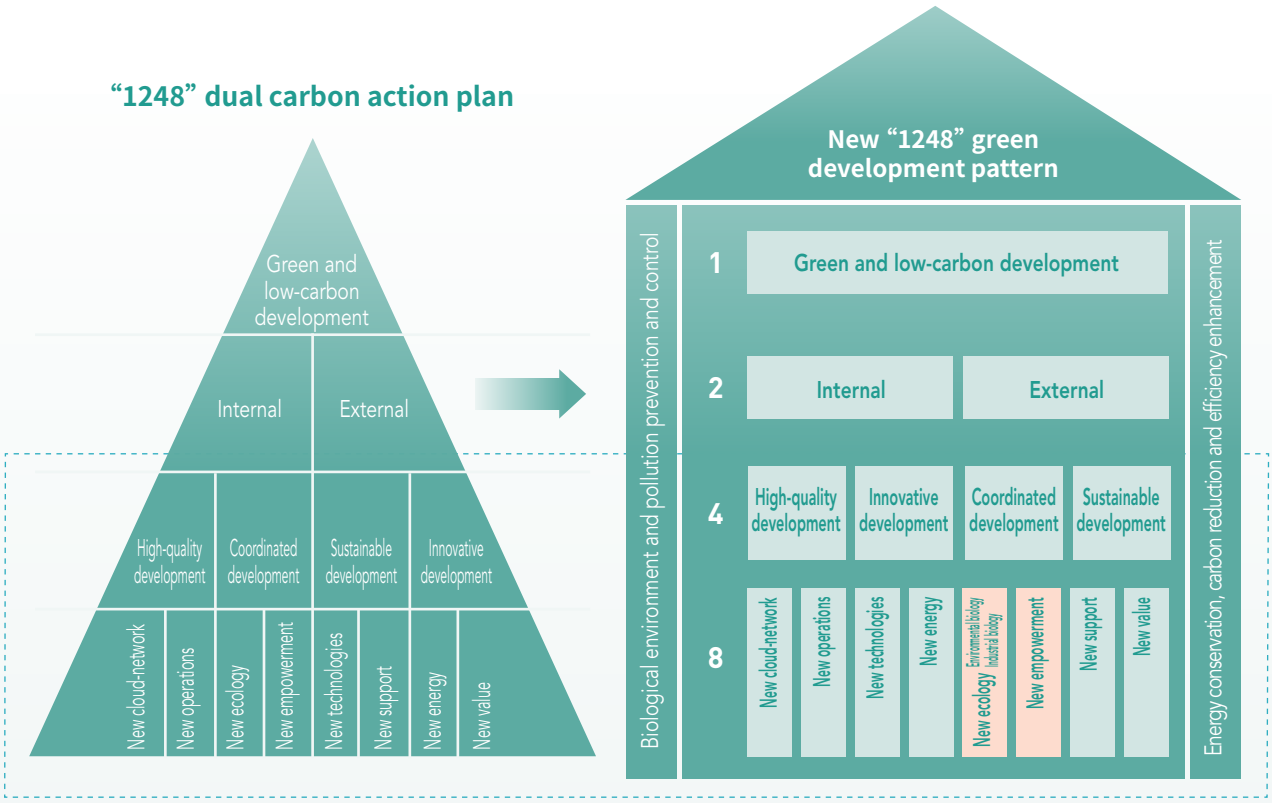
GREEN DEVELOPMENT

China Telecom actively implements the national "dual carbon goals" and the green and low-carbon requirements of the industry, and steadfastly pursues a high-quality development path that prioritizes ecological protection and green transformation. The Company continuously optimises the "1248" green development pattern, integrates green and low-carbon concepts into the whole construction and operation process of new types of digital infrastructures, accelerates energy structure transformation, and expands green products and services, contributing to green transformation across society.

PRACTICING "DUAL CARBON" STRATEGY

The Company actively implements the *Opinions on Completely, Accurately, and Comprehensively Implementing the New Development Concept and Achieving Carbon Dioxide Peaking and Carbon Neutrality*, the *Action Plan for Carbon Dioxide Peaking by 2030*, the *Opinions on Promoting the Gradual Shift from Dual Control of Energy Consumption to Dual Control of Carbon Emissions*, the *Opinions of the CPC Central Committee and the State Council on Comprehensively Promoting the Construction of a Beautiful Country*, the *Opinions on Accelerating Comprehensive Green transformation during Economic and Social Development* and other policy documents of relevant ministries and commissions, and keeps improving the "1248" green development pattern, integrating green and low-carbon concepts into the whole process of corporate production and operation.



Governance Structure

The Company has set up a three-level governance structure comprising decision-making level, management level and implementation level.

Governance level	Accountable department	Main responsibilities
Decision-making level	"Carbon Dioxide Peaking and Carbon Neutrality" leadership group	Promote the implementation of the Company's green and low-carbon strategy, lead the Company's green development efforts, and study and make decisions for important issues in the management of "Carbon Dioxide Peaking and Carbon Neutrality".
Management level	The office of the "Carbon Dioxide Peaking and Carbon Neutrality" leadership group	Implement and promote the arrangements of superior departments and the leadership group for "Carbon Dioxide Peaking and Carbon Neutrality" efforts, study important issues in the work, supervise the implementation of specific work tasks, regularly evaluate the progress of work and report to the leadership group.
Implementation level	The departments responsible for green development and related business departments of each subordinate unit	Track climate change-related risks and opportunities in real-time, and provide recommendations to management and decision-making levels based on practical experience

The Company places high priority on green development and climate change-related topics, and continuously strengthens capacity building for green development and transformation and climate change response at the level of the Board of Directors. In 2024, the Company organized 11 training sessions with participation from 6 directors.

The Company establishes green development assessment and incentive mechanisms, which includes key green development performance indicators into the Chairman's performance assessment and links them with remuneration. The Company formulated the *Notification on Issuing Green Development Work Assessment Rules of China Telecom in 2024*, incorporating the key work of green development into the operational performance assessment system for persons in charge of provincial branches and professional companies.

The Company continues to improve its organizational structure for green development efforts. A green development division under the cloud-network development department/the international department was set, while it maintained the original operational mode of green development taskforce to deepen overall green development efforts through horizontal departmental coordination and vertical "top-down" task implementation mechanisms.

Achievements and goals

In 2024, the Company achieved favourable results in energy conservation and carbon reduction. Through multi-pronged measures such as co-building and co-sharing, green renovation of facility rooms, and AI energy saving, it reduced greenhouse gas emissions by more than 15 million tons this year, the comprehensive energy consumption per unit of total volume of telecommunications services decreased by 12.5% year on year, and the greenhouse gas emissions per unit of total volume of telecommunications services decreased by 19.2% year on year. During the 14th Five-Year Plan period, the Company has reduced its greenhouse gas emissions by more than 45 million tons through co-building and co-sharing and various energy-saving measures, completing ahead of schedule the emissions reduction target set for the 14th Five-year Plan period. The Company promises to continue to reduce comprehensive energy consumption intensity and greenhouse gas emissions intensity in 2025.

Strategy and Risk Management

Climate impact evaluation

The Company is acutely aware that its business activities have or are expected to have a positive or negative impacts on economy, environment and society as well as its stakeholders. In order to fully understand the impacts of its climate-related business activities on its stakeholders, the Company evaluates its climate-related impacts every year, and communicates with its stakeholders to identify its climate-related business activities with major impacts.

Climate-related impact evaluation process

Climate-related impact identification	The Company's "Carbon Dioxide Peaking and Carbon Neutrality" leadership group identifies climate-related strategic planning and business activities by tracking climate-related policy dynamics and sorting out enterprise practices every year, and further analyses positive or negative impacts of its business operation modes and emission reduction plans on stakeholders in the aspects of economic development, environmental protection and social factors.
Impact importance evaluation	The office under the "Carbon Dioxide Peaking and Carbon Neutrality" leadership group holds a special meeting every year, and invites stakeholders and climate experts to evaluate the importance of the identified climate-related impacts.
Positive impact evaluation	The quantitative evaluation is conducted in dimensions of "impact scale", "impact scope" and "possibility", with each dimension rated on a three-level scale (scored 1-3 points), and the final score is the sum of the scores. A higher score means a higher positive impact importance of the business activity.
Negative impact evaluation	The quantitative evaluation is conducted in dimensions of "impact scale", "impact scope", "possibility" and "irremediability", with each dimension rated on a three-level scale (scored 1-3 points), and the final score is the sum of the scores. A higher score means a higher negative impact importance of the business activity.
Impact importance activity analysis and response	The impact importance threshold is set to be 75% or more of the full score. The office of the "Carbon Dioxide Peaking and Carbon Neutrality" leadership group reports the climate-related business activities identified with major impacts to the "Carbon Dioxide Peaking and Carbon Neutrality" leadership group. Then the Board of Directors makes decisions and develops response measures.
Impact importance activity disclosure	The process and results of the climate-related impact evaluation are disclosed in the annual sustainability report (i.e. the ESG Report) to respond to the concerns of stakeholders.

China Telecom's climate-related impact evaluation results

In 2024, the Company comprehensively identified and evaluated the impacts of its specific activities related to business operations, business modes and development strategies on the economy, environment and society through the above process, including the water and power consumptions of communication facility rooms, base stations, datacentres and other equipment in stable operation within the scope of China Telecom's main business, the negative impact of scrapped network equipment, hardware waste and other electronic waste and business activities on stakeholders, as well as the positive impact of actively implementing energy-saving and emission reduction measures, intelligent transformation and upgrading, expanding the application of renewable energy and other business activities. According to the evaluation results, the Company did not have any climate-related business activities with major negative impacts, and its climate-related business activities with major positive impacts and its impacts on economy, environment and society are detailed in the table below.

China Telecom's climate-related business activities with major impacts

Category	No.	Business activities	Climate-related performance	Impacts on economy, environment and society	Stakeholders affected
Positive impact	1	Upgrade facility rooms into intelligent ones, promote the application of AI-powered energy-saving technologies.	Indirectly reduce carbon dioxide emissions	**Economy:** Improve the return on investment. **Environment:** Effectively avoid excessive cooling or excessive heating, reduce energy consumption, and mitigate global climate change.	Natural ecology, social public
Positive impact	2	Develop renewable energy and forestry carbon sink projects in cooperation with clean energy enterprises and integrated energy service enterprises based on "dual carbon goals".	Indirectly reduce carbon dioxide emissions	**Economy:** 1. Promote innovation and market-based development of renewable energy technologies, boost the structural adjustment of the energy industry, and reduce dependence on fossil fuels and energy costs. 2. Forestry carbon sink projects may lead to carbon credit quota, which can be traded on the carbon trading market, contributing to the development of global carbon markets. **Environment:** 1. Mitigate global climate change. 2. Forestry carbon sink projects improves the ecological environment, restores damaged ecosystems and increases biodiversity by means of afforestation and ecological restoration. **Society:** 1. Raise public awareness of renewable energy and low-carbon life. 2. Drive the sustainable development of local economy, especially clean energy projects and ecological restoration projects in the western region, contributing to the balanced development of society.	Energy industry, social public, natural ecology
Positive impact	3	Outsource green electricity and build distributed photovoltaic power generators to increase the use ratio of green electricity gradually and call for increasing the use ratio of renewable energy in the energy use structure of the whole supply chain.	Indirectly reduce carbon dioxide emissions	**Economy:** 1. Play an exemplary role to encourage other industries and companies to adopt similar green energy strategies, further promoting large-scale green transformation. 2. Use and expand renewable energy to promote the vigorous development of related industries, such as photovoltaic equipment manufacturing, energy storage technology, smart grid industries, driving economic growth and industrial innovation. **Environment:** 1. Green power (such as wind power and photovoltaic power) produces almost no carbon emissions, which can effectively reduce pollution to air, water and soil. 2. Reduce the dependence on non-renewable resources such as coal.	Upstream and downstream supply chains, natural ecology

Category	No.	Business activities	Climate-related performance	Impacts on economy, environment and society	Stakeholders affected
Positive impact	4	Strengthen the innovative application of digital information technologies, and use cloud computing, IoT and other technologies to provide customers with new types of digital solutions, such as energy efficiency and carbon reduction, pollution prevention and control, and ecosystem protection.	1. Indirectly reduce carbon dioxide emissions 2. Provide green digital solutions	**Economy:** Promote the low-carbon transformation of downstream customers and promote the process of national carbon neutrality. **Environment:** Indirectly mitigate the rising global temperature. **Society:** Effectively enhance the Company's brand image and social influence, and further promote the green consumption trend of the whole society.	Natural ecology, downstream customers, the public

Climate risk management

The Company actively addresses climate change, and includes climate-related risk management into its overall risk management, achieving closed-loop management for risk identification, risk evaluation, key risk analysis, risk response, and risk monitoring, tracking and disclosure.

Climate-related risk and opportunity management process of China Telecom

Risk identification

The Company's "Carbon Dioxide Peaking and Carbon Neutrality" leadership group identifies short-term, medium-term and long-term climate risks and opportunities related to the Company by benchmarking with international standards and holding internal interviews every year.

Risk evaluation

The "Carbon Dioxide Peaking and Carbon Neutrality" leadership group holds a special meeting to discuss and analyse the identified climate-related risks and opportunities every year. On the one hand, it considers the probability and frequency of occurrence of the risks or opportunities, and divides the probability of occurrence into three levels, namely "Likely", "Very likely" and "Virtually certain", based on the response measures taken by the Company. On the other hand, it conducts both qualitative and quantitative evaluations on financial impact, business impact and reputation impact brought by the risks and opportunities, and divides the degree of impact into three levels, namely high, medium and low.

Key risk analysis

The Company ranks climate-related risks and opportunities in dimensions of "probability of occurrence" and "degree of impact", and determines major climate-related risks/opportunities (i.e. high risks/opportunities) based on the following matrix. The office of Carbon Dioxide Peaking and Carbon Neutrality reports major climate-related risks or opportunities to the leadership group of the office of Carbon Dioxide Peaking and Carbon Neutrality for decision-making at the level of the Board of Directors.

Probability of occurrence \ Degree of impact	High	Medium	Low
Virtually certain	High risk/opportunity	Medium-high risk/opportunity	Medium risk/opportunity
Very likely	Medium-high risk/opportunity	Medium risk/opportunity	Medium-low risk/opportunity
Likely	Medium risk/opportunity	Medium-low risk/opportunity	Low risk/opportunity

Risk response

For identified major climate-related risks, the Company will conduct a cost-benefit analysis for potential response measures to discuss and determine reasonable response plans. For identified significant climate-related opportunities, the Company will also conduct internal analysis and discussion to define measure modes and schedule.

Risk monitoring, tracking and disclosure

The Company tracks the risk management performance based on regular reviews of changes in climate-related risks and opportunities. It discloses major climate-related risks and opportunities in the Annual Sustainability Report (i.e. the ESG Report), including qualitative and quantitative financial impacts, risk management processes and management performance.

Time range and definitions

Short term (0-3 years)

The Company considers 0-3 years as a short-term period, and evaluates identified climate risks with a higher probability of occurrence in the near future within this time range and their relevant impacts. Short-term financial risk impacts include increase in energy consumption costs and credit risk and adjustment in cash flow forecasts. The Company should strengthen scenario analysis and risk evaluation to ensure accurate financial planning.

Medium term (4-5 years)

The Company develops a comprehensive five-year plan every five years to ensure medium-term stability and sustainable development. In order to achieve environmental goals, the Company defines a path to achieve medium-term goals in its capital expenditure planning, which may involve larger capital expenditures, such as investments in renewable energy or energy efficiency technologies. Financial planning requires careful consideration of the timing and scale of these expenditures to ensure investment decisions in line with the Company's long-term emission reduction goals and sustainable development projects, and maintain operational efficiency and financial stability.

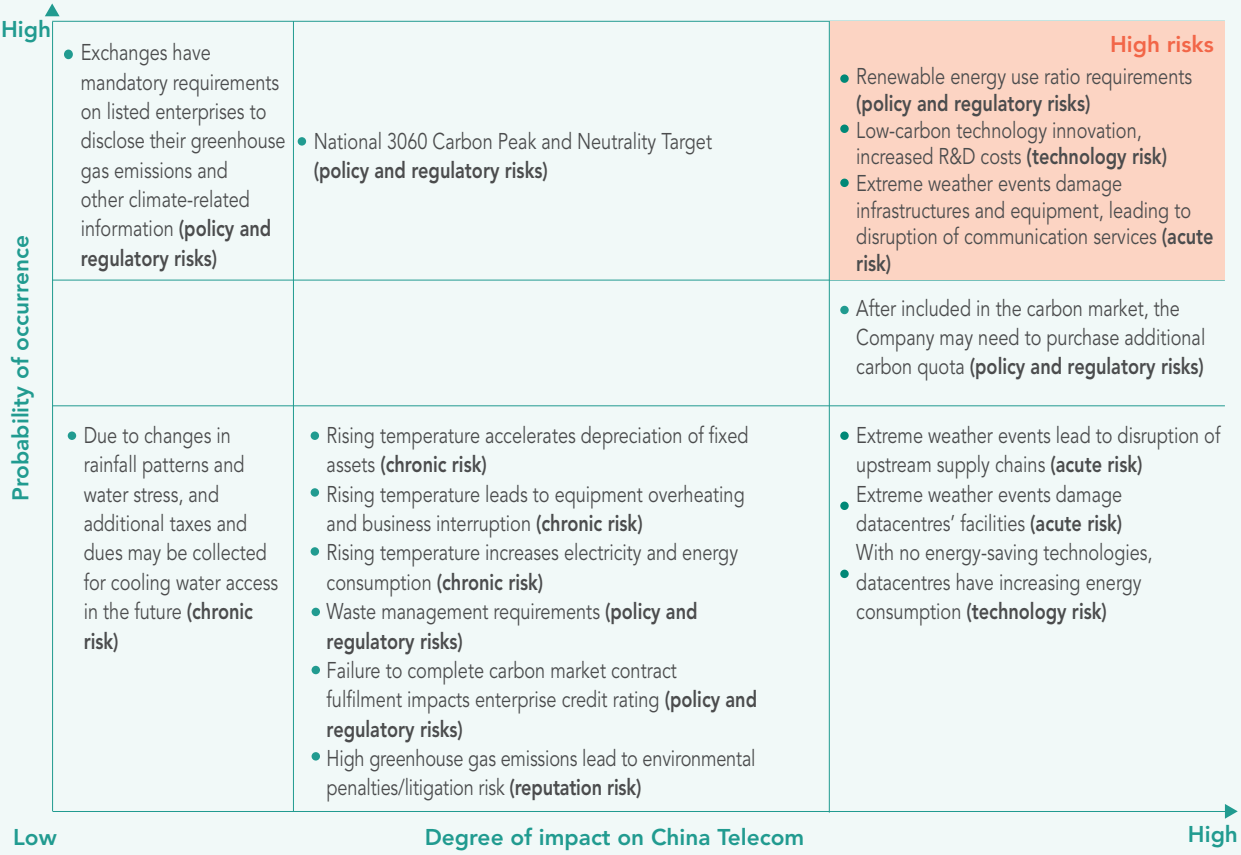
Long term (6-10 years)

As an operator, the Company considers asset characteristics in long-term financial planning, and adopts a planning period of 6-10 years. During this period, the Company evaluates the results of its climate risk response measures, and make long-term asset planning based on the results, including optimising capital structure and balancing debt and equity financing to support long-term emission reduction and sustainable development projects, ensuring long-term robust financial stability and corporate sustainability.

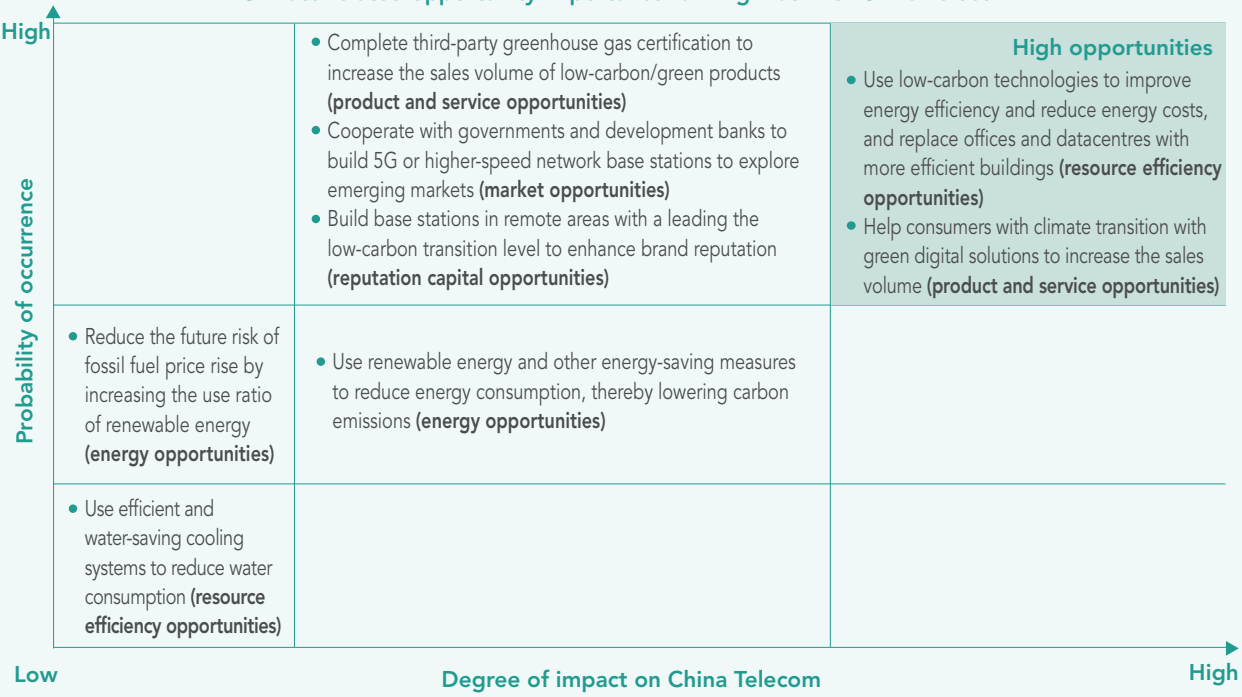
Results of climate-related risk and opportunity analysis and evaluation

In 2024, the Company identified and evaluated climate-related risks and opportunities through the above process. The matrix below shows risk/opportunity levels for all climate-related risks/opportunities identified in the year. The risk/opportunities identified as high risks/opportunities were conducted a financial impact evaluation.

Climate-related risk importance ranking matrix of China Telecom



Climate-related opportunity importance ranking matrix of China Telecom



Major climate-related risks faced by China Telecom and its response measures

Type and level of risks	Policy and regulatory risk (High risk)	Technology risk (High risk)	Acute risk (High risk)
Risk description	The national policy requires that the proportion of green electricity in new datacentres in the national hub nodes of "East-to-West Computing Resource Transfer" exceed 80%, and the minimum proportion of renewable energy used in green datacentres in government procurements to reach 30% (for year 2025). The Company will face mandatory requirements for the use of renewable energy in future, which may incur additional operating costs.	In the short term, as scientific and technological innovations, especially research for cutting-edge green and low-carbon technologies, require plenty of time and cost investments, the Company increases resource investments in innovation. This proposes higher requirements on the Company's innovation capabilities. The Company should fully analyse current application and development of green and low-carbon technologies, and promote research and development and application of new technologies.	Extreme weather such as flooding and typhoon may damage our infrastructure and fixed assets, causing network disruption, communication interruptions and resulting in additional operating costs such as asset damage losses, repair fees from communication interruptions and operating cost for resuming communication. In the future, as the severity and frequency of extreme weather increases, the Company's capital expenditure may also increase further.
Major financial impacts	Higher operating costs	Higher operating costs	Higher capital expenditures *Quantified financial impacts: In 2024, Hainan, Hubei and Hunan were affected by typhoons and severe convection weather, and suffered heavy freezing and flood, resulting in RMB1.1 billion of asset loss to the Company.*
Value chain	Direct operation	Direct operation	Direct operation
Time frame	Mid-term	Short-term	Mid-term
Probability of occurrence	Virtually certain	Virtually certain	Virtually certain
Degree of impact	High	High	High
Response measures	The Company conducts renewable energy surveys to assess the feasibility and cost of renewable energy access. In 2022, the Company clearly regarded energy transformation as a key point in the implementation of carbon peak and carbon neutrality action plan, determined work ideas and overall plans for obtaining green electricity, encouraged provincial branches to develop "provincial policy" for obtaining green electricity based on their own conditions and endowments. Meanwhile, the Company extensively participated in green electricity market-based transactions to actively increase the use ratio of renewable energy.	The Company strengthens the independent research and development, conversion and promotion of energy-saving and carbon reduction technologies, and promotes large-scale application. As a co-founding member of the Carbon Neutral Industry Innovation and Intellectual Property Alliance, the Company actively promotes key technology innovation and green technology development to cope with climate change, takes an active part in international cooperation to share low-carbon development experience, practices ESG concepts to enhance sustainable development capabilities, and participates in standard setting and industry activities, jointly driving green and low-carbon transformation of the industry.	The Company strengthens alert and risk prevention and control of extreme weather, continuously optimises emergency plans for extreme weather, and minimises the cost and losses from disasters. The Company regularly assesses the impact on capital expenditures based on the frequency and scale of extreme weather, and set up special funds for post-disaster reconstruction on this basis.

Major climate-related opportunities faced by China Telecom and its response measures

Type and level of opportunities	Resource efficiency opportunities (High opportunities)	Product and service opportunities (High opportunities)
Opportunity description	Low-carbon technologies are used to improve energy efficiency, or offices and datacentres are replaced with more efficient buildings to improve energy efficiency and lower energy consumption, thereby reducing operating costs.	As green and low-carbon information and communication industry chain is a long-term trend, innovative digital technologies and low-carbon solutions can not only reduce cloud-network costs, but also create new types of information services and products. With the increase of public awareness of climate change, customers will have increasing demands for green consumption.
Major financial impacts	Decreased operating costs *Quantified financial impacts: Through the co-construction and co-sharing base stations, the cleaning of old facilities, the green upgrades of facility buildings, the comprehensive promotion of AI technologies and other energy saving measures, the Company is expected to save 27.48 billion kWh of electricity. Calculated based on the average cost of RMB0.63 per kWh of electricity, RMB17.31 billion of operating cost is saved.*	Increased product and service demands lead to higher revenue. *Quantified financial impacts: In 2024, the Company provided zero-carbon datacentre solutions for automobile and Internet branches and other environmentally sensitive branches in Anhui and Qinghai, and the renewable energy utilization rate of datacentres exceeded 95%, bringing more than RMB400 million of revenue.*
Value chain	Direct operation	Direct operation, downstream value chain
Time frame	Long-term	Long-term
Probability of occurrence	Virtually certain	Virtually certain
Degree of impact	High	High
Response measures	The Company enhances energy efficiency and reduces energy consumption through new technology innovation and management improvement. Currently, datacentres have taken energy-saving measures, including AI energy-saving technologies applied in more than 3,200 facility rooms nationwide, temperature monitoring for single equipment in facility rooms and other intelligent transformation and upgrades. In addition, the Company actively carries out green upgrades for facility buildings, and promotes the upgrade project based on the facility room list by means, including "self-investment in upgrades, contract-based energy management, upgrades of over-age facilities and relocation in groups".	With increasing customer demands for digital solutions, the Company empowers low-carbon transformation of the whole society by providing digital solutions. The Company actively strengthens the innovative application of digital information technology, and provides customers with energy conservation and carbon reduction, pollution prevention and control, ecosystem protection and other new types of solutions using cloud computing, IoT and other technologies.

Climate risk scenario analysis

In 2024, the Company further conducted physical climate and transition-based climate scenario analysis to comprehensively evaluate long-term and short-term impacts of climate change on business operations, analyse financial impacts of rising energy costs, reconstruction costs and carbon costs.

Physical climate scenario

RCP (Representative Concentration Pathway): 8.5

Scenario description

Assuming that the existing policies and technological levels remain unchanged, the consumption intensity of fossil fuels (coal, oil and natural gas) remains high, and the application of clean energy is limited, with no significant emission reduction measures, radiative will be forced to rise to 8.5 W/m^2, and the warming rate will exceed 5°C by the end of the 21st century according to the fifth evaluation of the Intergovernmental Panel on Climate Change.

Key scenario assumptions

- **Average temperature:** According to the data on the official website of ISIMIP (Inter-Sectoral Impact Model Intercomparison Project), the global average temperature will rise by 1.5°C, 2°C and 2.5°C under RCP8.5 scenario by 2030, 2045 and 2055, respectively.
- **Precipitation:** Compared with reference years (1986-2005), China's precipitation in very humid weather and extremely humid weather will increase by 57% and 162% from 2020 to 2039, respectively. Global warming will lead to an increase in water vapor content, which may cause an increase in precipitation frequency and intensity in the middle and lower reaches of the Yangtze River basin, rising water levels of rivers, lakes and coasts, resulting in waterlogging, causing damages to buildings and equipment, and threatening business operations and asset security in low-lying areas.

Scenario uncertainty

The uncertainty mainly lies in the technical deviations of current climate models in simulating regional precipitation and the complex impacts of large-scale circulation changes of the climate system itself.

Situational application

Potential future financial impacts of chronic physical risks (rising average temperature) and acute physical risks (floods, heavy precipitation) are quantified in this scenario.

- **Average temperature rise:** For datacentre operators, the rising average temperature may have a substantial impact on the operating costs of datacentres. Inner Mongolia Cloud Computing Information Park with a high average temperature increase risk was selected for analysis. According to the results, Inner Mongolia Park will have a higher equipment operating power consumption due to rising average temperature by 2030, 2045 and 2055, so the potential impact of increased energy consumption costs will not exceed the substantial risk financial impact threshold.
- **Floods and heavy precipitation:** In extreme risk situations, floods may cause damage to the Company's datacentres and base stations, resulting in reconstruction costs. Jiangbei International Datacentre, Changsha Information Park and Zhongnan Intelligent Computing Centre with medium to high flood risk were selected for analysis. The Company faces the potential cost impact of rebuilding the datacentres after floods.

Impact of scenario analysis on strategic decision-making

The Company will focus on the impact of climate change on communication infrastructures, and may incorporate reconstruction costs into budget practices as a risk reserve in the future, in order to take quick actions to minimize damage. Meanwhile, the Company may work with stakeholders in the future to simulate future physical risks in short, medium and long-term time frames based on the location of specific infrastructures and its operational characteristics, so as to prepare targeted emergency plans for different types of infrastructure in advance and better manage climate physical risks through mitigation and adaptation strategies.

Transition-based climate scenarios

B2DS (Beyond 2 Degrees Scenario) of IEA (International Energy Agency)

Scenario description

IEA proposed an energy transition scenario, which aims to explore to control global temperature rise within 2°C and approach the goal of 1.5°C as closely as possible through deep decarbonization of energy systems.

Key scenario assumptions

- **Energy usage:** Electricity becomes the largest ultimate energy carrier, slightly higher than oil.
- **Carbon price:** The carbon price will reach US$540 per ton of carbon dioxide by 2060.

Scenario uncertainty

The carbon price is predicted largely based on the development and application speed of future clean energy technologies, but the energy efficiency improvement speed is difficult to predict.

Situational application

In transition scenario analysis, carbon price and emission intensity are key parameters for evaluating potential financial impacts. By calculating carbon costs of enterprises, we found that with the reduction of emission factors of State Grid and Southern Power Grid, the electricity emission intensity is expected to be very close to zero by 2060. In the long run, carbon costs are unlikely to have substantial potential financial impacts on the Company. In the short to medium term, however, some subsidiaries and branches included in local carbon markets may still be subject to certain financial impacts.

Impact of scenario analysis on strategic decision-making

The Company will continue to actively increase the consumption of renewable energy, while accelerating the promotion of plans related to the use of green electricity, and encourage provincial branches to develop "provincial policy" for obtaining green electricity based on their own conditions and endowments. By measures of extensive participation in green electricity market-based transactions and independent construction of distributed new energy infrastructures, the Company will further increase the use ratio of renewable energy.

PROMOTING LOW-CARBON OPERATION

Under the guidance of the "1248" dual-carbon action plan, the Company has been promoting green cloud-network, green energy use, green office, recycling, green sci-tech innovation and green management and constantly tapping its own carbon reduction potential.

Green cloud-network

The Company builds green and low-carbon cloud-network infrastructures, accelerates the application of as liquid cooling, AI, indirect evaporative cooling, high-voltage direct current and other green energy-saving technologies, and creates industry-leading green datacentres, including 28 national-level green datacentres, ranking first among all operators. In 2024, the Company carried out green upgrades for more than 600 facility buildings by optimising air flow organization, replacing old high-energy-consuming equipment and applying AI-powered energy-saving technologies. Meanwhile, the Company optimised energy efficiency of base stations, and completed the minimalist transformation for 28,000 base station and the light-stacking construction of base stations, saving 180 million kWh of electricity and reducing 100,000 tons of carbon a year.

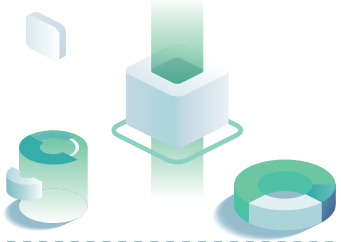
2024

- Completed green upgrades for more than **600** A and B class facility buildings
- Saved **180** million kWh of electricity a year
- Reduced **100,000** tons of carbon a year

Promoting the energy-saving upgrade project for facility rooms

CASE

In 2024, on the occasion of the 55th Earth Day, Jiangsu Branch implemented the "dual-carbon" strategy, accelerated the energy-saving upgrade project for facility rooms, promoted AI-powered energy conservation on a large scale, introduced heat pipes, fluorine pumps and other innovative energy-saving technologies, build photovoltaic power generators on idle roofs, and launched energy-saving upgrades for office lighting, enhancing the overall energy efficiency level of infrastructures, and further achieving energy conservation and consumption reduction.



The Company continues to promote AI energy conservation, makes full use of the advantages of cloud-network integration, independently researched and developed the intelligent cloud-network infrastructure energy conservation platform with national integration and cloud-edge synergy based on AI algorithms, Big Data processing, edge computing and other capabilities, achieving precise energy saving for 4/5G base stations, communication facility rooms and datacentres. By the end of 2024, the Company had more than 5 million 4/5G base station sectors, over 3,200 facility rooms, and above 6,000 cloud hosts under management, saved more than 900 million kWh of electricity and reduced over 500,000 tons of greenhouse gas emissions.

By the end of 2024

- More than **5** million 4/5G base station sectors under management
- Above **6,000** cloud hosts under management
- Reduced over **500,000** tons of greenhouse gas emissions

The Company has comprehensively deepened co-building and co-sharing cooperation with China Unicom, reduced duplicate construction of 4/5G base stations and significantly enhanced the utilisation rate of existing base stations, while protecting the natural environment and landscape, and reducing the consumption of land, energy and raw materials. Meanwhile, the Company continued to deepen co-building and co-sharing of infrastructure such as pole lines, pipelines, and optical cables. Over 165,000 5G base stations were newly activated for the two parties. The number of 5G co-built and co-shared base stations in use exceeded 1.375 million, and the number of 4G mid-band co-shared base stations exceeded 2 million. The Company provided more than 13,385 kilometres of co-shared pole line and 1,266 kilometres of co-shared pipelines. 4/5G co-building and co-sharing has led to over RMB370 billion savings in investment, over RMB43 billion in annual operating cost savings, over 23 billion kWh in annual electricity savings accumulatively, and more than 12 million tons of carbon emissions.

In response to concerns in telecommunications engineering construction from the government and the public, such as farmland protection, equipment pollution, construction impact and electromagnetic radiation, the Company has further improved the electromagnetic radiation management system and the risk prevention mechanism, revised the *Administrative Measures for Environmental Protection of Electromagnetic Radiation from Communication Base Stations of China Telecom*, formulated the Implementation Rules on Environmental Monitoring for Electromagnetic Radiation from 5G Mobile Communication Base Stations of China Telecom, organized national environmental protection training for electromagnetic radiation from base stations, and taken various proactive environmental protection measures such as environmental monitoring, and communicated with the public actively, effectively preventing environmental risks caused by electromagnetic radiation from base stations. In 2024, the Company had no major environmental incidents.

Scientific understanding of radiation from base stations

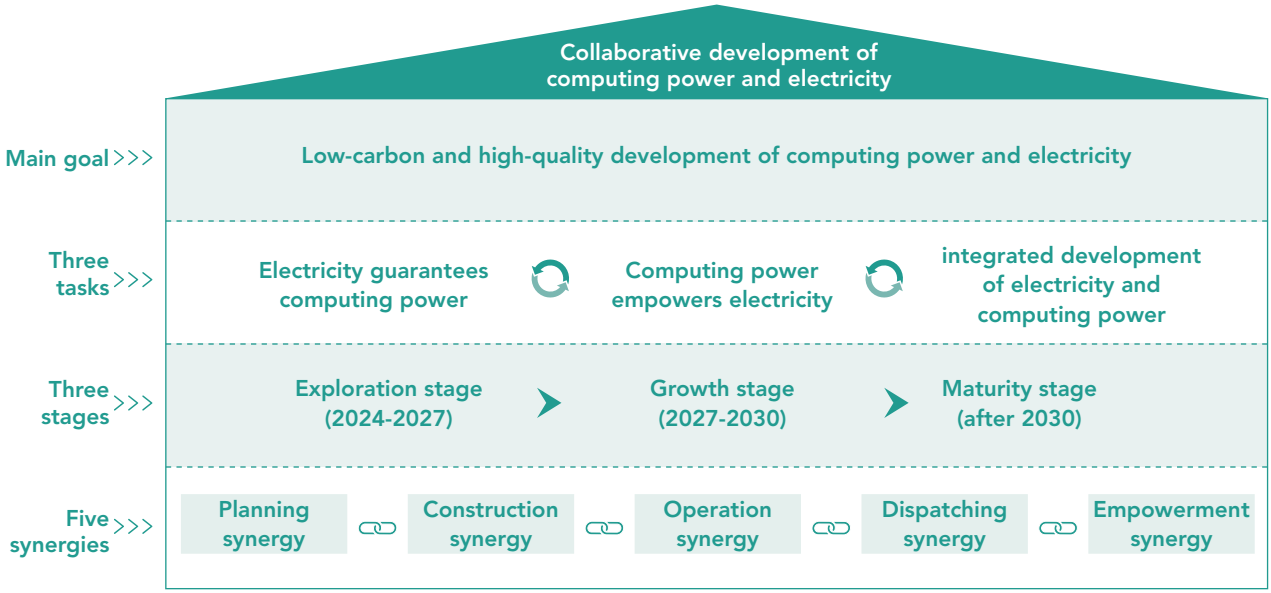
CASE

In order to further publicize the knowledge of electromagnetic radiation and guide the public to correctly understand the impact of electromagnetic radiation from communication base stations, Guangxi Guigang Branch worked with China Tower to carry out a publicity activity themed on "Scientific Understanding of Radiation from Base Stations". On the spot of the activity, publicity brochures were distributed to call for a rational perspective on radiation in life.

Green energy usage

The Company continues to promote the transformation of energy use structure. In 2024, it used 2.7 billion kWh of green electricity, an increase of 145% year on year. With efforts in low-carbon and clean energy use, the Company's datacentres led the industry in renewable energy use, and accelerated building low-carbon and zero-carbon computing power infrastructures using green energy, ranking among the best in the industry in terms of renewable energy utilization rate and green power scale. The Company's self-built distributed energy facilities were widely extended to datacenters, base stations, communication buildings, office buildings and other energy use scenes. In Anhui, Guangxi, Qinghai and other provinces, the Company launched the wind-solar complementary power supply system, light storage and light hydrogen storage and other integrated innovative applications, and achieved diversified energy applications, providing more environmentally friendly, low-carbon and sustainable products and services for the society.

The Company carried out prospective research on the collaborative development mechanism of computing power and electricity, published the *White Paper on Collaborative Development of Computing Power and Electricity of China Telecom*, and established the top-level design of "1335", further promoting five synergic paths in planning, construction, operation, dispatching and empowerment.



Building China's first green computing power cluster in high-altitude areas CASE

Sichuan Branch built China's first distributed green computing power cluster in Ganzi Prefecture and other high-altitude areas with rich clean energy, effectively promoting consumption and conversion of local clean energy.

According to the unique geographical environment of the western Sichuan Plateau, the distributed computing power cabin pilot project was carried out in the form of "containers" and flexibly deployed based on the distribution of hydropower stations, effectively reducing power transmission losses. The computing power cabin demonstration project, which is located in Danba County, Ganzi Prefecture, Sichuan Province, consumed local clean energy, and converted green electricity into green computing power, achieving PUE1.12 in operation, consuming about 20 million kWh of electricity, saving RMB10 million of electricity charge, and reducing about 12,000 tons of carbon emissions.

Green office

The Company actively promotes and advocates water conservation by posting reminders regarding water conservation near water facilities and appliances. The Company continuously strengthens the management on water resources usage, carries out sewage discharge and treatment, promotes the reuse of water in production, actively uses reclaimed water as an alternative source of water in place of tap water while meeting the demands for water usage. The Company promotes and popularises the use of water-saving appliances and performs regular checks and repairs on each part of the water supply system to prevent water leakage and wastage. The Company sets the target for year-on-year growth of water consumption per unit operating revenue for 2025 to be no more than 10%.

The Company encourages paper saving by actively advocating double-sided printing of documents, reducing colour printing, accelerating the digital transformation of the procurement supply chain and vigorously promoting the application of electronic procurement and electronic order to realise paperless operation of the whole process of the supply chain. The Company also continuously promoted electronic accounting files management, VAT electronic invoice, e-reimbursement and filing of e-invoice and paperless operation, and boosted the automatic process of tax declaration to reduce paper usage.

Recycling

The Company strictly implements the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste*, the *Management Measures for Hazardous Waste Transfer* and other national laws and regulations and standards, focusing on safe and compliant disposal requirements. Through system construction and digital platform construction, the Company continue to promote waste and green packaging recycling, boosting the development of circular economy.

In 2024, the Company launched the integrated platform for waste and idle materials disposal to achieve online closed-loop management of the whole process from asset retirement, material inventory withdrawal, auction disposal, contract signing and delivery. Throughout the year, it earned RMB880 million from centralized disposal of waste and idle materials, with a waste recycling rate of about 100%.

Building a base station recycling system to boost green development of circular economy

CASE

In response to construction supply and resource recycling due to large-scale replacement of old base stations in the communication industry, Jiangsu Branch designed and built a two-way logistics system for green supply chains to accelerate efficient development of circular economy.

A standardized recycling process from demolition, packaging, coding, transportation, warehousing and reuse was designed based on specific demands for equipment of communication base stations. By the end of 2024, over 14,000 base stations were demolished and recycled in the province, with a base station demolition and logistic distribution rate of 97%, forming a circular logistics system.

The project has the following direct achievements. First, the base station demolition and logistic distribution cycle was shortened from five days to one day, improving the construction efficiency. Second, old base stations were allocated and rebuilt through the recycling system, with a recycling rate of up to 93%.

Waste batteries and other hazardous waste generated during operations are delivered by waste generation departments to purchase and supply departments, stored in temporary hazardous waste storage sites or warehouses in line with national environmental protection standards, and finally disposed by qualified hazardous waste recyclers. Non-hazardous waste is sorted out, collected and stored in classified garbage cans at dining places, while kitchen waste and other garbage are distinguished by labels and colours, sorted out manually, and stored and disposed separately.

In 2025, the Company will continue to strengthen professional waste management in the principle of "recycling as much as possible", promote public auction of waste, and strengthen environmental compliance management, improve income from disposal. The Company will continuously optimise and improve green packaging, carry out the implementation plan of packaging reduction and standardization for key products, and enhance the delicacy management level of packaging carbon reduction, boosting resource utilization and recycling development.

Green sci-tech innovation

The Company strengthens green sci-tech innovation, with its self-developed base stations, intelligent energy-saving technologies for facility rooms and stock resource revitalization technology included in the *Catalogue of Recommended Energy-Saving Technologies and Equipment in the Industrial and Information Fields (2024 Edition)*. The Company expanded the supply based on green evaluation standards, took the lead in special projects for the National Quality Infrastructure (NQI), established a multi-dimensional green datacentre evaluation index system, and published a total of 19 international and industry standards according to "dual carbon goals". Besides, the Company increased industry-university-research institution cooperation, promoted the standardization of liquid cooling technology, and jointly innovated the "wind-liquid integrated cold source" scheme to lead the green development of the industry.

Green management

The Company continues to improve the green development management level, improves management system functions based on "dual carbon goals", and strengthens green development data governance. It built well-established scientific MRV (Monitoring, Reporting and Verification) mechanisms, achieved flexible allocation of the Company's indicators for dual control over the amount and intensity of carbon emissions through internal carbon trading, and provided enterprises with efficient and low-cost carbon reduction means, and facilitated forming cross-level, cross-regional, cross-department and cross-business collaborative management mechanisms, maximize the potential of energy efficiency and carbon reduction in all fields. Meanwhile, the Company established an expert and talent pool based on "dual carbon goals" by means of "rolling in and rolling out" to make up for the shortage of professionals, enhancing the green management level of enterprises in an all-round way.

EMPOWERING GREEN DEVELOPMENT

The Company develops intelligent and green solutions by taking advantage of next-generation digital technologies, such as cloud computing, Big Data, IoT, artificial intelligence and blockchain to facilitate green transformation of all industries, boosting harmonious coexistence between human and nature.

Green economic and social transformation

The Company actively provides green public services to facilitate green and energy-saving transformation of government, enterprises and public institutions, hospitals and schools, hotels and supermarkets, community property management companies and other social institutions. It boosts product innovations by AI and IoT technologies, and launches green energy-saving products, such as green lighting lamps, energy-saving air-conditioners, energy consumption meters, safe electricity controllers and environmental sensors, achieving energy efficiency and carbon reduction. By the end of 2024, the Company upgraded more than 1 million devices in public places in 231 prefecture-level cities of 31 provinces nationwide, saving more than 80 million kWh of electricity and reducing more than 60,000 tons of carbon dioxide emissions a year, which is equivalent to planting 3.44 million trees in the country.

Promoting green lighting nationwide

CASE

In Asia No.1 logistics warehouse, the Company replaced mining lamps with green intelligent ones through the green energy-saving IoT cloud platform to monitor equipment and energy consumption, completing green and intelligent transformation of warehouse lighting lamps, and saving 80% of energy.

In the Hong Kong-Zhuhai-Macao Bridge, the Company upgraded indoor and outdoor lighting lamps into intelligent and energy-saving ones to create a safe and comfortable lighting environment at the parking lots of the port, improve the overall image of the port, and reduce energy consumption by 75%, setting a benchmark in green lighting as a national landmark.

In Zhengzhou Xinzheng International Airport, the Company installed intelligent light tubes at underground parking lot, and built the self-developed edge gateway and tidal energy-saving management platform to automatically adjust the illumination, improve the experience, management convenience and driving safety, and greatly reduce the energy consumption of the parking lots, saving more than 80% of energy.

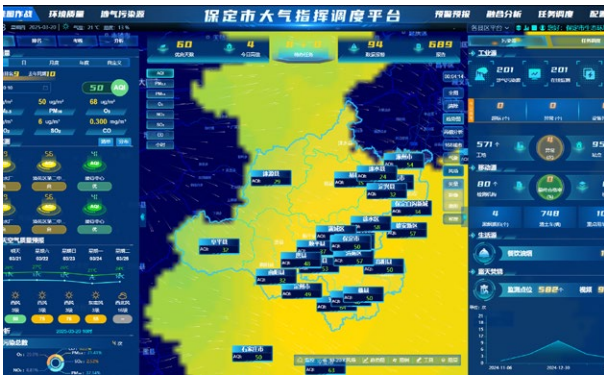
In brief, the Company continues to empower ecological environmental governance, focuses on atmospheric environment supervision and water environment supervision, builds the environmental protection cloud platform and the integrated water environment supervision system based on large models, Big Data, 5G and satellite remote sensing technologies, promoting efficient synergy between environmental protection and government supervision, and providing green and convenient life services for the public.

Empowering ecological environment governance by informatization technology CASE

In October 2024, the Beijing-Tianjin-Hebei Financial Collaborative Development Conference for Ecological Environment Technology Industry was held in Shijiazhuang. Hebei Branch made its debut at the finance exhibition of governance achievements and technology industry, showcasing its products and solutions, such as "ecological environment Big Data platform", "environmental protection cloud platform", "grand mountain and river model" and "comprehensive digital intelligence environmental protection management platform".

The environmental protection cloud platform gives impetus to environmental traceability. China Telecom supported to build an environmental protection cloud platform (atmospheric command and dispatch platform) in Baoding, Hebei Province, including environmental warning, command and dispatch, and integrated analysis modules based the Xingchen-ecological environment model, and developed an intelligent environmental traceability assistant for targeted tracing of more than 110,000 pollution sources, increasing the traceability efficiency by more than 90%, and offering firm support for pollution prevention and control.

The grand mountain and river model is a large-scale artificial intelligence model independently developed by China Telecom and focusing on the environmental protection industry. With powerful functions, it provides customers with a wide range of intelligent services, including environmental protection industry question and answer, AI law enforcement discretion, AI-assisted decision-making for environmental emergencies, and environmental quality inquiry and analysis, helping customers in solving professional problems in environmental protection, and providing strong support for the fight against pollution.



Ecosystem and biodiversity conservation

In the fields of biodiversity, migratory bird monitoring, forest and grass protection, the Company created an ecological protection monitoring and management system by technologies such as artificial intelligence, Big Data, IoT and cloud computing to provide effective support for scientific management of ecological protection and sustainable development, incorporating intelligent management and control in ecological protection.

Making the "mother river" more beautiful through digital intelligence CASE

Gansu Branch launched the smart Yellow River project by means of "environmental protection + IoT", Big Data and AI technologies to make water management application more scientific and intelligent, building a delicacy management technology system for aquatic ecosystems.

The system integrates the functions of "monitoring, evaluation, tracing, risk, bearing capacity and early warning", covering river basin water environment monitoring, daily supervision and other fields. In particular, it develops and builds the Yellow River supervision Big Data platform based on real-time monitoring, alarm tracing, 3D live-action shooting, enterprise VR and other applications, which analyses, determines and traces water pollution problems through automatic water quality monitoring stations and AI-powered cameras, automatically generates analysis conclusions, and provides water quality and water environment integration monitoring and other application functions and governance systems, effectively improving the delicacy management level for water environment of management departments.

Gansu Branch carried out intelligent monitoring for 36 rivers in the whole basin by means of "AI+" intelligent perception technology, maintaining the water quality of the main stream of the Yellow River beyond the territory reaching the Class II standard. Since coming into operation, the system has detected 182 suspected environmental cases in more than 10 categories, such as floating objects on the river surface, garbage on the river bank and suspected sewage discharge, and sent 698 verification tasks.

Giving impetus to panda protection efforts CASE

In 2024, Shaanxi Foping Branch successfully opened the Liangfengya Base Station in the national-level nature reserve in Longcaoping Village, Changjiaoba Town, Foping County, Hanzhong. This move not only resolved the "last mile" communication difficulty in the hinterland of the Qinling Mountains, but also delivered reliable communication support for science researchers in the nature reserve and workers at the protection station, playing a positive role in promotion panda protection efforts.

Known as the "navel of the Qinling Mountains", the Liangfengya Base Station is located deep in the Qinling Mountains, which are remote from counties and towns. The area is the core of the panda reserve, possessed with advantaged natural conditions and exceptional biodiversity.

The Liangfengya Base Station offers stable and efficient communication services for science researchers in the nature reserve and workers at the protection station, and facilitates prompt sharing of the latest progress and research achievements of panda protection efforts, providing robust support for the efforts.

Digital defence of "720 Highland"

CASE

Tiaozini Wetland in Dongtai of Yancheng City is at the core area of a World Natural Heritage site of coastal wetlands, including a bird habitat with a fixed high-tide level that covers 720 mu and hosts over one million of birds in up to 400 species for nesting, breeding and wintering every year. It is the "720 Highland" numbered as MFC720 by a bird protection organisation. Yancheng Branch established a bird monitoring and protection platform to recognise birds by AI-powered algorithms in real-time, learn the activity rules of birds and discover new species in time, providing "Chinese specimens" for wetland biodiversity conservation.

Intelligent defence of marine ecosystems: targeted control of marine debris and protection of marine life

CASE

CTFF Information Technology Co., Ltd. built a marine supervision platform in Xiamen, which is a comprehensive marine ecosystem management system for "timely problem recognition, intelligent analysis and targeted solutions" to provide unified management of marine environmental monitoring and marine risk sources. By accurately predicting generation, distribution and drift trends of marine debris, it provides strong support for timely cleanup, and effectively reduces marine life habitat destruction caused by marine debris, ensuring security of marine life.