We assisted with the construction of a pig farm in Longtanhe Village, which was leased to market entities as a village-owned collective fixed asset for business operation, driving revenue growth every year for the collective economy at the village and benefiting 118 local households. By investing in breeding bases to promote large-scale production of *Apis cerana Fabricius*, benefiting 45 households and driving revenue growth of over RMB3,000 per household. We also developed traditional industries to benefit 193 impoverished households, and developed the businesses of Chinese herb plantation, chicken, pigs and *quasipaa spinosa* farming, and timber processing, engaging 78% of local farmers, with steady revenue growth of RMB12,000 per household. The three collective economic projects, including chicken farming, beekeeping and tea garden, will continue to consolidate the results of poverty alleviation following Banliao Village been removed from the group of poverty-stricken villages, resulting in a decrease of overall poverty to 0.25%.



▲ Longtanhe village black pig breeding base

On the date of 25th to 26th in August 2020, Mr. Tong, Chairman of the Company, went to Hefeng and Xuan'en counties in Enshi Prefecture, Hubei Province, on an inspection tour regarding the targeted poverty alleviation initiatives, and progress achieved in the industry-based, e-commerce-based, and people-livelihood-supporting projects. The Company emphasized the importance of helping local farmers develop businesses with local characteristics, based on the actual local conditions and focusing on advantageous resources, effectively deliver industrial assistance packages to the individual households and employment assistance packages to the relevant person, and to encourage farmers to find jobs accordingly based on industrial development, and helped them steadily increase their income, in order to ensure the completion of the “tough battle” against poverty and the goal of building a moderately prosperous society.



▲ Chairman Tong inspects the tea production process in Xuan'en

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Poverty alleviation through pro-consumption campaigns

The Company issued the “Notice on Taking Pro-consumption Actions for Poverty Alleviation to Aid the Tough Battle against Poverty”, aligned production planning with sales, and promoted the consumption of products from designated poverty alleviation projects among corporate entities and canteens. We developed an e-commerce platform for poverty alleviation, set up permanent booths in the Headquarters’ canteens, and established an e-commerce service station to help people sell agricultural products right from their homes. To further expanded the scale of the pro-consumption campaigns, we actively involved in the promotion and sale of agricultural products from target poverty-stricken areas, we encouraged senior managers and employees to purchase agricultural products from poverty-stricken areas, and we advocated making purchases over donations.

The Company’s Headquarters and provincial branches bought agricultural products worth RMB4.6 million in total from poverty-stricken areas in 2020. Meanwhile, greater and more efforts were made for the promotion of agricultural products to help sell RMB2.71 million worth of agricultural products from poverty-stricken areas. The above results proved that the pro-consumption campaigns for poverty alleviation were remarkably effective.

(III) Providing support for emergency communications

The Company actively fulfilled its responsibility of providing emergency communication services, continuously improved the communication security system, and formulated an emergency management system, providing emergency communication support for disaster relief and various cases of emergencies. In 2020, the Company further optimized the emergency management system, enriched and integrated the existing prevention mechanisms, improved the emergency service link, worked with TSPs to jointly clarify the requirements for conferences, guarding, on-site command management. We also optimized and supplemented the reporting process in an all-round way. By clarifying the classification criteria for various emergencies, we further improved the timeliness and accuracy of information communications during emergency handling processes at all levels.

Emergency communication support against natural disasters

In 2020, flood control and disaster relief operations were further compounded by epidemic control. To ensure effective emergency communications during natural disasters, China Tower put aside 73,000 disaster relief employees, 28,000 vehicles, 116,000 diesel engines and 100,000 flood containing sandbags. We successively conducted 104 emergency drills with local telecommunications administrations and TSPs, and 547 flood control training sessions of various kinds for 48,000 trainees. Simultaneously, hazard investigations were conducted on 1.551 million tower sites, and rectifications were made on 39,000 sites against serious potential risks, ensuring that the entire Company was alert to any flood before and after its occurrence, and that the communication networks were not interrupted during the occurrence of an emergency.

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In 2020, China Tower's branches in 19 provinces, including Hubei, Jiangxi and Anhui branches, designated as key units of flood control and disaster relief, provided 159,000 employees, 73,000 vehicles, 200,000 diesel engines and 154,000 power generation stations in aggregate, enabling effective support for the stable operation of the tower sites.

»» Communications network operated steadily, supporting flood disaster relief

Heavy rainfalls hit many places in Gansu in August 2020. Longnan, Dingxi, Tianshui regions suffered from river floods, mountain torrents and other geological disasters. With a view to ensuring stable operation of key nodes in the communications networks, the Company immediately launched secondary emergency response, worked in collaboration with provincial and municipal branches to establish a joint commanding and deployment team. Through the analysis of historical data of flood warnings during the flood season in 2019, we determined key target sites for action, and developed solutions site-by-site to ensure the orderly rollout of emergency rescue.



▲ Emergency support power supply vehicles



▲ Delivery of a diesel engine to a high-priority tower site

Communication security for major events

As the national team and the main force in the construction of urban telecommunications infrastructure, the Company played a leading role in resources integration and overall planning, adhering to high standards and aiming high in order to provide strong communication service support during major events.

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» Telecommunications support for China International Import Expo

From funded in China to global sharing, the eagerly-awaited 3rd China International Import Expo (CIIE) was held from 4 to 10 November 2020 at the Shanghai National Exhibition & Convention Center (NECC).

Taking into account the COVID-19 prevention and control requirements and the experience gained in telecommunications support operations during the 2nd CIIE, the Company identified 735 high-priority base stations in important transportation hubs, e.g. Hongqiao Airport, Pudong Airport, Hongqiao Railway Station and Shanghai Railway Station, and starred hotels and popular business districts, within 3 kilometer radius of the NECC. Adhering to the basic principle of "key issues first, others next; resume service first, repair next", the Company made every effort to ensure the normal operation of base stations. In addition, to address the battery charging issue with the patrol vehicles of the NECC Police Station, Energy Tower Corporation Limited organized 2 power charge cabinets and 16 sets of lithium batteries to provide complete, safe, light-duty and highly enduring battery charging services, contributing to the security service support for the CIIE.



▲ CIIE Communication Support Team

(IV) Facilitating the provision of inclusive telecom services

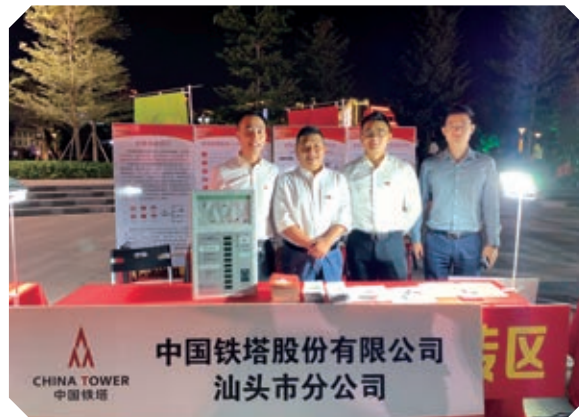
The Company actively fulfilled its social responsibility as a state-owned enterprise, worked hard to tackle the network coverage issues in rural, mountainous and remote areas, and helped TSPs complete pilot programs of inclusive telecom services as scheduled. With the promotion of inclusive telecom services, the construction of inclusive service base stations has gradually reached borders, provincial borders and remote rural area. While confronting with the scarcity of resources and greater challenges in construction, the Company took into full account the topography and site features, encouraged a higher level of social resource sharing to reduce construction of new ground towers, and completed the communication networks in remote areas in a faster, better and more economical manner. As of the end of 2020, it had undertaken 40,400 pilot projects of inclusive telecom services and 2,089 border. In 2020, we undertook more than 13,000 inclusive telecom service pilot projects and more than 400 border sites.

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(V) Engaging in volunteer services

The Company attached great importance to fulfill its social responsibility, performed its duties as an state-owned enterprise, and encouraged young employees to participate in various volunteer services and get actively involved in COVID-19 prevention and control operations. As of the end of 2020, 2,894 employees were registered as youth volunteers. A cumulative total of 863 youth volunteer activities were carried out during the year, and 8,826 people participated in various volunteer services.

The Company launched a community campaign on the safety of battery charging for electric vehicles. By giving pamphlets and on-site presentation, the Company explained and presented relevant safety regulations and knowledge of battery charging for electric vehicles, and promoted the use of battery charging piles for electric vehicles that meet the safety requirements. The campaign also involved displaying and demonstrating smart fire safety products of China Tower, providing the general public with comprehensive prevention and control solutions.



▲ Going into the community to stage a safety education regarding battery charging for electric vehicles

The Company continued to organize activities for the disadvantaged groups such as CDPF schools and elderly people who live alone, and increased its involvement in ecological and environmental protection activities. It organized theme-based day group activities, such as the "Good City Resident Survey on Communication Quality", to bring youngsters more closely together and put on a new trend of sanitation improvement.



▲ Theme-based day group activities

Starting a new chapter for harmonious development

» The Youth League members were organized to support smooth communications in flood-stricken areas

On 18 August 2020, the Chongqing Municipality raised the flood response level to Grade 1. The Company immediately launched its Level 1 emergency plan for flood control and drought relief, deployed and coordinated resources allocation in advance, and spared no efforts in ensuring emergency communication support for flood control and rescue.

The Youth League members in the Company worked with local government authorities in disaster rescue operations. The 24-hour duty attendance and zero reporting policies were implemented for frontline communication support. We coordinated the allocation of resources (e.g. manpower, vehicles, power generators and kayaks, etc.) for emergency communication support to effectively ensure uninterrupted communication during the flood.



▲ Youth League members in Wanzhou were actively involved in emergency communication support for flood control and relief



▲ Yuzhong young employees conducted the work of mud removal and flood prevention



▲ Hechuan Youth League members help with the fight against flood



▲ Youth from Nan'an District are moving a base station in emergency

Starting a new chapter for harmonious development

Caring and empowering employee development

Guidelines for the Sustainable Development of China Tower

Employees are the underpinning foundation for the healthy and sustainable development of the Company, and they are valuable assets and core competitiveness of the Company. The success of employees drives the sustainable development of the Company. The Company firmly believes that talented employees are what makes it strong. As a champion of employee rights and interests, we care for the physical and mental well-being of employees, keep boosting organizational power to create a positive and harmonious workplace, and share our achievements with employees.

Actions Taken by China Tower in 2020

Protecting the legitimate rights and interests of employees

- Developed a sound system for protecting the rights of employees
- Adhered to open and equal recruitment
- Provided employees with benefits including pension, medical care, work-related injury insurance, maternity and unemployment insurance
- Established a well-developed performance management system

Care for the well-being of employees

- Offered annual physical examination to all employees
- Covered critical illness insurance for all employees
- Provided accident insurance for all employees and their families
- Organized regular and diverse activities



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Actions Taken by China Tower in 2020

Sound training and management system

- Set up Tower Academy and improved the training system
- Commitment to creating a good learning atmosphere
- Introduced training programs such as the “Set-Sail Program”

(I) Protecting the legitimate rights and interests of employees

Looking ahead, the Company aims to build a new pattern of talent development in strict compliance with 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 and other relevant laws and regulations, based on which it has established the Measures of China Tower Corporation Limited for Management of Staff Attendance and Leave, Labor Contract Management Measures, Training Management Measures (Trial), etc. to standardize the management in staff recruitment, employment, remuneration packages, attendance, performance, equal opportunities, anti-discrimination and employee diversity, and condemn differentiated treatment based on race, age, gender, marital status, religion and beliefs. Meanwhile, the Company will further improve the allocation of human resources to unleash talent potential. We adhere to the principle of openness and equality during recruitment to strictly eradicate gender and race discrimination and child labor.

Corporate annuities are an important supplement to the national basic aged pension insurance, and the “secondary pillar” to China’s evolving urban employee aged pension insurance system, which concerns the immediate interests of employees. The Company adapts itself to the latest national policies for ongoing optimization and improvement, and for the continuous enhancement of annuity management, which has become an important part of the Company’s staff benefit system, playing a positive role in reinforcing the sense of belonging among employees and improving staff retention.

The Company has continuously innovated existing systems, mechanisms and its management model to create a flat organizational structure, thereby maximizing the efficiency and capability of its staff members. Guided by performance and capability improvement, the Company puts work value at its core, and determines employees’ ranks and remuneration packages based on work value, performance and competence level. Employees are provided with numerous development paths, allowing them with optimal scope for growth. A top-down flexible and dynamic management mechanism is in place to effectively attract, motivate and retain employees.

Starting a new chapter for harmonious development

Employee breakdown

Indicator		Total (persons)
Total headcount		19,821
Employees from ethnical minorities		1,698
By gender	Male	14,661
	Female	5,160
By category	Managers	3,790
	Non-managers	16,031
By age	29 and below	4,882
	30-39	9,226
	40-49	5,002
	50 and above	711
By region	East China	4,943
	Central China	2,256
	North China	3,046
	South China	2,040
	Northwest China	2,375
	Northeast China	1,751
	Southwest China	3,408
	Hong Kong, Macau and Taiwan	2

Starting a new chapter for harmonious development

Employee turnover

Indicator		(%)
Employee turnover rate		1.7
By gender	Male	1.7
	Female	1.9
By age	29 and below	4.0
	30-39	1.3
	40-49	0.7
	50 and above	0.0
By region	East China	2.1
	Central China	1.3
	North China	2.4
	South China	2.7
	Northwest China	1.8
	Northeast China	1.0
	Southwest China	1.6
	Hong Kong, Macau and Taiwan	0.0

(II) Care for the well-being of employees

The Company has gradually established a comprehensive medical system for all employees, providing contracted health management plans, critical illness insurance and accident insurance. We are committed to improving employee health protection and their sense of security. In 2020, the Company further developed its supplementary staff medical insurance, broadening the system to cover employees' immediate family members.

This year, while adding new items of physical examinations for employees, the Company has also introduced psychological counselling services, which perform checks mainly from symptoms, emotional tendency and accessibility to social resources, etc., and provided customized guidance for employees with "severe" problems based on their evaluation results. In view of the impacts of COVID-19 on employees' professional and private lives, the Company made macro-level arrangements to protect their mental health, and took a series of measures to set up facilities such as reading and entertainment rooms where staff members can relax and vent off their feelings.

Starting a new chapter for harmonious development

» The Volleyball Friendly Match helped to improve employees physical and mental well-beings

The Company not only cares about the physical and mental health of employees, but also strives to improve their physical fitness to enhance the spirit and work efficiency. In 2020, the Company's trade union organized teams from Guangxi, Hunan and Hainan to take part in the Gas Volleyball Friendly Match for Telecommunications Company Employees in Three Southern Provinces organized by the China Telecommunications Sports Association, and won the Best Organization Award and Most Spirited Award.



▲ The 2020 Gas Volleyball Friendly Match for Telecommunications Company Employees in Three Southern Provinces

(III) The “Talents Make Business Strong” strategy

In an effort to minimize gatherings of people after the COVID-19, the Company carried out its first online recruitment campaign with job postings published on major recruitment websites in the autumn of 2020. Adhering to the theme of “Tower for the Young, Passionate Growth”, the Company created short videos in which senior managers introduced the Company, and staff representatives elaborated on their work experience, attesting to China Tower's commitment to promoting the development of young university graduates by providing them with a comprehensive development platform, a full range of compensation and benefits, and a well-established training system. This online campaign involved the Headquarters and branches in 27 provinces, autonomous regions and municipalities. The videos were played over 370,000 times, and more than 28,000 resumes were received, with positive promotional effects achieved.



▲ Online Campus Recruitment Campaign

Starting a new chapter for harmonious development

With a view in pushing forward the implementation of relevant strategies and the in-depth market-oriented reform, and enhancing the quality of education and training for employees, the Company established the Tower Academy, a dedicated institution responsible for employee training, in 2020. The academy regards the Company's employees as its customers, 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 supporting employee development. The Company's current training system consists of two components: the "Leadership Program", "Empowerment Program" and "Succession Program" for management staff at all levels; and training products designed for employees at all levels, including the "Set-Sail Program" for new employees, the "Excellence Program" to improve employees competence, and the "Specialist Program" and "Talent Program" for expert talents, etc.

In particular, the "Set-Sail Program", which begins at the new employee onboarding stage, was introduced in 2020. The Company has developed a total of 13 induction training courses, delivered in the form of live video broadcast, and have trained more than 3,000 people in total. In addition, the Company held a total of seven sessions of management and expertise video training throughout the year, benefitting an approximate cumulative number of 18,000 trainees, and continued to make the "Headquarters Seminars" as the top brand of inclusive competence training.

The Company held two professional and technical job qualification certification events in 2020 to intensify training efforts, and granted the grade-1 qualification certificate for business cooperation positions to 339 employees, and the grade-1 qualification certificate for regional positions to 3,796 employees. In addition, the Company organized training courses for general managers, and video training to cover approximately 1,200 local managers in more than 300 cities.



▲ The 2020 "Set-Sail Program" New Employee Induction Training

Prospects for Sustainable Development

2021 marks the opening for the development of a modern socialist country in all respects and the 14th “Five-Year Plan”. It is also the year for China Tower to work hard to set foot at a new stage of development, implement the new philosophy of development, and to draw a new development paradigm with full efforts to open up a new chapter for high-quality growth. We will continue to implement national strategies such as “Cyberpower”, “Digital China” and the “5G Infrastructure”, keep the focus on high-quality development, and push ahead with reforms and innovation as the primary driving force. Building on the transformation and market-oriented reforms, we will further implement the “One Core and Two Wings” strategy and expand the scope of the resource sharing philosophy. As the “Cyberpower”, “Digital China” and “5G Infrastructure” strategies deepened, new-generation of information technologies, such as the mobile internet, big data and artificial intelligence, is flourishing. The 5G technology is expected to further drive the development of digital economy.

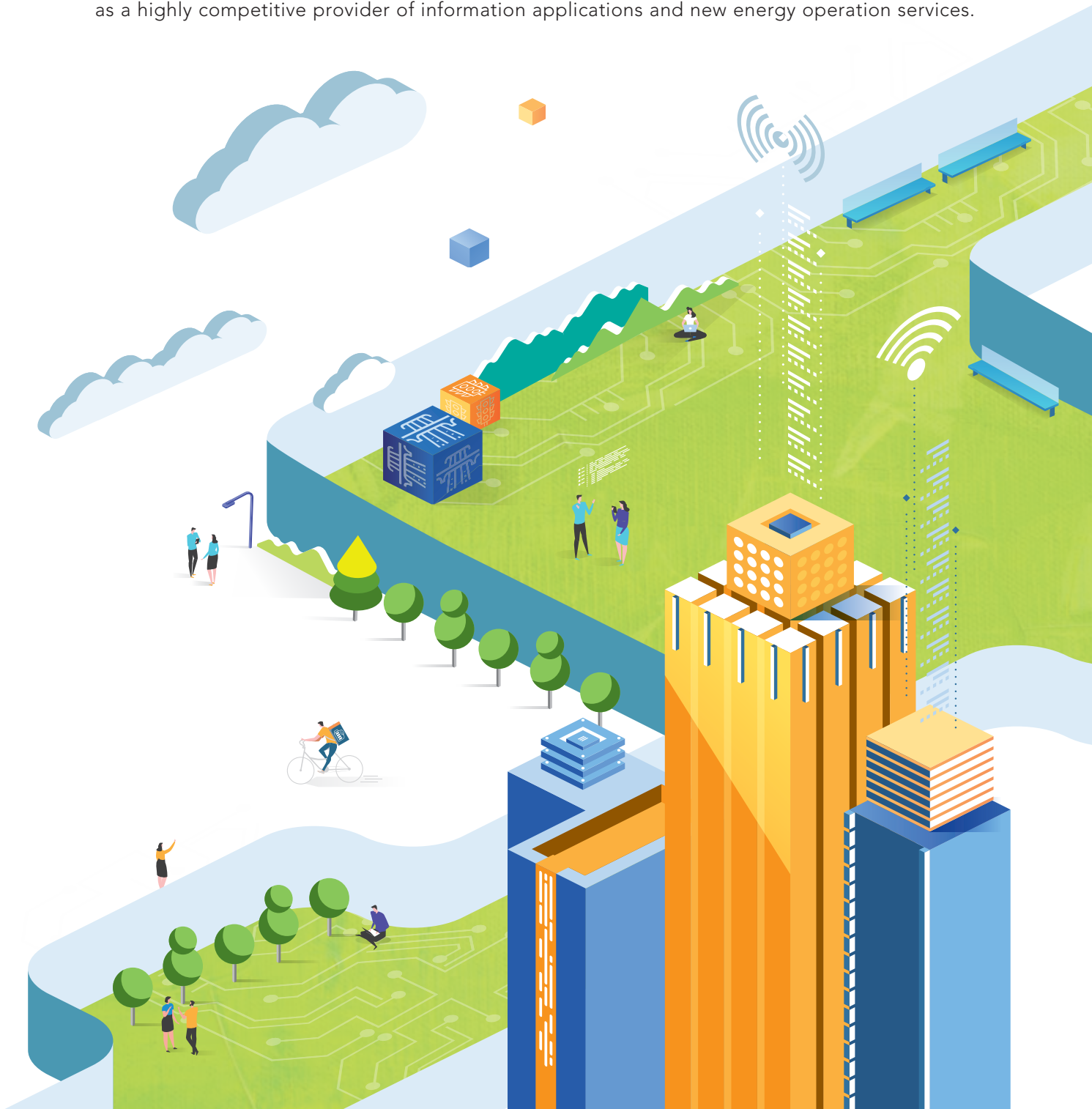
Having experienced an unprecedented year like 2020, we are now standing at a new starting point. We will continue to grasp opportunities of the time, fully make use of our roles being the “national team” for telecommunications infrastructure development and operation, and as the “main force” to implement 5G and new infrastructure strategies. In addition, we will seize opportunities in market development, work in accordance with the sharing economy model to promote collaborative development. We will support the implementation of the national strategies adhering to the philosophy of “prioritizing co-location and co-construction over new and single construction”, and effectively support the large-scale commercialization initiative of 5G networks. By leveraging our advantages on telecommunication tower resources, we will empower digital economy and support the digitalization and informatization of various industries, with the aim of serving the national economy and people’s livelihoods. In addition, by providing services for battery, power backup and power generation, we will take an integrated approach in planning the energy operation business to support the sustainable development of energy economy and green economy.

We will continue to deepen reforms and innovation, improve corporate governance, remain concentrated on consolidating fundamental management, strengthen innovation in technology, business, management, system mechanisms, etc. to enable further business development, reduce costs, improve efficiency in operation and management and ensure quality communication services. We will stay tuned of climate change issues and respond accordingly to the national requirements in terms of peaking emissions of carbon dioxide and carbon neutrality. We will apply green energy technologies and big data technologies to improve energy efficiency, and to accomplish the goals of energy-saving and emission reduction. In order to minimize the impacts on the environment, and contribute to the building of a resource-saving and environmental friendly society, the Company will proactively adopt tower types and construction plans that are environmental friendly. Moreover, we will continue to promote the building of telecommunication networks in remote areas, bridging the “digital divide”, securing and expanding the achievements of poverty alleviation to fulfill our corporate social responsibility. Meanwhile, we will fulfill our obligations at all aspects and to provide emergency communication support for ensuring uninterrupted communication over unforeseeable incidents like natural disasters, epidemic, etc. We also care for the growth of our employees, and will implement our talent strategy with ongoing efforts to improve our training system and inspire growth of future business.



Prospects for Sustainable Development

In 2021, we will carry on the philosophy of sustainable growth and insist the implementation of the “One Core and Two Wings” strategy to deepen synergistic development based on sharing. We will continue to build on our core competitiveness by strengthening the market-oriented approach, and enhance the quality and efficiency of business development by focusing on the consolidation of fundamental capabilities, with the aim to accelerate the development of China Tower into an enterprise with the best potential for growth and value creation. Ultimately, China Tower aims to become a world-class telecommunication infrastructure service providers, as well as a highly competitive provider of information applications and new energy operation services.



Appendix: Index List

HKEx “ESG Reporting Guide” – Index Table

Scope	Topic for discussion	Performance indicators	Chapter disclosure
Environment	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 promote ecological harmony
		A1.1 The types of emissions and respective emissions data.	Committed to promote ecological harmony
		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 promote ecological harmony
		A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Committed to promote ecological harmony
		A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Committed to promote ecological harmony
		A1.5 Description of emission target(s) set and steps taken to achieve them.	Committed to promote ecological harmony
		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 promote ecological harmony
		A2 Use of resources	General Disclosure Policies on the efficient use of resources, including energy, water and other raw materials.
		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 promote ecological harmony

Appendix: Index List

Scope	Topic for discussion	Performance indicators	Chapter disclosure
Environment		A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	Committed to promote ecological harmony
		A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	Committed to promote ecological harmony
		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 promote ecological harmony
		A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	Committed to promote ecological harmony
	A3 Environment and natural resources	General Disclosure: Policies on minimizing the issuer's significant impacts on the environment and natural resources.	Committed to promote ecological harmony
		A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	Committed to promote ecological harmony
Society	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 and empowering employee development
		B1.1 Total workforce by gender, employment type (for example, full- or part-time), age group and geographical region.	Caring and empowering employee development
		B1.2 Employee turnover rate by gender, age group and geographical region.	Step up HR development to facilitate employee growth

Appendix: Index List

Scope	Topic for discussion	Performance indicators	Chapter disclosure
Society	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.	Focusing on enhancing service quality
		B2.1 Number and rate of work-related fatalities.	–
		B2.2 Lost days due to work injury.	–
		B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.	Caring and empowering employee development
	B3 Development and training	General Disclosure Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	Caring and empowering employee development
		B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	–
		B3.2 The average training hours completed per employee by gender and employee category.	–
	B4 Labor standards	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 preventing child and forced labor.	Caring and empowering employee development
		B4.1 Description of measures to review employment practices to avoid child and forced labor.	Caring and empowering employee development
		B4.2 Description of steps taken to eliminate such practices when discovered.	Caring and empowering employee development

Appendix: Index List

Scope	Topic for discussion	Performance indicators	Chapter disclosure
Society	B5 Supply chain management	General Disclosure Policies on managing environmental and social risks of the supply chain.	Striving for consistent improvement in management
		B5.1 Number of suppliers by geographical region.	Striving for consistent improvement in management
		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.	Striving for consistent improvement in management
	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, labelling and privacy matters relating to products and services provided and methods of redress.	Striving for consistent improvement in management
		B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	Striving for consistent improvement in management
		B6.2 Number of products and service related complaints received and how they are dealt with.	Strictly adhering to work safety requirements for ongoing improvement of service quality
		B6.3 Description of practices relating to observing and protecting intellectual property rights.	Striving for consistent improvement in management
		B6.4 Description of quality assurance process and recall procedures.	Striving for consistent improvement in management
		B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	Striving for consistent improvement in management

Appendix: Index List

Scope	Topic for discussion	Performance indicators	Chapter disclosure
Society	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.	Striving for consistent improvement in management
		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.	–
		B7.2 Description of preventive measures and whistleblowing procedures, and how they are implemented and monitored.	Striving for consistent improvement in management
	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.	Fulfilling social responsibility
		B8.1 Focus areas of contribution (e.g. education, environmental concerns, labor needs, health, culture, sport)	Fulfilling social responsibility
		B8.2 Resources contributed (e.g. money or time) to the focus area.	Fulfilling social responsibility



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