

Green Development: Leading Ecofriendly Growth for a Better Planet





Driving Energy Conservation and Environmental Protection

Sustainability Context

Climate change is a universal crisis of mankind. In 2020, the Chinese government announced its aim to reach a peak in carbon dioxide emissions before 2030 and carbon neutrality before 2060, demonstrating China's responsibility for and commitment to global sustainable development. However, with the rapid evolution of information and communication technologies, energy consumption of base stations and large data centers is growing at an alarming rate, and the ICT industry is facing continuous pressure of the carbon emissions brought by its own operation.

Our Actions

We believe that environmental protection does not run counter to business development as in a zero-sum game. For a beautiful China with bluer skies, greener mountains and clearer water, we are committed to putting into practice the concept of ecological civilization by constantly improving our environmental management system, actively working with stakeholders and continuously developing innovative ICT-based solutions to save energy, reduce emission, build green supply chains and protect the ecosystem.

Fully Practicing Green Operation

China Mobile is committed to harmonious coexistence with the environment. For 14 consecutive years, we have carried out the "China Mobile Green Action Plan", contributing green efforts to itself, the industry and society. We have advanced whole lifecycle environmental management, built green industrial chains and supply chains, and innovated environmental governance and ecological protection solutions, striving to peak carbon emissions and achieve carbon neutrality.

Environmental Management System

By constantly perfecting our environmental management system, we have a three-tier governance structure at the decision-making, management and execution levels in place to identify and control environmental risks. We have also formulated the *China Mobile's Green Data Center Evaluation Index System* and established a closed-loop management mechanism of regular evaluation, assessment, rectification and re-evaluation to ensure green operations in all of our businesses.

China Mobile's Environmental Management System

The system covers various aspects of business operations such as product operation and business facilities, suppliers and service providers selection, R&D of new products and services, packaging and transportation, waste management, engineering design, new project construction, due diligence and daily work.





18%

In 2020

Year-on-year decline in overall energy consumption per unit of telecom business



Total electricity saved

8

Number of green accreditations achieved by China Mobile's data centers in Karamay, Xinjiang and in Chongqing

Addressing Climate Change

Dedicated to achieve the national target of peaking carbon dioxide emissions by 2030 and reaching carbon neutrality by 2060, we have established and improved the climate change risk management system. We have also set a clear goal to reduce the overall energy consumption per unit of telecom business by no less than 6% in 2021, and to employ energy-saving measures to reduce greenhouse gas (GHG) emissions by no fewer than 1.9 million tonnes. With these efforts, we persist on the path to carbon neutrality in our operations.

Identifying and Addressing Risks and Opportunities of Climate Change

Considering multi-dimensional factors such as corporate strategy, market, finance, operation, legal compliance and information technology, China Mobile conducts major risk identification and assessment of climate change every year to analyze and address the relevant risks and opportunities.

Risk Type	Risk Description	Response
Regulatory risks	China Mobile headquarters, Beijing subsidiary, China Mobile Tietong headquarters and Beijing branch are now included in the Beijing carbon trading pilot scheme. If we do not meet the carbon emission quota, our development may be restricted.	 Draft internal management regulations and plans at the beginning of each year, and publish energy consumption notices and alerts every quarter.
Technological risks	The evolution of 5G increases the density of communication infrastructure and increases energy consumption, resulting in a greater demand for low-carbon technology.	 Set a timetable to phase out energy intensive equipment. Join hands with value chain partners to develop energy-efficient hardware and establish roadmaps for introducing energy-saving technologies.
Legal risks	China Mobile and its subsidiaries may face legal risks if they do not engage in carbon trading.	 Regularly follow the updates of laws and regulations regarding climate change. Abide by the carbon trading system and reduce emissions to reduce legal risks.
Market risks	With the popularization of 5G and Internet+ technologies, the use of mobile networks and their scale will spike, which will in turn place a burden on our overall energy consumption and GHG emissions.	 Devise annual energy consumption plans to manage our overall energy consumption and GHG emissions due to the rapid expansion of network scale.
Reputational risks	Failure to fulfill carbon trading commitment will subject us to a circulated notice of criticism and fines by government departments, which will damage our reputation.	 Evaluate compliance risks on a regular basis and establish mechanisms for ensuring timely contract fulfillment.
Acute risks	Extreme weather events may cause our computer rooms to collapse and damage batteries, which may pollute the environment.	Evaluate the impacts on fixed assets damage, production, operation and the environment based on the frequency and scale of natural dis- asters, and set aside post disaster reconstruc- tion funds based on the evaluation results.
Chronic risks	As temperature will increase due to global warming, more energy will be consumed by air conditioners to ensure stable operation of base stations, computer rooms and data centers, and this will in turn bring a large electricity bill.	 Regularly evaluate and monitor the operating time of air conditioners in computer rooms and assess the financial impact brought by extra energy consumption.
Product/ service opportunities	Information and communication technologies are considered to be effective solutions for reducing GHG emissions and can offer marketing opportunities for our products and services.	 Research and develop a variety of ICT solu- tions including smart logistics, smart trans- port, smart lighting, smart factory, smart construction site, etc. to support emission reduction society-wide.

Abiding by the national requirements of energy saving and consumption reduction, China Mobile has established a fourdimensional evaluation system of network performance, network quality, operation and maintenance efficiency as well as cost effectiveness based on the philosophy of value management to standardize, refine and scientifically reduce power consumption.

Reduce wireless power consumption through intelligent operation, maintenance and innovative application, such as switching off symbol and MIMO (multiple input and multiple output) and other energy-saving means, while ensuring network quality. Build green data centers with meticulous and targeted management, such as transforming ICT equipment deployment to build green data centers and completing energy-saving transformation of over 800 equipment rooms during the year. Eliminate low efficiency assets through network cleanup, such as replacing and retiring old energy intensive equipment in wireless, transmission, core, physical and bearer networks and power environment, effectively saving energy and limit emission.

A small step in "Green Power", a big leap for energy transformation

Case

In Guangdong, we implemented an integrated power supply system combining solar photovoltaic power, wind power and storage system to minimize the consumption of traditional fossil energy to the fullest extent, completely eliminating the reliance of offshore islands on diesel power stations in the past.

In Liaoning, to reduce carbon dioxide emission, we used wind power, photovoltaic power and other types of green energy during the construction of 5G and data centers. In 2020, our Liaoning subsidiary's power stations used 540 million kWh of wind and photovoltaic power through market-oriented power transactions, becoming the first provincial-level company with nearly zero emission of carbon dioxide of China Mobile.

Solid Waste Treatment

China Mobile continues to tighten the management of all kinds of solid waste, and strictly adheres to relevant national laws and regulations regarding storage, transportation and disposal to prevent and control environmental pollution risks. We also set waste control goals to continuously improve the comprehensive utilization efficiency of waste.



Driving Energy Conservation and Environmental Protection

China Mobile takes the lead in building green supply chains and practicing green industrial standards. Through developing innovative ICT-based solutions for environmental governance, we promote ecological governance and biodiversity protection, enhance the awareness of the whole society to practice green actions, and safeguard a beautiful earth together.

Green Supply Chain

We have compiled the *Research Plan of China Mobile's Green Supply Chain*, which specifies the overall application strategy and evolution path of the supply chain, including procurement, production, packaging, transportation, energy consumption and recycling. We contribute to ecological protection by building an energy efficient supply chain with our actions and technologies.

Formulate Green Procurement Standards

Specify energy consumption levels for different types of equipment, gradually raise the weighting of energy efficiency in procurement ratings, and encourage suppliers to reduce energy consumption year-by-year, thereby reducing environmental pollution.

Promote Paperless Procurement

Apply digital procurement to standardize, digitalize and automate tender and bidding documents, and move offline practices such as posting notices, issuing bidding documents, submitting tenders, evaluating bids and signing contracts online. In 2020, we implemented around 45,700 e-procurement projects, reducing around 0.645 million paper documents.

Build Green and Circular Logistics

Packaging: Work with suppliers to design and use packaging made of recycled paper and reduce the use of non-biodegradable materials such as plastic. For packaging of special products (for use in forest land and mountain ranges), we conduct pest control, environmental certification and tracking.

Circulating: Encourage strategic suppliers to use RFID labels from production and transportation to outbound and inbound delivery.

Recycling: Collect spare, idle and retired materials for recycling and reuse to maximize their second-life value.

In 2020

78%

Green packaging rate of newly procured main equipment



Timber resources saved

Case

Case

Environment Governance Empowerment

Making full use of new technologies such as IoT and cloud computing, we provide holistic solutions of "smart environmental protection" consisting of "supervision, management and prevention", develop air pollution monitoring systems, and help build ecological monitoring systems for Zhangye Heihe Wetland National Nature Reserve and the waters around Poyang Lake. We strive to preserve the ecosystem and biodiversity as much as possible, achieving harmony between human and nature.

Protecting Asian elephants, we are in action

The Asian elephant is one of the endangered species on the list of Convention on International Trade in Endangered Species. To protect Asian elephants in the wild and reduce their conflicts with humans caused by habitat shrinking and human activities, China Mobile has joined hands with partners to build the first Asian Elephant Protection, Monitoring and Early Warning System in China. Applying advanced technologies such as 5G, Cloud and AI, we are able to achieve real-time monitoring, tracking and protection of elephants in herds.

Green construction: China Mobile adopts wireless access of front-end application equipment, wireless base stations, and wireless transmission and networking to avoid breaking grounds in the reserve and preserve the forests to the fullest extent.

Stable signal: Innovatively use Luneburg lens antenna for ultra-wide coverage and 5G 700M network with lower frequency, greater depth and wider breadth, thereby increasing coverage of forests and stabilizing wireless signal at boundary areas. At the same time, the antenna connects with the front-end mobile App for back-end management and front-end warning.

Intelligent monitoring: Through the deep training recognition platform that controls automatic gathering and AI recognition, we have overcome the technical difficulties of nighttime and incomplete image recognition for the first time. As a complement to artificial monitoring, the platform is able to conduct biological recognition of the detected Asian elephants with a recognition rate reaching 96%.

By the end of 2020, the system had cumulatively issued over 4,000 early warnings, and the App had issued

65 early warnings. This is expected to reduce 30% of human-elephant conflicts and further strengthen the prevention and management of accidents caused by Asian elephants. Meanwhile, it will bring longer-term and greater scientific research value to the ecological protection of the species.

Smart water control for beautiful river channels

Our Jiangxi subsidiary has developed the "Blue Sky Vanguard - Smart Water Control" system which leverages 5G technology, compound wing drone + 30x zoom HD camera, satellite remote sensing + drone data and other advanced tools to realize the high-density, high-frequency, multi-scale, large-range, real-time and accurate collection and perception of water ecological information, including surface water, drinking water source and pollution source. Based on the results, pollution alerts are classified scientifically. Moreover, electronic work orders support the implementation of the river chief system (RCS) in aquatic ecosystem management, thereby scientifically carrying out ecological protection and restoration. As of the end of 2020, pilot projects had been launched in Nanchang's Xiang Lake and Taohua River and Jiangjiang's Hukou and Lianxi District.



Sketch map of the backstage of Asian elephant monitoring system

5G helps build a "zero-waste city"

Our Shaoxing subsidiary makes full use of "5G+Big Data+AI" and other new technology packages to break through the pain points of solid waste management, including difficulties in information statistics, data analysis, disposal and process control. The "Waste-Free City" information platform developed by the subsidiary is used to achieve the full-cycle, intelligent and closed-loop digitalized management of five major types of solid waste, wastewater, exhaust gas and soil in Shaoxing. These efforts have promoted the "reduction, resource utilization and harmlessness" of all types of waste and improved the efficiency of governmental supervision and service capability to support relevant industries and promote the construction of Shaoxing into a "Waste-Free City".

Green Awareness

For many years, China Mobile has been organizing numerous environmental protection campaigns such as the "Energy Conservation Awareness Week", editing special promotional publications on energy conservation, and conducting carbon emission stocktaking. With these efforts, we hope to increase public awareness on low-carbon way of life, environmental protection and green development.



Shanghai subsidiary's "Green Shanghai with You" activity



Anhui subsidiary's garbage classification activity



Hong Kong subsidiary's "Hiking Festival"



Hunan subsidiary's "Green Box with You" activity

Case