

2024

Progress Report on China's Climate Change Adaptation

Ministry of Ecology and Environment of
the People's Republic of China
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This is an unofficial translation. In case of any divergence, the official text in the Chinese language shall prevail.

Foreword

The year 2024 is the warmest year on record, with the global average temperature about 1.55 ℃ above pre-industrial levels, marking the first calendar year to surpass the 1.5 ℃ threshold. Under the combined influence of global warming and El Niño, climate conditions were generally adverse in China, characterized by prominent warm and humid patterns and severe rain and flood disasters. Unprecedented or catastrophic extreme weather and climate events have occurred across various places, including high temperatures, torrential rains, typhoons, cold spells and severe convective events, which have exerted substantial negative impacts on China. This underscores the urgent need to comprehensively enhance the capacity for climate change adaptation.

In 2024, all departments concerned have persistently advanced the implementation of the *National Climate Change Adaptation Strategy 2035*. Sustained efforts have been made in key tasks outlined in the *Work Priorities for Climate Change Adaptation*, yielding tangible results: the capability for climate change monitoring, forecasting and early warning has been continuously enhanced; the assessment of climate change impacts and risks has been progressively deepened; the capacity for natural disaster prevention and control has been steadily upgraded; and the proficiency of climate change risk identification and emergency preparedness has been consistently reinforced. Major water conservancy projects have progressed towards high-quality development; the stability and adaptive capacity of forest and grassland ecosystems has been steadily improved, while the quality of marine ecological environment has remained stable with positive trends; and agricultural disaster reduction capacity and ecosystem resilience have been consistently bolstered. The initiative of health adaptation to climate change has been gradually deepened, and the capacity of urban adaption to climate change has been consistently augmented; and the climate resilience of sensitive secondary and tertiary industries has been progressively strengthened. A favorable atmosphere of proactive social participation in climate change adaptation has initially been formed.

The *Resolution of the Central Committee of the Communist Party of China on Further Deepening Reform Comprehensively to Advance Chinese Modernization* explicitly emphasized that "improvements will be made to the working systems for adapting to climate

change," raising new requirements for further promoting climate change adaptation. This report provides a systematic summary of the progress and effectiveness of China's climate change adaptation efforts in 2024, aiming to enhance the understanding of adaptation measures, continuously advance the implementation of adaptation policies and actions at all levels, and share China's practices and experiences, thereby contributing positively to the Beautiful China initiative and global climate governance.

I. Overview of Climate Change Conditions in 2024

Persistent elevated temperatures. In 2024, the national average temperature reached 10.9 ℃, 1.01 ℃ higher than climatological normal[1] (9.89 ℃), which surpassed the 2023 average (10.71 ℃) to make 2024 the warmest year since 1961. Seasonally, temperatures were elevated across all four seasons, with great variability during winter and record-breaking highs in spring, summer and autumn. Spatially, the warming trend was pervasive nationwide: 19 provinces (autonomous regions and municipalities), including Beijing and Tianjin, experienced their highest temperatures since 1961; seven recorded their second-highest historical temperatures; and three reported their third-highest historical temperatures. Furthermore, the proportion of meteorological stations registering extreme heat events throughout the year was 0.59 in meteorological stations monitored nationwide, an increase of 0.47 over the climatological normal value. The average number of high-temperature days (daily maximum temperature ≥35.0 ℃) was 15.6, exceeding the climatological normal by 6.6 and representing the second highest since 1961, only after 2022.

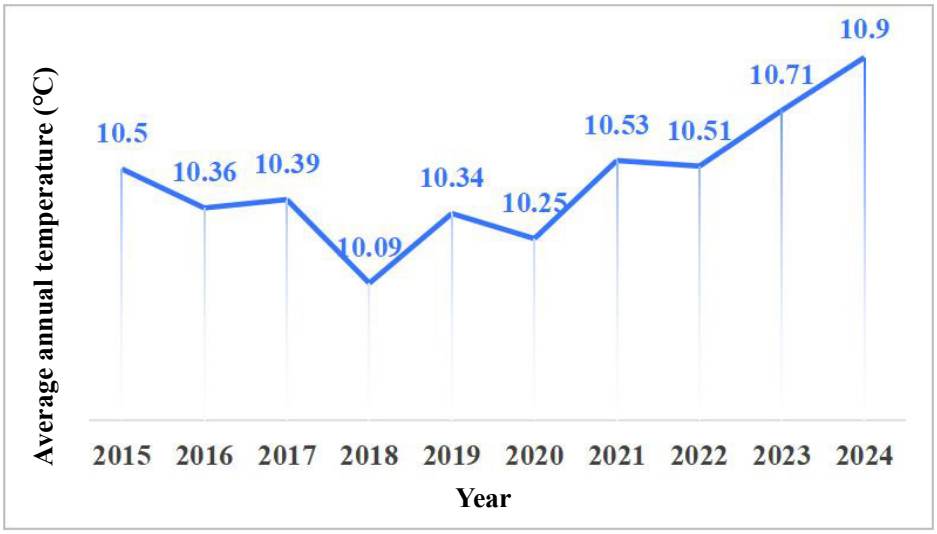


Figure 1. National average annual temperature

Increased precipitation and frequent heavy rainfall. In 2024, the national average precipitation reached 697.7 mm, 9.0% more than climatological normal, representing the

[1] The climatological normal refers to the average for the period from 1991 to 2020, same below.

fourth highest since 1951. Throughout the year, there were 41 large-scale precipitation events, including 18 heavy and 4 extremely heavy rainfall episodes. The cumulative annual number of heavy-rainfall station-days was 8,186, an increase of 31.3% over the climatological normal. Average precipitation during the rainy season was elevated and uneven between the north and the south. Both the pre-flood season in South China and the rainy season in Northeast China saw heavier and earlier precipitation than usual. Relative to the climatological normal, rainfall increased by over 50% during the mei-yu season in the area between the Yangtze River and Haihe River and the middle and lower reaches of the Yangtze River, and by 83% during the rainy season in North China. Among the seven major river basins, the Liaohe River Basin received its second highest precipitation on record and the Pearl River Basin its fourth most precipitation, and other river basins experienced above-normal precipitation. The combined effects of heavy rainfall and high temperature snowmelt have led to a post-1998 record high of numbered floods in major rivers.

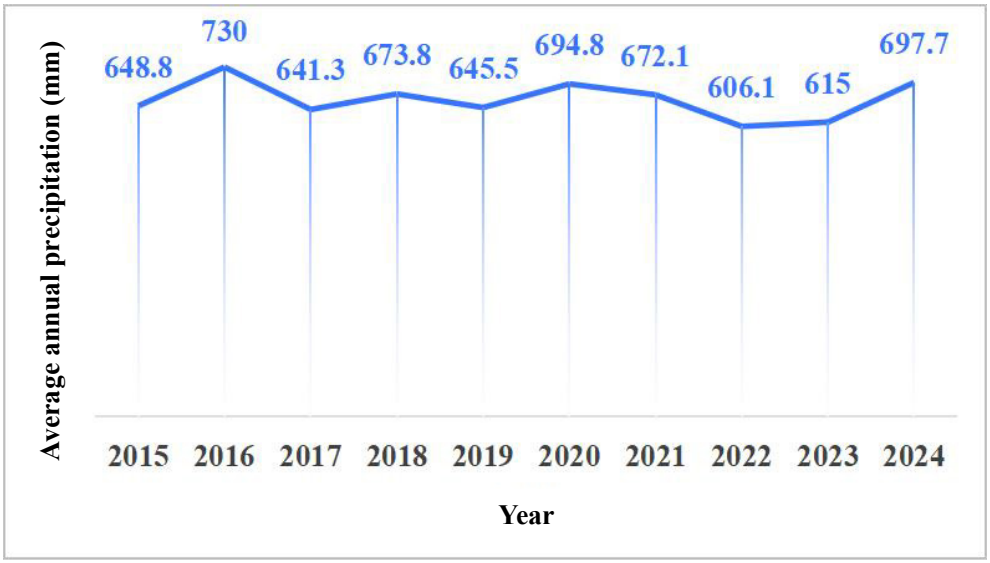


Figure 2. National average annual precipitation

More frequent and intense typhoons. In 2024, totally 26 typhoons formed in the Northwest Pacific Ocean and the South China Sea, 0.9 more than climatological normal (25.1). Of these, nine typhoons made landfall in China, 1.8 more than climatological normal (7.2). In particular, six autumn typhoons made landfall after September 2024, characterized by exceptional intensity and catastrophic impact, with their number reaching the highest on record for this

period since 1949. These events exhibited significantly above- climatological normal average intensity and exerted effects extending to mid-November.

Widespread and intense cold waves. In 2024, China saw 33 cold air processes, 3.9 more than climatological normal, with five reaching the cold wave intensity. The nationwide cold spell from January 19 to 23 registered the fourth strongest integrated intensity for the same period since 1991. It induced substantial cooling in northern and central-eastern China, with a maximum temperature decline of more than 8 ℃ over an area of 6.174 million square kilometers, and produced heavy rain and snow in the eastern part of Southwestern China and the south of the Yangtze River. In February, two rounds of widespread low-temperature rain, snow and freezing conditions enveloped central and eastern China, of which the cold spell from February 18 to 23 recorded the second strongest integrated intensity for the same period since 1961.

Early and catastrophic severe convective events. In 2024, China experienced 32 severe regional convective events, fewer than the average of the past five years (42). The first severe convective event spanned from February 19 to 21, about one month earlier than usual. According to incomplete statistics from meteorological authorities, there were 55 land tornadoes confirmed through disaster field surveys in 2024, of which 18 reached moderate or higher intensity, exceeding the average of the past three years (15.3).

In 2024, floods and droughts left 436 people dead and missing and affected 7,242,100 hectares of crops, with direct economic losses amounting to 268.17 billion yuan. Meteorological disasters, including typhoons, wind and hailstorms, low temperatures and freezes, snow disasters and sandstorms, caused 130 deaths and disappearances and affected 2,833,600 hectares of crops, resulting in direct economic losses of 125.75 billion yuan.

II. Strengthening Climate Change Monitoring, Early Warning and Risk Management

(i) Advancing climate change monitoring and prediction for early warning

Accelerating the detection and attribution of climate change. New technologies for detecting and attributing climate change have been developed based on 100-year observation records, and datasets for detecting and attributing various climate variables and extreme events have been created. Research has also been conducted on rapid attribution of extreme events. High-impact extreme weather and climate events in China during 2023-2024, such as regional high-temperature heat waves and winter low-temperature cold spells, have been attributed, with influence of diverse external forcings quantified. These efforts have contributed to the preliminary establishment of a technical route for the operational rapid attribution of extreme high-temperature events.

Improving climate change observation, monitoring and early warning. Monitoring has gradually expanded to multiple spheres of climate system, with enhanced multi-sphere data collection and management for international data organizations, covering the atmosphere, hydrosphere, lithosphere, cryosphere and biosphere. China has successfully completed its first overseas atmospheric background station (Antarctic Zhongshan Station), authorized operational access to 56 new high-precision greenhouse gas (GHG) observation stations, and deployed 21 new high-precision tall-tower monitoring sites in pilot cities. The platform for monitoring and early warning of extreme weather and climate events in the context of climate change has been improved, and the risk assessment of meteorological disasters, particularly compound disasters, has been advanced.

(ii) Intensifying climate change impact and risk assessment

Bolstering the capacity for climate change analysis and prediction. Based on high-resolution observations and statistical downscaling methods, China has developed a regional 5km climate change scenario prediction dataset, advanced the development and pilot of such regional high-resolution scenario prediction datasets, and realized the application of its independently developed long-series climate data products. The *Blue Book on Climate*

Change in China has been published for the 14th consecutive year, alongside the 13th *China Greenhouse Gas Bulletin, and the Bulletin on Global Climate Change Monitoring by Satellite Remote Sensing (2023)* was released to the public for the first time.

Buttressing the assessment of climate change impacts and risks. *The Technical Guidelines for Assessing Climate Change Impacts and Risks (for Trial Implementation)* has been formulated, and research has been initiated to develop national and provincial datasets and indicator systems for climate change adaptation. A suite of climate change adaptation products has been established, which provides dynamic updates on meteorological disaster risk census, and conducts targeted, high-precision risk assessment and zoning, covering typhoons, rainstorms, droughts, high temperatures, high winds and snowstorms. A decision support system for climate change adaptation in the Southwest "superposition zones" has been developed, enabling simulation of dynamic changes in regional ecosystems under various climate change scenarios. GHGs have been incorporated into environmental impact assessment (EIA), with ongoing exploration of integrating requirements for addressing climate change into the ecological and environmental zoning management system.

(iii) Enhancing comprehensive disaster prevention, mitigation and relief

Heightening the overall coordination for disaster prevention, mitigation and relief. In 2024, the National Committee for Disaster Prevention, Mitigation and Relief (NCD) was formally established and started operation. It is mainly responsible for improving the coordination mechanism for disaster prevention, mitigation and relief, formulating and issuing the *2024 Work Priorities of the National Committee for Disaster Prevention, Mitigation and Relief*, and coordinating and urging the implementation of key tasks by member agencies. Emphasis has been placed on strengthening the prevention and control of disaster-related major risks and hazards and developing risk prevention and response plans for spring sandstorms, major disasters during critical flood-control periods, winter low-temperature rain, snow and freezing conditions, and seawater inversion. Forest and grassland fire risk management has been intensified through thematic consultations, rolling research and short-term forecasting. Specifically, 12 thematic consultations on fire risks were organized, and 56 national fire risk trend forecasts, 311 fire risk level forecasts and 185 high-fire-risk

weather forecasts were issued, with 2,677 hotspots monitored by satellites.

Advancing the comprehensive management of natural disasters. The comprehensive monitoring and early warning platform for natural disasters has been improved, while strengthening the comprehensive risk analysis and assessment of natural disasters. A total of 9,944 new geologic disaster monitoring and early warning stations have been built amid the ongoing construction efforts, which have cumulatively issued 173 national-level 72h and 192 national-level 24h early warning products. The capability to identify and mitigate disaster risks and hazards at the grassroots level has been enhanced, and the six-tiered mechanism of two-way information exchange—national, provincial, municipal, county, township and village levels — has been optimized. Totally 600,000 pieces of information on disaster risks and hazards have been reported in various places, facilitating the evacuation of over 30,000 individuals from 10,000 households. Work has progressed in comprehensive natural disaster risk mapping, as well as comprehensive prevention and control zoning at the national, provincial, municipal and county levels, while advancing updates to national flood risk zoning for major rivers and national key defense zoning for storm surge disasters.

Upgrading comprehensive emergency rescue capabilities. A coherent and coordinated national emergency command system has been basically established, along with a joint emergency command platform. Specialized emergency rescue forces have been reinforced, with central funding utilized to provide applicable equipment for grassroots emergency rescue teams in areas with medium or high comprehensive risk of natural disasters, natural disaster engineering rescue bases under the Ministry of Emergency Management (MEM), and water engineering rescue teams. Two Wing Loong unmanned aerial vehicles (UAV) and two MA60 fire-fighting aircraft have been delivered and installed, marking the first use of domestically produced medium-and large-sized fixed-wing firefighting aircraft. The national Regional Emergency Rescue Center project has been largely completed, which addresses "coverage gap" in county-level administrative areas and major chemical parks and integrates firefighting and rescue mobile forces from all provinces. Emergency response mechanisms utilizing satellites and drones have been promptly activated to effectively support timely disaster and hazard research and assessment, as well as search and rescue operations. Additional frontline emergency rescue forces have been deployed, while strengthening early warning

"call-response" and evacuation. In 2024, the China National Comprehensive Fire and Rescue Team mobilized more than 279,000 persons, participated in more than 24,000 flood control operations, and rescued and evacuated more than 57,000 people.

(iv) Beefing up prevention of and response to major disasters

Building strong defense against floods and droughts. In 2024, China successfully surmounted 26 numbered floods on major rivers, and effectively overcome floods above warning levels on 1,321 rivers, as well as largest recorded floods on 67 rivers since measurement began. Water conservancy infrastructure played a pivotal role in flood control during the 2024 flood season. Nationwide, a total of 6,929 large and medium-sized reservoirs were operated through dispatching to retain 147.1 billion m^3 of floodwater, thereby preventing the inundation of 2,330 towns and cities and 1,124,667 hectares of farmland and the evacuation of 11.15 million people. In view of winter and spring droughts in Southwest China and summer high temperatures and droughts in North China and Yellow River-Haihe River Basin, emergency response was promptly activated. Such measures effectively addressed the severe drought conditions in Southwest China, North China, Yellow River-Haihe River Basin, and Northwest China. Moreover, scientific and precise emergency water scheduling was implemented to effectively safeguard drinking water safety for affected peoples, maintain water supply for Hong Kong and Macao, and meet seasonal water needs of crops in irrigation areas.

Promptly activating emergency response. In 2024, in view of frequent, consecutive and concurrent disasters including floods, droughts and typhoons, China initiated and adjusted 92 emergency responses, sent 77 working groups and expert teams to the worst-hit areas to provide assistance and guidance, and urged solid comprehensive efforts, including monitoring and early warning, identification of hidden hazards, and evacuation, rescue and relief. In response to the most severe low-temperature rain, snow and freezing conditions experienced during the Spring Festival since 2009, a Level III emergency response was launched, accompanied by rolling consultations. Five joint working groups were dispatched to frontline locations to ensure road transport and power supply and support rescue and relief efforts. Fire response and command levels have been elevated for critical and sensitive forest areas, with

rapid deployment of joint working groups to guide and coordinate firefighting operations and allocate equipment and supplies to the frontline. These measures efficiently addressed the March 15 Yajiang fire in Sichuan and multiple short-duration forest fires in Guizhou and Yunnan, and swiftly encircled and contained dozens of fires in the Daxing'anling forest area. Level II highway emergency responses were activated following the collapse of the Chaoyang section of the Meizhou-Dabu Expressway in Guangdong Province and the collapse of a highway bridge in Zhashui County of Shangluo City, Shaanxi Province. In total, 23 national emergency relief responses were activated in the face of floods, typhoons and other disasters, which facilitated the efficient and orderly allocation of central disaster relief funds to support disaster relief and assistance in disaster-stricken areas.

III. Enhancing the Adaptive Capacity of Natural Ecosystems

(i) Water resources

Rigorously implementing a stringent regulatory system for water resources. China has vigorously promoted the national action plan for water conservation. The total water consumption was maintained at 582.80 billion m^3 in 2024, an increase of 2.15 billion m^3 compared with 2023. Water consumption per 10,000 yuan of gross domestic product (GDP, at current year price) stood at 43.9 m^3. In a bid to tighten the dual control on the total amount and intensity of water consumption, water budget management has been implemented on a pilot basis, with accelerated quota management in key sectors. Mandatory water consumption quotas have been established for water-consuming industries in the Yellow River Basin. A water usage supervision and credit system has been instituted. Water withdrawal by powered wells for agricultural irrigation has been comprehensively calculated based on electricity consumption, achieving an online measurement rate of 96% for wells above the designated scale. The trade-in program for new water-saving appliances has proceeded in an orderly manner. A total of 9,503 new water-saving carriers have been constructed, and a number of water efficiency frontrunners have been identified and announced. The 2023 annual report on national groundwater resource assessment has been completed, and the initial phase of the national groundwater monitoring network has been efficiently operated and maintained, with the daily data arrival rate of monitoring sites exceeding 99.5%.

Accelerating the development of water conservancy infrastructure. National water network construction has proceeded in an orderly manner, with an emphasis on enhancing connectivity, addressing gaps and reinforcing chains, which gradually improves the effectiveness of water infrastructure network. The construction of the Guxian Water Conservancy Hub, a landmark project for the protection and management of the Yellow River in the new era, has commenced smoothly. The Pearl River Delta Water Resources Allocation Project has begun to provide water. The three-year action plan to ensure that critical dykes along the mainstreams of seven rivers meet established standards has been expedited, with the Liaohe River mainstream achieving full compliance. Post-disaster recovery and reconstruction has been effectively implemented in the Haihe River Basin, while comprehensively advancing the renovation of the Louli Reservoir and backbone rivers such as the Yongding, Daqing and Beisan Rivers, as well as the construction of 25 national flood storage and retention zones. The South-to-North Water Diversion Project has generated increasing comprehensive benefits, transferring a cumulative total of 77.16 billion m^3 of water since its full operation (as of January 2025), which benefits more than 185 million residents across 45 large and medium-sized cities.

Keeping improving the ecological environment of rivers and lakes. Comprehensive ecological flow management has been advanced for rivers and lakes and water conservancy and hydropower projects, covering ecological flow guarantee targets for nearly all major water bodies. The Mother River Recovery Action has been accelerated. Among 88 rivers (lakes) nationwide, 74 have been fully reopened, with flow length and duration extended for five rivers and ecological water level (water quantity) effectively maintained for nine lakes. The Beijing-Hangzhou Grand Canal has remained fully open for three consecutive years, while the Yongding River has been fully open for four consecutive years, maintaining year-round flow for two consecutive years. Water quality in the mainstreams of the Yangtze River and the Yellow River has stabilized at Class II for five and three consecutive years, respectively. China has addressed and rectified 42,000 instances of "four problems" in rivers, lakes and reservoirs, restored 21.9 million m^3 flood control capacity in reservoirs, and controlled soil erosion over an area of 64,000 km^2. Nationwide, groundwater overdraft has decreased by 31.9% and serious overdraft areas have contracted by 51% compared to the

previous evaluation round.

Redoubling efforts to protect aquatic life. Investigations into aquatic biological resources and environments in the Yangtze River Basin, as well as assessments of aquatic life integrity, have been conducted, so as to keep abreast of the impact of climate change on aquatic organisms. The *Letter on Doing a Good Job in Protecting the Yangtze River Dolphin and Other Rare Aquatic Organisms under Extreme Climate Conditions* was issued, outlining proactive measures in advance for protecting aquatic life from extreme climate. Relevant provinces and municipalities have been urged to continue emergency rescue operations for the Yangtze River dolphin in key waters such as Poyang Lake and Dongting Lake, thereby preventing stranding and mortality due to extreme droughts. Ecological dispatches of drift-spawning fish in the Yangtze River have been implemented to effectively bolster the recovery of aquatic biological resources. Monitoring data from 2024 indicate the presence of 8.32 billion fish eggs or fry of the four major fish species in the middle reaches of the Yangtze River at the Jianli section, an increase of 39.1% from 5.98 billion in 2023.

(ii) Terrestrial ecosystems

Intensifying the monitoring of typical ecosystems. A desertification census encompassing forests, grasslands and wetlands has been conducted to thoroughly understand the background conditions and ecological status of national forest and grassland resources. Ecological resource monitoring and early warning has been implemented in critical regions, including the core area of the northern agro-pastoral transitional zone such as the Dashang Plateau and the Black River Basin. The spatial distribution of ecosystem degradation driven by various dominant factors, and the driving factors and underlying causes of lake shrinkage and desiccation have been identified. An ecological early warning indicator system for river basins has also been established. Moreover, monitoring has been undertaken for freeze-thaw degraded land on the Qinghai-Tibetan Plateau, along with the establishment of comprehensive ecological observatories, including the Bayi Glacier in the Qilian Mountains and Sonam Dargye in Hoh Xil. Such work has preliminarily characterized freeze-thaw land degradation on the Qinghai-Tibetan Plateau, such as freeze-thaw collapse, freeze-thaw subsidence, talus slope formation, and freeze-thawed lakes and ponds. Two groups of comprehensive ecological

quality monitoring stations were selected, integrating a total of 171 stations into the national ecological quality monitoring network. The *Sample Site Establishment Plan for National Ecological Quality Monitoring* was formulated, and pursuant to the plan, 16,400 ecological quality monitoring sample sites were established nationwide, basically covering all county-level administrative units. Thus, an initial national ecological quality monitoring network that combines comprehensive stations and sample sites has been formed.

Strengthening the protection and restoration of terrestrial ecosystems. A large-scale territorial greening campaign has been scientifically implemented, planting 4.45 million hectares of trees and improving 3.32 million hectares of grassland in 2024. Projects aimed at the holistic protection and restoration of mountains, rivers, forests, farmlands, lakes, grasslands and deserts have made headway with central financial support during the 14th Five-Year Plan (FYP) period, completing the ecological protection and restoration of more than 5 million hectares. The third round of the subsidy and reward policy for grassland ecological protection, alongside grassland restoration and pet control, has proceeded steadily. Measures to ban and halt grazing and maintain grass-livestock balance have been put into practice, effectively mitigating the overloading and overgrazing trend. Scientific progress has been made in the comprehensive control of desertification and rocky desertification, with 2,359,080 hectares of sandy land and 423,660 hectares of rocky land treated. Eight new projects for national sandy land enclosed protection zones have been underway. In addition, 49 demonstration projects for ecological restoration of historically abandoned mines have been implemented, rehabilitating about 40,000 hectares. In 2024, the normalized difference vegetation index (NDVI) during May-September (plant growing season) reached 0.466, an increase of 1.5% over the previous year.

Augmenting disaster prevention and reduction capacity, including forest and grassland fire and pest control. Work has been accelerated to develop a forest and grassland fire prevention sensing system, enabling 10min satellite hotspot detection. Existing lightning fire monitoring equipment has been optimized and upgraded as part of efforts to gradually improve the national lightning fire monitoring and early warning system. Observing the bottom line of forest and grassland fire and pest control, forest fire prevention has been incorporated into the *Measures for Forest Chief Scheme Assessment (for Trial*

Implementation). Upholding the dynamic-zero strategy for forest and grassland fires, steady efforts have been made to identify disaster-related risks and hidden dangers of major infrastructures. The five-year campaign to prevent and control pine wilt disease has been deepened. By 2024, the spread of pine wilt disease was effectively contained, evidenced by reductions in the affected area and the number of affected counties, township-level outbreaks, and diseased and dead trees. Measures have been taken to curb Hyphantria cunea without causing public disturbance. Pest control has been extended to 38.53 million hectares of grasslands, recovering the loss of 3.68 million tons of fresh grass. Real-time monitoring of sand and dust weather has been conducted, utilizing the sandstorm emergency response management platform within the forest-grassland ecological network perception system. Three-dimensional and comprehensive monitoring techniques, such as satellite remote sensing, ground stations and informants, have been employed to track the development trends of sand and dust weather.

(iii) Oceans and coastal zones

Advancing the monitoring and prediction of marine climate change. El Niño and climate prediction consultations were organized, along with monitoring and prediction of critical marine climate events, including offshore and global sea surface temperature (SST) and ocean heat content. In 2023, SST along China's coastline was 1.01 ℃ above climatological normal (the 1993–2011 average), greater than the rise recorded in 2022. The *2023 Annual Report on Marine Climate Monitoring and Diagnosis* was finalized, and the *Monitoring Global Sea Surface Temperature and Ocean Heat Content* and *the 2024 Blue Book on Marine Climate Change in China* were published.

Intensifying the protection and restoration of marine ecosystems. Since the 14th FYP period, a total of 83 marine ecological protection and restoration projects have been systematically implemented, with 19.63 billion yuan allocated from central financial incentives and subsidies. They have remediated and restored about 400 km of coastline and over 31,000 hectares of coastal wetlands. Tasks outlined in the *Special Action Plan for Mangrove Protection and Restoration (2020 – 2025)* have been fulfilled, including the development of the national standard *Code of Practice for Mangrove Ecological Protection*

and Restoration. About 8,800 hectares of mangrove forests have been created since the 14th FYP period. As of 2024, China's mangrove forest coverage reached 30,300 hectares, an increase of nearly 38% from the start of this century, making China one of the few countries with a net increase in mangrove area.

Continuously improving the quality of marine ecological environment. The *Action Plan to Upgrade the Beautiful Bay Initiative* was released. The construction of beautiful bays, as well as the comprehensive management of key sea areas has been solidly advanced, while effectively strengthening the supervision and management of marine ecological environment. In particular, the initiative has expanded its scope from 50 to 113 bays, with a target to basically build about 80 beautiful bays by 2025. The *White Paper on Marine Eco-Environmental Protection in China* and the *2023 Bulletin of Marine Ecology and Environment Status of China* were published sequentially. In 2024, around 83.7% of China's near-shore marine areas met Class I and Class II sea water quality standards.

IV. Improving the Adaptive Capacity of Economic and Social Systems

(i) Agriculture and food security

Optimizing the utilization pattern of agro-climatic resources. The *2024 Work Plan for the Pilot Census and Zoning of Agro-Climatic Resources* was issued, which outlined the pilot census and zoning of agro-climatic resources at the national, provincial, municipal and county levels, including 11 cities and 7 counties across 7 provinces (autonomous regions). The outcomes will inform the rational adjustment of agricultural production layout and cropping structure, as well as the effective prevention and control of hazards and disasters. Through selective breeding, high-yield, superior-quality and stress-resistant crop varieties and adaptable and fine breeds of livestock and poultry have been developed. Furthermore, the revised standards for the validation of national-level crop varieties have been published, explicitly raising the requirements for disease resistance in the validation standards for rice, corn, soybean and wheat.

Reinforcing the working systems for agricultural adaptation and disaster reduction. An inter-sectoral information sharing mechanism has been established, including agriculture,

meteorology, water conservancy and emergency response. Keeping an eye on major weather changes, 50 risk warnings related to high temperatures, droughts, heavy rainfall and typhoons were issued, and emergency responses to major agro-meteorological disasters were initiated across 28 provinces (autonomous regions and municipalities), while a meteorological service platform for fishing boats has been developed. Disaster prevention and reduction plans have been formulated and disseminated for the flood season, the winter-spring period, and the critical growth period of autumn grain. They provide region-specific disaster assessment and proposed disaster-specific countermeasures. In total, 1.1 million agricultural water pumps and 104,000 high-power water pumps have been dispatched for emergency drainage operations in flood-affected provinces, and 6.63 billion yuan from agricultural production disaster prevention and relief funds have been allocated for disaster relief and post-disaster recovery.

Elevating the protection for climate-resilient food security. Efforts have been intensified to remedy degraded farmland, with key counties for remedying acidified farmland identified across 20 counties in 15 provinces. A cumulative area of over 213,333 hectares (equivalent to more than 3.2 million mu) has been restored. Agricultural water conservation and efficiency have been enhanced by vigorously promoting water-saving irrigation technologies. Nationwide, water-saving irrigation projects covered 42,533,333 hectares (equivalent to 638 million mu), and the effective utilization coefficient of farmland irrigation water reached 0.580. The development of high-standard farmland has advanced together with the promotion of high-efficiency water-saving irrigation, and the mechanisms for the construction, appraisal and management of high-standard farmland have been refined. Both the security and quality of grain production have steadily improved, with total yield and yield per unit area in 2024 increased by 1.60% and 1.30%, respectively, compared with the previous year. The first national census of invasive alien species has been completed. Moreover, regular monitoring of agricultural invasive alien species, particularly key species, has been conducted in key areas, such as major grain-producing areas, border areas, and agricultural and animal husbandry transitional areas.

(ii) Health and sanitation

Launching the health adaptation to climate change initiative. The *National Action Plan*

for Health Adaptation to Climate Change (2024–2030) has been issued, laying down ten specific measures to boost health adaptation to climate change. Preparatory efforts have been made to establish the National Expert Committee on Climate Change and Health, with the purpose of developing a talent pool of strategic and specialized scientists. A series of guidelines have been published to safeguard public health against extreme weather events, including high-temperature heat waves, low-temperature cold spells and floods. They have comprehensively enhanced the public awareness of self-protection and environmental health literacy.

Intensifying the monitoring, early warning, prevention and control of climate-sensitive diseases. Efforts have been cemented in the prevention and control of diseases closely linked to climate change, including insect-borne infectious diseases such as dengue fever and malaria and intestinal infectious diseases such as hand-foot-mouth disease. Meanwhile, investigation and surveillance have commenced targeting parasitic diseases such as schistosomiasis and kala-azar in climate-sensitive areas, alongside research on the impact of extreme weather events on regional vector organisms and associated sensitive diseases. Public health interventions based on air pollution impact monitoring have been sustained across 167 districts and counties in 87 cities, aiming to enhance the adaptive capacity of vulnerable groups, including children and the elderly.

Reinforcing health protection capacity in the context of climate change. Health emergency response plans that address natural disasters such as floods, droughts and typhoons have been formulated. They are fundamental to solidly advancing health emergency preparedness and response to natural disasters and extreme weather events. Research has been conducted to develop an indicator system for climate risk zoning tailored to China's population health landscape. Pilots have been launched in 27 provinces and municipalities to promote applicable technologies for environmental health risk assessment, which enables the provision of diversified health services such as health reminders to key populations.

(iii) Cities and human habitats

Actively implementing the urban renewal campaign. Cities at the prefecture level or above have carried out comprehensive checkups in a problem-oriented and objective-driven manner.

Such assessments aim to identify the pressing difficulties and problems of concern to the people, as well as deficiencies that compromise urban competitiveness, carrying capacity and sustainable development. Lists of over 50,000 issues and 40,000 improvement suggestions have been formed. A list of replicable experiences and practices and a group of typical cases in urban renewal have been published. Throughout the year, 163,000 km of various pipe networks were constructed or renovated; 201 km of integrated pipe and corridor projects were initiated; and over 900 flood-prone spots were addressed, which have collectively elevated the resilience of cities to floods.

Ensuring the safe operation of urban infrastructure. The General Office of the Central Committee of the Communist Party of China (CPC) and the General Office of the State Council issued the *Opinions on Promoting the Construction of New-type Urban Infrastructure for the Development of Resilient Cities*, seeking to build resilient cities with robust adaptation and recovery capacities. Urban safety, including road safety, has been incorporated as a critical component of comprehensive work safety supervision. Local governments have been urged to improve their capabilities in identifying and managing hidden hazards on urban roads. More than half of the cities at the prefecture level or above have established city-level urban lifeline supervision platforms.

Building climate-adaptive cities. At the main event of the 2024 National Low-Carbon Day, the first 39 pilot cities for advancing the development of climate-adaptive cities were announced. A national training workshop was held to enhance capacity building of climate-adaptive cities, encouraging pilot cities to actively explore distinctive pathways and modes. Based on the latest meteorological data, a meteorological parameter dataset for building energy efficiency was developed, covering over 2,000 cities nationwide. Pilot work for building sponge cities has been carried out in 60 cities to improve local consumption and utilization of rainwater resources. To enhance the services and functions of urban ecosystems, the *Measures for Administration of Urban Parks* was promulgated. Efforts have commenced to construct more than 6,200 "pocket parks" and over 7,300 km of urban greenways. A cumulative total of 18,000 hectares of lawns have been made accessible on a rotational basis in more than 360 prefectural-level cities (including districts under municipalities directly under the central government). The initiative to build happy rivers and lakes has proceeded

steadily, with over 680 new happy rivers and lakes constructed in river basins. Health evaluation has been completed for additional 9,448 rivers and lakes.

(iv) Climate-sensitive secondary and tertiary industries

Enhancing power grid resilience to extreme weather and climate events. The *Guiding Opinions on High-Quality Development of Power Distribution Networks under the New Situation* and *the Implementation Plan for Promoting the High-Quality Development of Power Distribution Networks (2024–2027)* were issued. In 2024, the average power outage duration for users of the national power supply system decreased by 1.12 hours/household year-on-year, so that the average power supply reliability reached 99.924%. Measures have also been taken to strengthen pre-disaster risk warning and post-disaster recovery in the power generation sector. In total, 95 natural disaster emergency responses were completed, restoring electricity to more than 29 million households affected by disaster-induced outages.

Guarding against climate-related financial risks. The *Guiding Opinions on Strengthening Financial and Meteorological Coordination and Synergy to Serve High-Quality Economic and Social Development* was issued. This guideline mandates the establishment of a monitoring, prevention and control system for climate-related financial risks, the exploration of climate risk stress test for financial institutions, and systematic assessment of potential risks for financial institutions under different climate change scenarios and transition policy requirements, which supports financial institutions to optimize their climate risk management strategies. Thematic research has been conducted to examine the impacts of climate risk and green transition on financial institutions, and stress test methods have been prospectively explored for physical and transition climate risks within the banking and insurance sectors, furnishing technical support for comprehensive climate risk assessment. The insurance sector is encouraged to develop catastrophe models, exemplified by the launch of a commercially viable flood catastrophe model with independent property rights, in addition to the ongoing upgrade of the typhoon catastrophe model.

Developing climate-resilient tourism. Effective disaster warning should be provided for scenic areas, and targeted contingency plans developed for extreme severe weather events. Considering climatic and tourism resource characteristics, activities have been organized to

review and showcase national distinctive tourism resources and introduce boutique tourism routes characterized by seasonal climate variations. Scenic locations are urged to maintain vigilance regarding weather changes, provide care for tourists in special weather conditions, and ensure effective protection of tourist safety. The *Technical Specification for the Evaluation of Climate Healthcare Resources* and the *Operational Specification for the Evaluation of Climate Healthcare Resources* have been published, coupled with the announcement of the first batch of typical pilot sites for climate healthcare.

Strengthening disaster prevention and reduction in transportation. Efforts have been made to optimize and reinforce highway sections highly susceptible to dense fog and icing. These include the issuance of the *Guiding Opinions on Deepening the Optimization and Enhancement of Highway Sections Prone to Adverse Weather* and the formulation of such national standards as the *Specification for Identification of Dense Fog-Prone Road Sections* and the *Specification for Identification of Icing-Prone Road Sections*. The *Work Plan for Further Enhancing the Design Retrospective for Highway Disaster Prevention and Resilience* has been released, accompanied by a comprehensive survey of major disaster risks and hazards on operational highways. A work program has been developed to bolster railway resilience to extreme weather conditions including snow and ice, so as to ensure safe railway operation. Steady progress has continued in identifying and managing potential risks and hidden hazards associated with flood prevention and drainage at national civil transportation airports.

Bolstering disaster prevention and reduction capacity in information and communication systems. Research on the impact of storms on information and communication systems has been conducted, and the *Standard for Storm Test Methods for Outdoor Communication Equipment* has been compiled, which comprehensively improves the storm resilience of outdoor communication equipment. Quality supervision and inspection has been implemented to effectively prevent and address major disasters and losses within information and communication projects.

V. Constructing Regional Structures Adaptive to Climate Change

(i) Constructing Territorial Space Adaptive to Climate Change

Optimizing territorial space development and protection. China has endeavored to build a national ecological security barrier system based on national ecological security barriers. This system prioritizes the development of key ecological functional areas, ecological protection red lines and protected areas, and integrates a network of biodiversity conservation priority areas and ecological corridors. It reinforces the ecological foundation for the sustainable development of the Chinese nation. Adhering strictly to natural ecological boundaries, the *National Territorial Spatial Planning Outline (2021–2035)*, which includes the mandates to enhance climate resilience, has been actively implemented at local levels. Regulations concerning ecological protection red lines have been refined and promulgated. By the end of 2024, all provincial territorial spatial plans had received approval from the State Council, and nearly 90% of city and county territorial spatial master plans had been approved.

Strengthening coordination and guidance in urban spatial planning. Progress has been made in the research and formulation of measures for administration of urban development boundaries, in order to rigorously control urban development intensity. The *Guiding Opinions on Exploring and Promoting the Development and Utilization of Urban Underground Space* has been issued, which calls for the establishment of a sound policy system for the development and utilization of urban underground space. This guideline facilitates the optimal allocation and efficient utilization of urban underground space resources, thereby enhancing urban comprehensive carrying capacity.

Optimizing the spatial configuration of coastal zones. The spatial planning for coastal zones and near-shore sea areas has been issued and implemented, steering their sustainable development. A series of climate change adaptation initiatives have been undertaken, including the construction of coastal protection forests, restoration of coastal wetlands, and consolidation of disaster prevention and reduction infrastructure. The spatial layout of newly developed marine aquaculture has been improved. The average offshore distance of new marine aquaculture sites nationwide increased from about 10 km in 2018 to about 18 km in 2024, reversing the trend of near-shore concentration.

(ii) Intensifying regional climate change adaptation actions

Developing and implementing provincial-level climate change adaptation action plans. As of February 2025, a total 30 provinces (autonomous regions and municipalities) and the Xinjiang Production and Construction Corps have formulated and issued provincial-level action plans, laying down the principal objectives and key actions and measures for local climate change adaptation through 2035. These solid efforts to advance adaptation actions at local levels have gradually produced practical results, initially fostering an atmosphere of proactive social participation in climate change adaptation.

Enhancing the adaptive capacity of key vulnerable regions. Within the framework of the Inter-Ministerial Joint Conference on Ecological Environmental Protection and Climate Change Adaptation on the Tibetan Plateau, cross-sectoral exchanges on climate change have been conducted, while strengthening coordination and information sharing on climate change adaptation. Comprehensive efforts have been made on building a scientific and technological support platform for the Tibetan Plateau, and establishing key laboratories on Earth system and resource environment, atmospheric environment and extreme meteorology, and cryosphere science and permafrost engineering. Simulation studies have been performed to characterize changes in the active layer thickness of the Tibetan Plateau. Meanwhile, monitoring, assessment and trend analysis have been intensified, covering climate change on the Tibetan Plateau, warming and humidification in Northwest China, and compound drought. Besides, the adaptive capacity of the Yellow River Basin has been bolstered through enhanced research on climate change impacts and risks. Ecological corridor construction along the Yellow River has moved forward, with an increase of 333.8 hectares in green space around rivers, canals, lakes and reservoirs in 2024.

VI. Advancing the Guarantee Mechanisms for Climate Change Adaptation

(i) Improving fiscal and financial support

Augmenting financial support for climate change adaptation. The central government allocated 2.51 billion yuan from natural disaster relief funds to support local efforts in flood control, drought relief, and responses to low-temperature rain, snow and ice conditions.

Substantial support has been extended to major projects, including the Three-North Shelterbelt Forest Program and the protection and restoration of important ecosystems. Public health service subsidies, as well as subsidies dedicated to medical service and protection capacity enhancement (capacity building of medical and healthcare organizations), have been earmarked to support population health management and build medical and healthcare capacity.

Promoting green financial innovation. By the end of 2024, the balance of green loans reached 36.6 trillion yuan, up 21.7% year-on-year, which is 14.5 percentage points higher than the growth of other loan categories. The balance of green bonds stood at 2.09 trillion yuan, with the total issuance exceeding 4.1 trillion yuan. Banking institutions have been encouraged to develop innovative, distinct and differentiated financial products and services based on project characteristics while adhering to the principles of risk control and commercial sustainability. This is exemplified by the introduction of marine ecological vegetation restoration insurance and wetland biodiversity conservation insurance. The *Corporate Sustainability Disclosure Standards—Basic Standards (for Trial Implementation)* and the *Guidelines for Corporate Greenhouse Gas Information Disclosure Part 1: General Provisions* have been issued, which establish requirements for corporate climate-related information disclosure and encourage enterprises to report their objectives and measures related to climate change mitigation and adaptation.

(ii) Expanding scientific and technological support

Intensifying basic scientific research. Strategic research into climate change has been reinforced amid active efforts to integrate artificial intelligence (AI) and emerging technologies within this domain. China's independently developed ocean model "Langya" enables high-precision, short- and medium-term prediction of global ocean state variables, which further improves the capability and accuracy of forecasting complex ocean phenomena, such as extreme weather events and marine disasters. Several major projects have been implemented, such as the "Scenario Extrapolation and Adaptive Regulation of Hydrological, Ecological and Sediment Processes in the Headwaters of the Yangtze and Yellow Rivers under Climate Change," "Study on the Yangtze River Estuary Evolution and Integrated Management

Amid the Dual Pressures of Global Climate Change and Human Activities," "Ecohydrological Response and Adaptive Regulation of Northern Seasonal Rivers Amidst the Influence of Climate Change and Human Activities," "Scientific Basic Research on Water Security in Inland River Basins of Arid Regions," and "Atmospheric Detection and Accurate Prediction of Extreme Meteorological Environments."

Accelerating technology research & development and popularization. Research has been intensified on compound disaster mechanisms and risk prediction technologies in the context of climate change. Research & development efforts have expanded to explore key techniques for attribution, future risk forecasting and early warning of extreme weather events such as high temperatures, heat waves and heavy precipitation, as well as catastrophic climatic events in representative climatic zones and major urban agglomerations. Efforts have redoubled in developing climate change adaptation technologies across sectors including agriculture, water conservancy, energy, health and ecology, as manifested in the creation of economic assessment tools for regional and industrial climate change adaptation. The Urban Meteorological Science and Technology Alliance has been formed, which facilitates the dissemination of various meteorological scientific and technological achievements related to early warning technologies for urban drainage and waterlogging, as well as utilization of climatic and ecological resources. A total of 18 technological achievements addressing flood and drought disasters have been integrated into the *2024 Promotion List of Mature and Applicable Scientific and Technological Achievements in Water Conservancy* to boost their application through list dissemination.

(iii) Enhancing science education and communication

Diversifying science communication and education efforts. Science communication concerning disaster prevention and reduction and emergency response has continued in combination with the National Disaster Prevention and Reduction Day, National Safety Production Month, and National Firefighting Publicity Month. The four-episode CCTV public security lecture series "When Disaster Strikes" has reached an audience of 318 million across the digital network, accumulating a total of 81.328 million views and broadcasts. The "Emergency Compass" science popularization campaign has been launched, which delivers

safety tips and emergency risk avoidance stories through major CCTV programs and prime time slots. Public service advertisements and communication and warning films focused on forest and grassland fire prevention have been produced and disseminated. A national training course on management and operational capabilities in forest and grassland fire prevention was organized, in a continued effort to strengthen national fire prevention communication. The *Tips for Preventing Meteorological Disasters in Rural Houses* was published to disseminate knowledge on disaster prevention in rural houses.

(iv) Deepening international cooperation

Publishing China's Action Plan on Early Warning for Climate Change Adaptation. President Xi Jinping's Special Representative, also China's Vice Premier, Ding Xuexiang, attended the High-level Meeting on "Early Warnings for a Climate-Resilient Future" during the 29th Conference of the Parties (COP29) to the United Nations Framework Convention on Climate Change (UNFCCC) in Baku. At this event, China's Action Plan on Early Warning for Climate Change Adaptation was unveiled by the Ministry of Ecology and Environment (MEE) and the China Meteorological Administration (CMA). This plan outlines four key actions over the next three years: sharing knowledge on climate risk census and assessment, building a climate risk monitoring, forecasting and early warning platform, sharing experience and expertise on building climate-resilient societies, and enhancing early warning capabilities in developing countries.

Launching a flagship project on early warning for climate change adaptation. China has signed with Pakistan and successfully implemented the first South-South cooperation flagship project on early warning for climate change adaptation. This initiative supplies with Pakistan with a comprehensive and integrated climate change monitoring and application system, five intelligent ground-based meteorological observatories, an integrated cloud-based disaster risk early warning support system, and 5,000 household photovoltaic power generation systems. Based on early warning dissemination standards and transmission protocols associated with Beidou, Tiantong and Fengyun satellites, China has offered participating countries with universal early warning information services. China has also actively organized remote international training and various international seminars to enhance the meteorological

management capacity and early warning capability of operational personnel in developing countries and least developed countries (LDCs). Moreover, China has energetically promoted the construction of international early warning operational support platforms, and established meteorological early warning operational platforms in Ethiopia, South Africa and other African countries.

Strengthening bilateral partnerships on climate change adaptation. China has engaged in exchanges with Europe on urban climate change adaptation, released the *China-EU Comparative Report on Urban Climate Change Adaptation*, and facilitated the study visits of European experts to Shenzhen on the development of climate-adaptive cities. Through the 2024 climate risk dialogue with the UK, China has advanced the improvement of its climate risk assessment system by incorporating the UK's experience in institutional and system building. Research on integrated urban climate actions has been conducted, disseminating China's experiences in urban low-carbon resilience to Southeast Asian countries including Thailand, Indonesia, Malaysia and the Philippines. The Asian Development Bank (ADB)-endorsed technical assistance project "Provincial and Municipal Climate Change Adaptation Capacity Improvement" has been launched to explore climate adaptation pathways at provincial and municipal levels, which bolsters climate resilience in key sectors such as agriculture and climate investment and finance. In partnership with the United Nations Children's Fund (UNICEF), the "Climate Adaptation for Children" demonstration project has enhanced the comprehensive adaptive capacity of vulnerable urban groups, contributing to the advancement of climate-adaptive cities.

Actively engaging in dialogue and experience-sharing activities on climate change adaptation. China has actively participated in international cooperation on climate change adaptation under the UNFCCC, the Paris Agreement, the Intergovernmental Panel on Climate Change (IPCC), the World Meteorological Organization (WMO), the Group of Twenty (G20), and the BRICS coalition. China has promoted the establishment of a Working Group on Climate Change within the Central Asia Regional Economic Cooperation (CAREC), and has deliberated and ratified the CAREC Climate Change Action Plan among other cooperation documents. Maintaining close communication with the Global Center for Adaptation (GCA) and its China office, China has utilized the GCA platform to disseminate its policies and

actions for climate change adaptation, and supported the pilot study on the development of Weihai into a climate-adaptive city. At the COP29 China Pavilion, a side event titled "Proactively Addressing Climate Risks to Build Low-Carbon Resilient Cities" was organized, where representatives of Chinese cities such as Chengdu and Suzhou and international cities such as Dubai and Karachi shared their progress, experiences and practices in fostering climate-adaptive cities.

Conclusion

In the context of global climate change, the 2025 climate scenario for China is projected to be generally adverse, characterized by frequent and intense extreme weather and climate events, including heavy precipitation and flooding, high temperatures and heat waves, and severe convective events. The risks posed by climate change to China's economic and social development and its people's production and livelihood safety will become more significant. This is likely to exacerbate the grim situation of climate change adaptation.

Looking ahead, we will, guided by the spirit of the 3d Plenary Session of the 20th CPC Central Committee, improve the working systems for adapting to climate change, and advance the implementation of the *National Climate Change Adaptation Strategy 2035*. While adhering to the principles of "proactive, scientific, systematic and coordinated adaptation," we will stay committed to addressing climate risks, strengthening adaptation actions and enhancing adaptive capacities. We will step up climate change monitoring, early warning and risk management, persistently enhance the adaptive capacities of natural ecosystems as well as economic and social systems, steadily push forward climate change adaptation in major strategic regions and key vulnerable regions, and optimize financial, fiscal, and scientific and technological guarantee mechanisms and supporting policies in an orderly manner. We will vigorously reinforce scientific and technological support to accelerate capacity building for climate change adaptation, and continuously expand international cooperation and exchanges, contributing China's solutions to enhancing global capacity for climate change adaptation.

Annex

Documents and Standards Related to Climate Change Adaptation in Key Areas (2024)

Area	No.	Time of issuance	Title	Issuing authorities
Climate change impact and risk assessment	1	June 2024	Climate Resources Assessment—Snow and Ice Tourism (QX/T708–2024)	China Meteorological Administration (CMA)
	2	June 2024	Grade of Meteorological Assessment on Ecological Function of Carbon Fixation and Oxygen Release of Forest Vegetation (QX/T714–2024)	CMA
	3	June 2024	Assessment of Climate Change Impacts—Vulnerability of Food Crops Yield (QX/T712–2024)	CMA
	4	September 2024	Weather Risk Early Warning Levels of Expressway Traffic Safety Control (QX/T729–2024)	CMA
	5	November 2024	Circular on Issuing the Corporate Sustainability Disclosure Standards—Basic Standards (for Trial Implementation)	Ministry of Finance (MOF), Ministry of Foreign Affairs (MFA), National Development and Reform Commission (NDRC), Ministry of Industry and Information Technology (MIIT), Ministry of Ecology and Environment (MEE), Ministry of Commerce (MOFCOM), People's Bank of China (PBC), State-owned Assets Supervision and Administration Commission (SASAC), National Financial Regulatory Administration (NFRA)

Area	No.	Time of issuance	Title	Issuing authorities
Climate change impact and risk assessment	6	November 2024	Adaptation to Climate Change—Guidelines on Vulnerability, Impacts and Risk Assessment (GB/T24091–2024)	State Administration for Market Regulation (SAMR), Standardization Administration of China (SAC)
	7	November 2024	Climate Prediction Verification—El Niño/La Niña (GB/T44955–2024)	SAMR, SAC
Integrated disaster prevention, mitigation and relief	8	January 2024	Circular on Strengthening Urban Geosafety Risk Prevention and Control	Ministry of Natural Resources (MNR), Ministry of Housing and Urban-Rural Development (MOHURD), Ministry of Water Resources (MWR), Ministry of Emergency Management (MEM)
	9	February 2024	Guiding Opinions of the Office of the State Flood Control and Drought Relief Headquarters on Enhancing Urban Capacity for Addressing Extreme Precipitation	Office of the State Flood Control and Drought Relief Headquarters (SFDH)
	10	March 2024	Guiding Opinions of the Office of the State Flood Control and Drought Relief Headquarters on Further Strengthening Response to Heavy Rainfall and Flood Disasters	SFDH Office
	11	April 2024	Circular on Doing a Good Job on the 2024 National Disaster Prevention and Mitigation Day	Office of the National Committee for Disaster Prevention, Mitigation and Relief (NCD)
	12	August 2024	Circular on Further Promoting Advanced and Applicable Technologies and Equipment for Flood Control and Risk Reduction	SFDH Office
	13	August 2024	Circular on Strengthening Meteorological Disaster Prevention and Reduction for Marine Fisheries	Ministry of Agriculture and Rural Affairs (MARA), CMA
	14	September 2024	Implementation Opinions on Strengthening the Early Warning and Monitoring System for Forest and Grassland Fires	National Forest and Grassland Fire Prevention and Fighting Command (NFGFC)

Area	No.	Time of issuance	Title	Issuing authorities
Integrated disaster prevention, mitigation and relief	15	October 2024	Circular on Doing a Good Job on the 2024 International Day for Disaster Risk Reduction	NCD Office
	16	October 2024	Circular on Issuing the Implementation Measures for Categorized and Graded Appraisal of Social Emergency Response Forces (for Trial Implementation)	MEM
	17	October 2024	Work Priorities for National Geological Disaster Prevention and Control in 2024	MNR
	18	October 2024	Circular on Issuing the Program of Activities for 2024 National Fire Prevention Month	Office of the Work Safety Committee of the State Council
	19	October 2024	Guiding Opinions on Further Strengthening the Supply Guarantee System and Capacity Building for Emergency Risk Reduction and Disaster Relief	NCD Office
	20	October 2024	Circular on Issuing the Guidelines on the Use of Emergency Relief Supplies Logos	NCD Office, MEM
	21	November 2024	Circular on Further Strengthening the Management of Disaster Relief Supplies	NCD Office
	22	December 2024	Security and Resilience—Emergency Management—General Guidelines for the Implementation of a Community-based Disaster Early Warning System (GB/T45156–2024)	SAMR, SAC
Water resources	23	January 2024	Opinions on Strengthening Spatial Management of Soil and Water Conservation	MWR
	24	February 2024	Guiding Opinions on Strengthening the Protection and Utilization of Mine Water	NDRC, MWR, MNR, MEE, MEM, SAMR, National Energy Administration (NEA), National Mine Safety Administration (NMSA)
	25	March 2024	Regulations on Water Conservation	State Council

Area	No.	Time of issuance	Title	Issuing authorities
Water resources	26	June 2024	Guiding Opinions on Accelerating the Development of Water Conservation Industry	NDRC, MWR, MIIT, MOHURD, MARA
	27	June 2024	Circular on the Pilot Program for Building "Water-Saving Stations" in Highway Rest Areas	Ministry of Transport (MOT), MWR
	28	September 2024	Guiding Opinions on Encouraging and Supporting the Participation of Social Capital in Soil and Water Loss Control	MWR, MNR
	29	October 2024	Circular on Issuing the Implementation Measures for Pilot Water Resource Tax Reform	MOF, State Taxation Administration (STA), MWR
	30	November 2024	Measures for Implementing the Regulations on Administration of Sand Excavation in the Courses of the Yangtze River	MWR
	31	December 2024	Opinions on Comprehensively Promoting the Construction of Happy Rivers and Lakes	MWR, MOF, MNR, MOT, MARA, National Forestry and Grassland Administration (NFGA)
	32	December 2024	Results of National Groundwater Overdraft Zone Delineation	MWR, MNR
Terrestrial ecosystems	33	January 2024	Measures for Managing Red Lines for Protection of Permanent Basic Farmland (Draft for Public Comments)	MNR, MARA
	34	January 2024	China National Biodiversity Conservation Strategy and Action Plan (2023–2030)	MEE
	35	February 2024	Circular on Issuing the Measures for Administration of Funds for Protection, Restoration and Governance of Key Ecosystems	MOF
	36	March 2024	Technical Guidelines for Identification and Assessment of Ecological Damage—Ecosystem—Part 1: Farmland Ecosystem (GB/T43871.1–2024)	MEE, SAMR

Area	No.	Time of issuance	Title	Issuing authorities
Terrestrial ecosystems	37	April 2024	Circular on Further Strengthening the Development of Green Mines	MNR, MEE, MOF, SAMR, NFRA, China Securities Regulatory Commission (CSRC), NFGA
	38	April 2024	Technical Specification for Land Reclamation and Ecological Restoration of Petroleum and Natural Gas Projects (GB/ T43936–2024)	SAMR, SAC
	39	April 2024	Technical Specification for Monitoring and Evaluation of Land Reclamation and Ecological Restoration in Mines (GB/T43935–2024)	SAMR, SAC
	40	April 2024	Circular on Promoting Scientific Land Greening in 2024	NFGA
	41	April 2024	Circular on Conducting a National Census of Desertification in Forests, Grasslands and Wetlands	MNR, NFGA
	42	June 2024	Circular on Issuing the China Action Plan for Flyway Conservation and Restoration for Migratory Birds (2024–2030)	NDRC, MOF, NFGA
	43	September 2024	Code of Practice for Degraded Forest Remediation and Restoration	National Technical Committee on Forestation of SAC
	44	September 2024	Code of Practice for Village Greening	National Technical Committee on Forestation of SAC
	45	September 2024	Code of Practice for Ecological Protection and Restoration of Mangroves (GB/T44592–2024)	SAMR, SAC
	46	December 2024	Circular on Issuing the Technical Program for Prevention and Control of Pine Wilt Disease (2024 Edition)	NFGA

Area	No.	Time of issuance	Title	Issuing authorities
Oceans and coastal zones	47	June 2024	Circular on Enhancing the Protection and Restoration of Coral Reefs	MNR
	48	June 2024	Action Plan to Upgrade the Beautiful Bay Initiative	MEE
	49	December 2024	Technical Guidelines for Monitoring and Effectiveness Evaluation of Seagrass Bed Ecological Restoration of (GB/T45031–2024)	SAMR, SAC
	50	December 2024	Technical Guidelines for Monitoring and Effectiveness Evaluation of Coral Reef Ecological Restoration (GB/ T45025–2024)	SAMR, SAC
Agriculture and food security	51	February 2024	Opinions on Strengthening Farmland Protection and Upgrading Farmland Quality to Improve the Occupation and Compensation Balance	General Office of the CPC Central Committee, General Office of the State Council
	52	September 2024	Circular on Promoting the Stable Development of Beef Cattle and Dairy Cow Production	MARA, NDRC, MIIT, MOF, PBC, SAMR, NFRA
	53	October 2024	National Action Plan for Smart Agriculture (2024–2028)	MARA
	54	October 2024	Guiding Opinions on Vigorously Developing Smart Agriculture	MARA
	55	December 2024	Circular on Issuing the Implementation Plan for Emergency Response to African Swine Fever (6th Edition)	MARA
Health and sanitation	56	September 2024	National Action Plan for Health Adaptation to Climate Change (2024–2030)	National Disease Control and Prevention Administration (NDCPA), NDRC, MOF, MEE, MOHURD, MOT, MWR, MARA, Ministry of Culture and Tourism (MCT), National Health Commission（NHC）, MEM, CMA, NFGA

Area	No.	Time of issuance	Title	Issuing authorities
Cities and Human Habitats	57	January 2024	Circular on Strengthening Urban Geosafety Risk Prevention and Control	MNR, MOHURD, MWR, MEM
	58	February 2024	Guiding Opinions on High-Quality Development of Power Distribution Network under New Situation	NDRC, NEA
	59	March 2024	Circular on Improving Urban Drainage and Flood Prevention in 2024	MOHURD
	60	March 2024	Circular on Strengthening the Construction, Operation and Maintenance of Urban Domestic Sewage Pipeline Networks	MOHURD, MEE, NDRC, MOF, SAMR
	61	April 2024	Circular on the Three-Year Action to Address Production Safety in Housing and Municipal Engineering Projects	MOHURD
	62	April 2024	Circular on Doing a Good Job in the 2024 National Urban Water Conservation Promotion Week	MOHURD
	63	May 2024	Circular on Issuing a List of Replicable Policies and Mechanisms for Developing Sponge Cities	MOHURD
	64	May 2024	Guiding Opinions on Deepening the Development of Smart Cities and Promoting City-wide Digital Transformation	NDRC, National Data Administration (NDA), MOF, MNR
	65	May 2024	Circular on Issuing a List of Pilot Cities for Deepening the Development of Climate-Adaptive Cities	MEE, MOF, MNR, MOHURD, MOT, MWR, CMA, NDCPA
	66	September 2024	Measures for Administration of Urban Parks	MOHURD
	67	November 2024	Opinions on Promoting the Construction of New-type Urban Infrastructure for the Development of Resilient Cities	General Office of the CPC Central Committee, General Office of the State Council

Area	No.	Time of issuance	Title	Issuing authorities
Climate-sensitive secondary and tertiary industries	68	February 2024	Circular on Improving Forest and Grassland Fire Prevention and Response at Power Facilities	NEA
	69	February 2024	Guiding Opinions on High-Quality Development of Power Distribution Networks under the New Situation	NDRC, NEA
	70	March 2024	Circular on Effective Flood Control and Drought Relief for the Electric Power Sector in 2024	NEA
	71	March 2024	Circular on Further Strengthening and Standardizing the Reporting of Natural Disaster Impact on the Power System	NEA
	72	June 2024	Circular on Further Strengthening Risk Management for Power Security during the Peak Summer Period	NEA
	73	July 2024	Circular on Further Improving Flood Control, Drought Relief and Risk Reduction for the Electric Power Sector in 2024	NEA
	74	July 2024	Emergency Notification on Further Improving Safety Production and Prevention and Control of Major Disaster Risks in the Electric Power Sector during the Ongoing Main Flood Season	NEA
	75	August 2024	Implementation Plan for High-Quality Development of Power Distribution Networks (2024–2027)	NEA
	76	August 2024	Guiding Opinions on Promoting the High-Quality Development of Tourism Public Services	MCT, NDRC, MOF,MNR, MOHURD, MOT, MARA, MEM, National Fire and Rescue Administration
	77	December 2024	Guiding Opinions on Strengthening Financial and Meteorological Coordination and Synergy to Serve High-Quality Economic and Social Development	CMA, MOF, PBC, NFRA, CSRC

Area	No.	Time of issuance	Title	Issuing authorities
Transportation disaster prevention and emergency protection	78	February 2024	Opinions on Further Enhancing the Disaster Prevention and Reduction Capacity of Rural Roads	MOT
	79	February 2024	Guiding Opinions on Deepening the Optimization and Enhancement of Highway Sections Prone to Adverse Weather	CMA, Ministry of Public Security (MPS), MOT
	80	March 2024	Announcement on Publishing the Technical Specifications for Highway Emergency Equipment and Supplies Reserve Centers	MOT
	81	April 2024	Circular on Doing a Good Job in Flood and Typhoon Prevention in Transportation in 2024	MOT
	82	April 2024	Implementation Rules for Supervision and Management of Railway Equipment Quality and Safety at the Source	National Railway Administration (NRA)
	83	May 2024	Circular on Further Strengthening the Investigation and Management of Flood Prevention and Discharge Risks and Hazards at Airports	Civil Aviation Administration of China（CAAC）
	84	June 2024	Opinions on Strengthening the Planning and Construction of Coastal and Inland Ports and Waterways in the New Era	MOT
	85	June 2024	Opinions on Strengthening the Supervision and Management of Intercity and Municipal (Suburban) Railways	MOT, NRA
	86	August 2024	Opinions on the Centralized Investigation of Highway Sections Prone to Adverse Weather Nationwide	MOT, MPS, CMA
	87	August 2024	Work Plan for Further Enhancing the Design Retrospective for Highway Disaster Prevention and Resilience	MOT

Area	No.	Time of issuance	Title	Issuing authorities
Transportation disaster prevention and emergency protection	88	2024	Circular on Disaster Prevention Featuring "Three Managements, Three Responses and Three Implementations" in Highway and Waterway Construction During the Flood Season	MOT
	89	November 2024	Circular on Issuing the Measures for Administration of Graded Safety Risk Management and Hidden Hazard Identification and Elimination in Urban Rail Transportation Operations	MOT
Fiscal and financial support	90	February 2024	Circular on Expanding the Catastrophe Insurance Coverage for Urban and Rural Residents' Houses and Further Improving the Catastrophe Insurance System	NFRA, MOF
	91	May 2024	Circular on Issuing the Opinions on Financial Support for the Three-North Shelterbelt Forest Program	MOF, NDRC
	92	May 2024	Circular on Issuing the Measures for Administration of Subsidy Funds for the Three-North Shelterbelt Forest Program	MOF, NFGA
	93	July 2024	Announcement on the Enterprise Income Tax Policy for the Digital and Intelligent Transformation of Special Equipment Related to Energy Conservation, Water Saving, Environmental Protection and and Safety Production	MOF, STA
	94	August 2024	Opinions on Further Strengthening Financial Support for Green and Low-Carbon Development	PBC, NDRC, MIIT, MOF, MEE, NFRA, CSRC, State Administration of Foreign Exchange(SAFE)
	95	October 2024	Opinions on Leveraging Green Finance to Support the Beautiful China Initiative	PBC, MEE, NFRA, CSRC
	96	December 2024	Circular on Revising the Measures for Administration of Forestry and Grassland Reform and Development Funds	MOF, NFGA