

China's Policies and Actions for Addressing Climate Change (2022)

**Ministry of Ecology and Environment
of the People's Republic of China**

This is an unofficial translation. In case of any divergence, the official text in the Chinese language shall prevail.

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Introduction

Climate change is a common challenge for humankind and bears on its sustainable development. China has always attached great importance to tackling climate change, unremittingly pursuing green development and actively promoting a community of harmony between humanity and nature.

Over recent years, under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, especially Xi Jinping Thought on Promoting Ecological Civilization, China has thoroughly and faithfully implemented the new development philosophy, established a new development paradigm and made efforts for high-quality development. It has implemented a national strategy of proactively responding to climate change by giving it higher priority in the national governance system and strives for further progress by integrating the goals of carbon dioxide peaking emissions and carbon neutrality into China's overall plans for promoting Ecological Civilization and economic and social development, focusing on forming a synergy between reducing pollution and controlling carbon emissions to promote a comprehensive transformation towards environment-friendly economic and social development.

Since 2021, China has actively implemented the Paris Agreement on climate change, updating its Nationally Determined Contributions (NDCs) goals, earnestly carrying out effective and well-conceived actions and making significant progress in meeting the targets of carbon dioxide peaking and carbon neutrality. China has put in place "1+N" policy framework for carbon

dioxide peaking and carbon neutrality, developed a mid-term and long-term strategy for controlling greenhouse gas emissions, accelerated the development of a national carbon market, and formulated and implemented the National Strategy for Climate Change Adaptation. Based on preliminary calculations, in 2021, the carbon intensity of China dropped by 3.8 percent and 50.8 percent from the level respectively in 2020 and 2005, the share of non-fossil fuels in primary energy consumption rose to 16.6 percent, the total installed capacity of wind and solar power generation combined increased to 635 million kilowatts, the coal consumption per unit of GDP dropped significantly, and the forest coverage and stock have both risen over the past 30 consecutive years. By the first anniversary of national carbon trading system, the cumulative volume of carbon emission allowances (CEA) was 194 million tonnes, and the cumulative turnover CNY 8.492 billion.

This report is released to summarize China's progress in responding to climate change since 2021 and share its experience and approaches with the international community.

1. New Arrangements on Combating Climate

Change

China's active climate change response is based on not only its own need to secure sustainable development but also its sense of responsibility to build a community with a shared future for mankind. In 2020, China announced the goals of striving to carbon dioxide peaking before 2030 and striving to achieve carbon neutrality before 2060, updated its NDCs, made a series of new plans and arrangements, and adopted a package of more effective policies and actions.

1.1 Improving the Top-level Design for Tackling Climate Change

China has enhanced tackling climate change to be a national strategy, integrating it into the overall plan for promoting ecological civilization and economic and social development, and strengthened the top-level design for tackling climate change, applying holistic approach throughout the whole process of achieving the goals of carbon dioxide peaking emissions and carbon neutrality.

Strengthening overall planning and coordination. In 2021, China set up a national steering group to guide and coordinate the work of carbon dioxide

peaking and carbon neutrality in all aspects. All provinces, autonomous regions and municipalities directly under the central government (PARMs) set up their leading groups to plan for and coordinate all efforts within their areas, establishing an orderly working mechanism featuring unified planning and coordination across different levels.

Incorporating green and low-carbon development into the overall plans of national economic and social development. *The Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Long-Range Objectives through the Year of 2035 of the People's Republic of China* set an obligatory indicator: the carbon dioxide emission per unit of GDP in 2025 is 18 percent lower than in 2020. All provinces have also incorporated green and low-carbon development into their 14th Five-Year Plans, outlining their specific targets and tasks.

Having put in place a “1+N” policy framework for carbon dioxide peaking and carbon neutrality. “1” means the guiding idea and the top-level design for achieving carbon dioxide peaking and carbon neutrality, consisting of the two documents issued in 2021: *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy* and *the Action Plan for Carbon Dioxide Peaking before 2030*, which clearly articulate the schedules, road maps and working procedures for carbon dioxide peaking and carbon neutrality, whereas the “N” is the implementation schemes in key areas and sectors, such as energy, industry, transportation urban and rural development, transport, agriculture and rural areas, synergy between reducing pollution and controlling carbon emissions, coal, oil and natural gas, steel, non-ferrous metals, petrochemicals and building materials, and the supporting plans, such as

technology support, financial support and statistical and accounting work. Meanwhile, all provinces have also had their implementation schemes for carbon dioxide peaking within their respective jurisdictions. As a result, these serial documents have on the whole formed a full-fledged policy system for carbon dioxide peaking and carbon neutrality with definite objectives, reasonable division of functions, effective measures and efficient collaboration, lay out a sound and coordinated arrangement, and give a steady boost to the momentum for carbon dioxide peaking and carbon neutrality.

1.2 Formulating Mid-term and Long-term Strategies for Addressing Greenhouse Gas Emissions

In October 2021, China officially unveiled *China's Achievements, New Goals and New Measures for Nationally Determined Contributions* and *China's Mid-Century Long-term Low Greenhouse Gas Emission Development Strategy*, representing its specific moves to fulfill the *Paris Agreement* and embodying its commitments and efforts to promote green and low carbon development and actively respond to global climate change.

Putting forward new targets and enhanced actions on its NDCs. China has set higher targets for its NDCs: strive to peak its carbon dioxide emissions before 2030 and achieve its carbon neutrality before 2060, lower its carbon dioxide emissions per unit of GDP by over 65 percent from the 2005 level and increase its share of non-fossil fuels in primary energy consumption to around 25 percent by 2030, and increase its forest stock by 6 billion cubic meters from the 2005 level and its total installed capacity of wind and solar power generation combined to over 1.2 billion kilowatts. To this end, more than 20 important implementation policies and measures have been proposed, focusing

on well-ordered steps in achieving carbon dioxide peaking and carbon neutrality, proactively adapting to climate change and strengthening the support and safeguard system.

Formulating long-term low greenhouse gas emissions development strategy. With in mind achieving carbon neutrality before 2060, China has laid out the basic policies, strategic vision and technical path for the mid-century long-term low greenhouse gas emission development, and identified and planned for the strategic priorities in 10 key areas, including economy, energy, industry, urban and rural development and transport, etc.. By 2060, it aims to fully establish a clean, low-carbon, safe and efficient energy system, enhance its energy use efficiency to internationally advanced levels, and increase its share of non-fossil fuel consumption to over 80 percent.

1.3 Formulating and Implementing the National Strategy for Climate Change Adaptation

China has always attached equal importance to the mitigation of and adaptation to climate change, and actively pushed ahead with and implemented major strategies for climate change adaptation. The *National Strategy for Climate Change Adaptation 2035* unveiled in June 2022 establishes the guiding idea, main targets and basic principles of its climate change adaptation in the new era, identifies key areas based on the exposures and vulnerabilities of different sectors and regions to adverse impacts and risks of climate change and in the dimensions of the natural ecosystem and the economic and social system, including water resources, terrestrial ecosystem, ocean and coastal zones, agriculture and food security, public health, infrastructure and major works, urban living environment and sensitive

secondary and tertiary industries, fosters a multi-faceted and multi-tiered regional dynamic of climate change adaptation in the light of the national territorial spatial plan, plans for climate change adaptation actions for eight major regions, and especially major strategic areas, including the Beijing-Tianjin-Hebei Region, the Yangtze River Economic Belt, the Guangdong-Hong Kong-Macao Greater Bay Area, the Yangtze River Delta and the Yellow River Basin, and further improves the support and safeguard measures, providing the important guidance and basis for adapting to climate change.

2. Mitigating Climate Change

China has taken active measures to adjust the industrial structure, optimize the energy mix, promote energy conservation and efficiency, control the emissions of non-carbon dioxide greenhouse gases, enhance the carbon sink capacity of ecosystems, increase the synergy between reducing pollution and bringing down carbon emissions, and carry out pilots and demonstration projects.

2.1 Adjusting the Industrial Structure

Strongly developing green and low-carbon industries. China has steadily developed emerging industrial clusters in new energy, new-energy vehicles and green, eco-friendly sectors, supported the green, low-carbon and high-quality development of industries and built up a pro-environmental manufacturing system. In 2021, the high-tech manufacturing sector saw its

added value rise 18.2 percent year on year, accounting for 15.1 percent of the total for industries above the designated size. The output of new-energy vehicles come in at 3.677 million units, up 152.5 percent from the previous year. The output of photovoltaic modules stand at about 182GW, leading the world for 15 consecutive years. A total of 662 green factories, 989 green design products, 52 green industrial parks and 107 green supply chain enterprises launched. By 2021, in the pro-environmental sector, including light industry, textile, building materials, chemicals, electrical and electronics, China established 117 demonstration enterprises in industrial product green design, fostered 430 “little giant” enterprises with high growth potential, advanced technology and strong market competitive edge, generated the pro-environmental output value of more than CNY 8.0 trillion, and saw an annual growth rate of over 10 percent. China saw the operating revenue of its strategic emerging service enterprises rise by 16.0 percent and the investment of its high-tech industries rise by 17.1 percent from the previous year. In addition, China extended its green product certification program to nearly 90 product categories from building materials, express packaging, electrical and electronic products and plastics products to detergents, and issued nearly 20,000 unified green product certification certificates to more than 2,000 enterprises.

Strictly controlling the irrational expansion of energy-intensive projects with high-emissions and backward production capacity. In 2021, China improved its work arrangement and applied the approach of list management, categorized approval and dynamic monitoring to the energy-intensive, high-emission projects with low technology, requiring all localities to establish their lists of such projects (including completed, ongoing and proposed projects) and clarify specific disposal schemes. China strictly controlled the

launch of new projects, maximized the energy conservation potential of ongoing projects, enhanced the benchmarks and criteria of energy efficiency in key areas, and facilitated the greener technological transformation in energy-intensive industries in a scientific and orderly manner. China recalibrated a series of environmental impact assessment (EIA) and approval principles or environmental access conditions for projects in related industries to enhance environmental compliance. The irrationally launched projects and the implementation performance of the overcapacity projects were subjected to “follow-up checks” to the central inspection on ecological and environmental protection supervision. Prominent problems were identified through regular inspections and warning films on the ecological environment in the Yangtze River Economic Belt and the Yellow River Basin to fully exert the warning and deterrent effects and effectively force industrial restructurings. In 2021, the EIA approvals of related industries reduced by over 30 percent from the previous year, eliminating more than 350 proposed projects and representing a reduction of additional energy demand by 270 million tonnes of standard coal equivalent.

2.2 Optimizing the Energy Mix

Developing vigorously non-fossil energy. China has accelerated the transition to a clean and low-carbon structure of energy consumption and has seen its installed capacity of non-fossil energy surpass that of coal for the first time in 2021. Its share of non-fossil fuels in primary energy consumption to increased 16.6 percent and the share of coal consumption reduced to 56.0 percent. China has developed new energy bases at a faster pace, has planned for large wind power and photovoltaic bases of 450 million kilowatts in the desert, gobi and barren areas, and has worked on 100-million-kilowatt projects. By the end of

2021, China's installed capacity of renewable energy reached 1.063 billion kilowatts and accounted for 44.8 percent of the total, with that of hydropower, wind power and solar power each being over 300 million kilowatts, that of biomass power standing at 37.98 million kilowatts, and that of offshore wind power leading the world. In 2021, China's power outputs of wind, photovoltaic and biomass energy increased by 40.5 percent, 25.1 percent and 23.6 percent year on year respectively, driving up the power output of renewable energy to 2.48 trillion kWh and the share of renewable energy to 29.8 percent of the total electricity consumption. China's utilization ratios of wind power, photovoltaic power and hydropower all increased to over 96.5 percent. In June 2021, the first two generating units at Baihetan Hydropower Station on the Jinsha River, owing the largest stand-alone unit capacity and the highest technological complexity in the world, went into operation. China has actively developed its nuclear power industry in a safe and orderly manner, put five new nuclear power units of 5.618 million kilowatts into operation, and approved 11 new units of 12.603 million kilowatts during the period from 2021 to the first half of 2022. For example, the phase-I project of Haiyang nuclear heating system in Shandong has operated well and the phase-II project has gone into operation, and the Qinshan nuclear heating system project in Zhejiang, the first in southern China, has recently gone into operation. China has paced up the planning and development of trans-provincial/regional renewable energy power transmission routes. As of the end of 2021, the supply volume of the West-to-East power transmission project was over 280 million kilowatts, and 31 trans-provincial/regional UHV routes went into service. In September 2021, the pilot program of green power trading was officially launched. China has promoted the development of its new energy storage system, increasing its cumulative installed capacity to more than 4 million kilowatts by the end of 2021, and has rolled out its *Mid and long-term Plan for*

Hydrogen Energy Industry Development 2021-2035, making it clear that hydrogen energy is an important part of the national energy system.

Enhancing clean utilization of fossil energy. In light of the basic pattern of coal-dominated energy consumption, China has made constant efforts to promote the clean, efficient and centralized utilization of coal and vigorously pushed ahead with the campaign of carbon reduction retrofits, flexibility retrofits and heating transformations in a well-ordered way. In 2021, China completed the carbon reduction retrofits of 110 million kilowatts, the flexibility retrofits of 63.8 million kilowatts and the heating transformations of 68.3 million kilowatts and reduced the average coal consumption in thermal power plants to 302.5g standard coal/kWh, posting a 6.9 percent slid compared to 2012. By the end of 2021, China completed the cumulative carbon-reduction retrofits of nearly 900 million kilowatts and the cumulative flexibility retrofits of more than 100 million kilowatts, completed the ultra-low emission upgrading of the coal-fired power units of 1.03 billion kilowatts, making up 93 percent of the total, and built up the world's largest clean coal-fired power system. China has accelerated the development of a modern coal chemical sector featuring high-end, diversification and low carbonization, and increased its production capacities of the coal-to-oil, the coal-to-gas and the coal (syngas)-to-ethylene glycol in 2021 to 8.23 million tonnes/year, 6.125 billion cubic meters/year and 6.75 million tonnes/year, respectively. China has constantly improved its coal quality management and established clear requirements for improving coal preparation and processing procedures and strengthening commercial coal quality management. China has continued to strengthen its oil and gas supply security. In 2021, its national natural gas consumption, posting a 12.5 percent increase year on year and accounting for 8.9 percent of the total primary energy consumption. China has efficiently

exploited and utilized coal-bed gases (mainly coal mine methane) and has laid out the work priorities in coal mine methane control and the annual targets of coal-bed gas extraction and utilization, continuously improving its extraction and utilization rates.

Implementing strict control on total energy consumption and energy consumption intensity. China has implemented and further improved the system and policy for the control of total energy consumption and energy consumption intensity, strengthened the management of obligatory targets of energy consumption intensity reduction, and implemented targeted measures, such as excluding newly added renewable energy and coal, petroleum and natural gas consumed as raw materials from the total amount of energy consumption and keeping energy consumption of national major projects under separate management, to effectively enhance the flexibility in the total energy consumption management and ensure the reasonable energy consumption demand of economic and social development, and earnestly fulfilled the obligatory targets in reducing energy consumption intensity. In 2021, the national energy consumption per unit of GDP decreased by 2.7 percent year on year (incl. energy consumed as raw materials). China has strengthened the coordination and linkage between the control of the total volume and intensity of energy consumption and the goals of achieving carbon dioxide peaking and carbon neutrality to promote the transition from the control on total energy consumption and energy consumption intensity to the control on total carbon emission and carbon intensity.

2.3 Promoting Energy Conservation and Efficiency Improvement

Promoting quality and efficiency improvement in the industrial sector.

China has vigorously promoted energy-saving technologies, identifying and unveiling more than 500 advanced energy-saving technologies, equipment and products in the industrial and communications fields. China implemented the energy efficiency improvement plans for key electrical equipment, and strengthened the two-pronged mechanism of “energy-saving supervision and energy-saving diagnosis”, conducting energy-saving review and supervision on 3,535 key enterprises, providing energy-saving diagnosis to 6,800 enterprises and industrial parks, recognizing 43 “ Frontrunners” in energy-efficiency in 14 key industries, including petrochemical, chemicals and iron&steel, to motivate the energy efficiency improvement of the whole industrial sector, and driving down the overall energy consumption per unit product in crude steel, electrolytic aluminum and ethylene sectors by 9.0 percent, 4.7 percent and 4.9 percent respectively compared to ten years ago.

China has vigorously promoted the comprehensive utilization of industrial solid waste, phasing out outdated production processes and equipments with highly polluting industrial solid wastes within prescribed time limits while actively popularizing applicable advanced techniques and equipment conducive to the comprehensive utilization of industrial resources. China constantly increased the recycling and utilization of renewable resources, rolling out the industry specifications on waste paper processing and releasing the list of 309 compliance enterprises in waste steel and waste plastics. China has pushed ahead with the life-cycle traceability management on power batteries, building up a full-fledged network of more than 10,000 used battery

recycling stations. China strengthened the demand-side management in the industrial sector, recognizing demonstration enterprises (or industrial parks) in demand-side management in the power sector, supporting power management improvement and demand-side responsiveness enhancement and optimizing power resource allocation.

China has rolled out the program for green industrial development, implemented the action plan for improving industrial energy efficiency, and planned and launched energy-saving and carbon-reduction technological transformations at enterprises in key sectors, including iron&steel, nonferrous metals, building materials and petrochemicals. In 2021, the energy consumption per unit added value at industrial firms above the designated size dropped by 5.6 percent.

Accelerating the improvement of building energy efficiency. China has formulated and issued a development plan for energy-conserving and green buildings and pushed ahead with the national standards for energy–efficiency buildings and renewable energy utilization. By the end of 2021, China had increased the usable floor area of solar and shallow geothermal energy-powered heating in urban buildings to 5.07 billion square meters and 470 million square meters respectively, the usable installed capacity of photovoltaic power generation in urban buildings to 18.16 million kW, the replacement rate of renewable energy in civic buildings to 6.0 percent, the share of energy-saving civil buildings in the total to over 63.7 percent, and the cumulative floor area of ultra-low and near-zero energy consumption buildings to over 13.9 million square meters. China has steadily pushed ahead with the energy-saving reconstruction of residential buildings in northern heating areas and hot-summer and cold-winter areas, completing the energy-saving

renovation of 1.6 billion square meters of residential buildings and the green construction of 8.5 billion square meters of new buildings, and encouraged energy-saving renovation while earthquake-resistant retrofitting and dilapidated housing reconstruction in northern rural China, improving the energy efficiency and reducing energy consumption and heating expenses while ensuring housing safety.

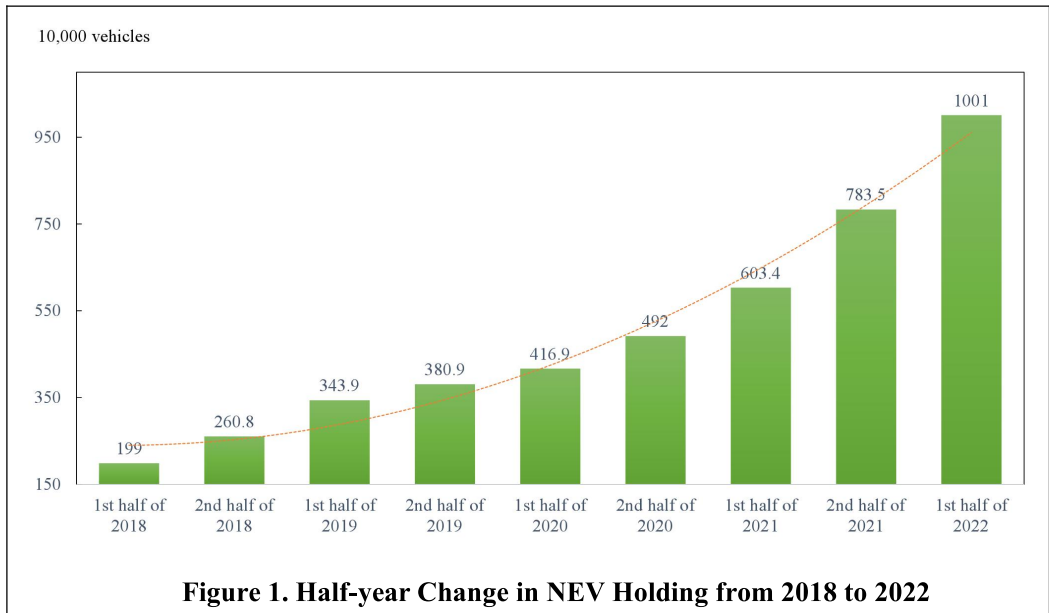
Building up a green and low-carbon integrated transport system. China has actively popularized energy-saving and low-carbon vehicles and maintained the rapid growth of the new-energy vehicle sector, increasing its cumulative sales of new energy vehicles to more than 10 million units, the nationwide adoption of new-energy buses to over 71 percent and the penetration rate of shore power facilities for five categories of specialized berths to 75 percent. China has given priority to LNG-powered ships in passing through the Three Gorges ship lock, built initially an LNG refilling system for ships on the main Yangtze River routes, and built more than 310 LNG-powered inland ships. China has pushed ahead with the electrification transformation of existing railways to lower the energy consumption of railway transport, increased its railway electrification rate to 73.3 percent in 2021, and reduced its overall energy consumption per unit railways transport workload by 3.9 percent from the previous year.

China has implemented a green development program for civil aviation and continued to support the rapid development of airport electrification at industrial entities. By the end of 2021, China increased the share of electric vehicles at airports to 21 percent, especially with the adoption of EVs at Beijing Daxing International Airport standing near 80 percent, and both the installation rate and utilization rate of alternative devices to aircraft auxiliary

power units (APU) at airports with an annual passenger throughput of 5 million or more to 95 percent, and saved about 640,000 tonnes of aviation fuel since 2018. China has accelerated the shift away from road transportation of cargo to the railway and waterway modes. In 2021, China transported 4.774 billion tonnes of freight by railway, posting a 4.9 percent increase year on year; 15.545 billion tonnes by waterway, posting a 6.8 percent increase year on year, and 7.54 million TEUs through rail-water transportation, posting a 9.8 percent increase year on year. China has fully implemented the strategy of prioritizing urban public transport, further developed accessible public transport cities across the country, actively advocated for green travel, and constantly improved the experience of green travel. China has accelerated the development of green transportation infrastructure and has deployed 2.617 million charging infrastructures and more than 200 hydrogen refueling stations.

New-energy Vehicle is Driving into the Fast Lane

By the end of June 2022, China had 10.01 million new-energy vehicles (NEV), accounting for 3.23 percent of the total, and of which, 8.104 million were pure electric vehicles, accounting for 80.93 percent of the total NEV holding. In the first half of 2022 alone, China registered 2.209 million NEVs, posting a 100.26 percent increase year on year. In 2021, more than 3.5 million NEVs were sold in China, seeing its market share skyrocket to 13.4 percent from 5.4 percent in 2020 and becoming the best performer in the broader automobile sector. Its rising popularity signals the shift of the sector from being policy-pushed to being market-pulled.



Requiring public institutions to play the leading role in green and low-carbon actions. In 2021, 28 regions across the country articulated special plans for energy conservation for public institutions during the 14th Five-Year Plan period, and 16 regions rolled out their implementation schemes for encouraging public institutions to play the leading role in the low-carbon development campaign. China saw its energy consumption per unit of floor area, the per capita overall energy consumption and the per capita water consumption at public institutions fall by 1.14 percent, 1.32 percent and 1.30 percent year on year respectively in 2021. As of June 2021, about 35 percent of the party and government organs at the county level or above and all the central and state organs were qualified as energy conservation-oriented organs, 5,114 public institutions the demonstration entities in energy efficiency and 376 public institutions the leaders in energy efficiency.

Fully improving energy-saving management ability. China has imposed

strict energy efficiency control, pushed ahead with energy conservation and carbon reduction in key industries in an orderly and progressive manner, strengthened special supervision on industrial energy conservation, coordinatedly promoted supervision on energy conservation in key industries, and improved the supervision system of energy conservation and carbon reduction in key industries. China has rolled out the *Comprehensive Work Plan on Energy Conservation and Emission Reduction during the 14th Five-Year Plan Period*, calling for strengthening the basic capacity building in energy conservation, reinforcing energy conservation management in key areas and key energy-consuming units, strictly conducting energy conservation reviews over fixed asset investment projects, enhancing inspection and law enforcement of energy conservation, organizing and implementing key projects of energy conservation and carbon reduction, and expediting the improvement of the energy conservation standard system.

Energy Conservation and Carbon Reduction in New Infrastructure

Data centers and 5G networks are the most critical links in new infrastructure for energy conservation and consumption reduction. It is estimated that 5.436 million racks at data centers in 2021 (up by 27 percent year on year) used 2.6 percent of the total electricity power in the whole society. Despite explosive growth in information flows and communications services during the 13th Five-Year Plan period, the overall electricity consumption in the telecommunication sector stabilized at about 1 percent of the total electricity consumption of the whole society, and the average annual decline of energy consumption per unit of telecommunication services and information traffic remained above 20 percent.

A series of special actions have facilitated the low-carbon-oriented transformation of new infrastructure. In July 2021, China initiated the three-year action plan for developing

new-type data centers and all provinces set higher energy-saving indicators and demanding requirements for new facilities at data centers. In December 2021, China implemented the implementation plan for promoting the green and high-quality development of new infrastructure, including data centers and 5G networks, to improve the utilization rate and the PUE of data centers and the energy efficiency of 5G base stations. The *Notice on Developing National Computing Hub Nodes in Eight Key Areas* issued in February 2022 outlines the plans for 10 national data center clusters, marking the overall start of the initiative to channel computing resources from the east to the west. Now, 153 national green data centers in three batches have been set up, and the first national zero-carbon 5G base stations in Zhoushan Islands have gone into trial operation. These base stations operate at night and in bad weather on the stored surplus energy from solar and wind power generation during their normal operation, thus producing zero emissions. Right now, more than 20,000 sets are operating across the country, saving more than 20 million kWh of electricity per year.

2.4 Controlling Non-Carbon Dioxide GHG Emissions

Starting with major emission sources, such as energy, agriculture and wastes, China has taken actions on controlling non-Carbon dioxide greenhouse gas emissions, improved related policies, standards and technical specifications, and strengthened the methane control measures at enterprises in sectors and regions. Now, China is working on the *Action Plan for Controlling Methane Emissions*.

Energy Sector: China has encouraged the recovery and utilization of coal bed methane (coal mine gas), increased the collection and utilization of vent gas and oilfield-associated gas, set up the methane emission control alliance among Chinese oil and gas enterprises to explore methane recycling and

detection approaches, phased out sulfur hexafluoride power grids and populated power facilities with energy conservation and low warming potential.

Agricultural Sector: China has explored new farming modes to reduce and recycle farming waste. China has developed innovative rice cultivation techniques of straw composting, high yield and less methane emission, increasing the rice yield by 4.1 - 8.8 percent and the nitrogen utilization efficiency by 30.2 - 36.0 percent and reducing the production cost by 8.3 - 9.7 percent and the methane emission by 31.5 - 71.7 percent, and cultivated and popularized varieties of water-saving and drought-resistant rice, reducing the methane emission per mu (one *mu* is around 666.67m²) of paddy fields by 90 - 95 percent and increasing the cultivated area to over 200,000 *ha* in Anhui, Hubei, Zhejiang, Hainan and other provinces. China has applied more cost-effective fertilizers to reduce nitrous oxide emissions, reducing the net fertilizer usage by 12.3 percent in 2020 compared with 2016 and increasing the farming area of soil testing and formula fertilization by 17.7 percent from the 2015 level to 128.67 million *ha*. In 2021, China promoted the recycling of livestock and poultry waste in 96 counties to reduce the emissions of non-Carbon dioxide greenhouse gases.

Waste Treatment Sector: China has rolled out the *Implementation Scheme for Household Waste Sorting* vigorously advanced household waste sorting management in a steady and orderly manner in 297 cities at the prefecture level or above, and launched the “building zero-waste cities” initiative in 113 cities and eight regions, increasing the average coverage rate of waste sorting management to 77 percent of residential compounds, expanding the sorting transport vehicle fleet to 66,000 units and enhancing the sorting transport

capacity. China has promoted institutional and technological innovation and constantly enhanced the harmless treatment and recycling of household waste. In 2021, China basically achieved the harmless treatment of household waste, with 297 cities at the prefecture level or above treating harmlessly 514,000 tonnes of household waste every day.

Policies for Methane Control

The Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Long-Range Objectives through the Year of 2035 of the People's Republic of China issued in March 2021 requires that further efforts are made to control methane, hydrofluorocarbons, perfluorocarbons, and other greenhouse gases.

Working Guidance For Carbon Dioxide Peaking And Carbon Neutrality In Full And Faithful Implementation Of The New Development Philosophy issued on September 22, 2021 requires that further efforts are made to control methane, hydrofluorocarbons, perfluorocarbons, and other greenhouse gases.

The Opinions of the CPC Central Committee and the State Council on Winning the Battle against Pollution issued on November 2, 2021 requires that further efforts are made to control methane, hydrofluorocarbons, perfluorocarbons, and other greenhouse gases.

The Opinions on Deepening the Reform of Ecological Protection Compensation Mechanism issued on September 12, 2021 requires that voluntary greenhouse gas emission reduction items, including methane utilization, are listed on the China Carbon Emission Trade Exchange.

The 14th Five-Year Plan for a Modern Energy System issued on January 29, 2022 requires that further efforts are made to increase the recovery and utilization of methane in oil and gas fields.

The Implementation Plan of Emission Reduction and Carbon Sequestration in Agriculture and Rural Areas issued on May 7, 2022 outlines key tasks in planting, animal husbandry and fishery, including reducing methane emissions from rice fields, reducing the intensity of methane emissions from ruminants' intestines, and reducing methane and nitrous oxide emissions from livestock and poultry manure management, and prioritizes methane emission reduction in rice fields in ten major actions to promote emission reduction and carbon sequestration in agriculture and rural areas.

Now, China is working on the *Action Plan for Controlling Methane Emissions* in accordance with the *Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Long-Range Objectives through the Year of 2035 of the People's Republic of China* and the *Working Guidance For Carbon Dioxide Peaking And Carbon Neutrality In Full And Faithful Implementation Of The New Development Philosophy*.

Industrial Sector: the *Kigali Amendment to the Montreal Protocol on Ozone-depleting Substances* came into force in China on September 15, 2021 (temporarily inapplicable to the Hong Kong Special Administrative Region). In 2021, China issued *the List of Controlled Ozone-depleting Substances in China*, covering hydrofluorocarbons, and the *Catalogue of Ozone-depleting Substances Controlled for Import and Export in China* (the *Catalogue*) and implemented the import and export licensing control on the hydrofluorocarbons as listed in the *Catalogue* since November 1, 2021. According to related provisions, China has strengthened the control of hydrofluorocarbon emissions, requiring that the projects involving HFC chemicals are strictly controlled, their environmental management is strengthened and the direct discharge of their by-product trifluoromethane is prohibited.

Hydrofluorocarbons Emission Control

To implement the *Kigali Amendment to the Montreal Protocol on Ozone-depleting Substances*, in 2021, the Ministry of Ecology and Environment issued a series of guidelines, including the *Notice on Controlling By-product Trifluoromethane Emissions* and the *Notice on Strictly Controlling the First Projects Involving Hydrofluorocarbons Chemicals*, to strengthen the control of the emissions of hydrofluorocarbon chemicals including trifluoromethane, strictly control the projects involving HFC chemicals, and enhance their environmental management.

HFC-23, a by-product from HCFC-22 or HFC production, shall not be directly discharged as from September 15, 2021 and is required to be destroyed or disposed of, if possible, with the techniques approved at the Conference of the Parties to the *Montreal Protocol on Ozone-depleting Substances*. Related enterprises shall establish and keep the records of HFC-23 by-product facilities and related disposal facilities, strengthen their HFC-23 discharge management, prevent its leakage and discharge, and be subject to inspection and supervision from competent authorities of ecology and environment.

Approvals shall not be given as from January 1, 2022 to the construction or expansion of the production facilities for controlled HFCs, including refrigerants and foaming agents, as set forth in the Schedule (excl. by-product facilities), providing, however, that their environmental impact statements (reports) have been approved, and the production capacities and/or product categories of such HFCs shall not be expanded for any reconstructed or relocated facilities.

2.5 Enhancing the Carbon Sink Capacity of Ecosystems

Enhancing the carbon sink capacities of forests and grasslands. In 2021, China cultivated 2.31 million *ha* of forest, restored 0.93 million *ha* of

degraded forest and planted 3.6 million *ha* of new forest, reducing the incidence of forest fires, the acreage of damaged forests and the acreage of damaged grasslands by 47 percent, 50 percent and 62 percent compared to the previous year respectively. In addition, China reclaimed 1.44 million *ha* of desertification and stony desertification land, added nine national closing-off zones against land desertification, assigned the tasks of afforestation to specific counties for the first time, designated the areas for afforestation, and continuously improved the national park-predominated system of protected nature areas. In 2021, China built up 193 “national forestry cities”, increased the greening coverage in urban built-up areas across the country to 42.4 percent, further improved its living environment, and expanded the overall vegetation coverage in grasslands to 50.32 percent. In 2022, China announced its action objective of “striving to plant, conserve and restore 70 billion trees within 10 years”.

Enhancing the carbon sink capacities of wetlands. China has set ecological conservation red lines, covering most typical terrestrial natural ecosystems, such as natural forests, grasslands and wetlands, and typical marine natural ecosystems, such as mangroves, coral reefs and seagrass beds, to further consolidate the national ecological security and stabilize the carbon sequestration of ecosystems. In 2021, China increased its national wetland conservation rate to 52.65 percent, created and restored 72,670 million *ha* of wetlands, rolled out the industry standard: the *Guidance on Karst Carbon Cycle Investigation and Carbon Sink Effect Evaluation*, embarked on the construction of the Karst carbon sink testing field at the UNESCO International Center for Karst Research and carried out the investigation and evaluation of karst carbon sinks in typical watersheds in southwest China.

Enhancing the carbon sink capacities of farmlands. China makes overall plans to promote farmland construction, strengthens planning and guidance, increases policy support, supports the designation of permanent basic cropland reserves, functional zones for grain production and protective areas for the production of major agricultural products, and focuses on developing high-quality farmlands. *The Implementation Plan for National Chernozem Soil Conservation Program (2021-2025)* focuses on grappling with tackling the issue of thinning, nutrient depletion and soil hardening of chernozem soil layers. In 2021, China put under conservation more than 6.67 million *ha* of farming lands in typical chernozem soil regions in northeast China, including 4.8 million *ha* of conservation farming areas, launched the initiative of comprehensive straw utilization in 401 counties, feeding back over 400 million tonnes of straw in some 73.34 million *ha* of field nationwide, and invested CNY 2 billion of special funds from the central government in bettering subsoils in 8.07 million *ha* of farmland.

Enhancing the carbon sink capacities of waters. China has issued the technical specifications for surveying and assessing the carbon sink capacities of mangroves, coastal salt marshes and seagrass beds, and conducted carbon storage surveys in 16 pilot areas. In addition, China has also published the *Mangrove Ecological Restoration Manual*, conducted regular monitoring of ocean acidification and ocean air-sea carbon dioxide flux, including the monitoring of anoxic areas in the Yangtze River estuary and the Pearl River estuary, experimented with marine carbon sink trading, and established 136 national marine pasture demonstration zones to boost marine carbon sequestration.

2.6 Increasing Synergy between Reducing Pollution and Bringing Down Carbon Dioxide Emissions

Formulating policies on the synergy between reducing pollution and bringing down carbon emissions. A significant improve in the ecological environment and the achievement of carbon dioxide peaking and carbon neutrality are two strategic challenges at the same time for China, whereas synergy between reducing pollution and bringing down carbon emissions is the critical starting point for achieving the goals of carbon dioxide peaking and carbon neutrality and promoting the comprehensive green transformation of economic and social development. The *Implementation Plan for Synergizing Reduction of Pollution and Carbon Emission* enacted in June 2022 under the “1+N” policy framework proposes to strengthen the source treatments, such as ecological environment zoning control, enhance the implementation of pollution and carbon reduction in key areas, such as industry, transport and urban and rural construction, reinforce the synergy from environmental pollution control measures of air, water, soil and solid waste and carbon reduction measures to improve environmental quality, and encourage key regions, cities, parks and enterprises to play the innovation and demonstration role in synergizing reducing pollution and bringing down carbon emissions. By maximizing the synergy between reducing pollution and bringing down carbon emissions in the whole process of “source - process – end”, China has fully improved its comprehensive efficiency of environmental governance and achieved environmental benefits, climate benefits and economic benefits.

Promoting the implementation of synergizing between reducing pollution and bringing down carbon emissions. Over the three years of implementing the *Three-year Action Plan to Fight for a Bluer Sky*, China managed to reduce

the nationwide emission of sulfur dioxide, nitrogen oxides and primary PM_{2.5} by about 3.67 million tonnes, 2.1 million tonnes and 1.25 million tonnes, respectively, and the cumulative emission of carbon dioxide by 510 million tonnes. Focusing on the Beijing-Tianjin-Hebei Region and its surrounding areas as well as the Fenwei Plain, China continued to promote clean heating in northern China, and took targeted approaches to reduce the use of low-quality coal while securing heating in winter for residents, thus phasing out the low-quality coal of more than 60 million tonnes for 27 million households by the end of 2021. China has vigorously built regional recycled water systems, increasing sewage recycling and synergy between reducing pollution and bringing down carbon emissions and launched the initiatives, such as “building zero-waste cities” and “building demonstration counties of clear waters and green mountains being invaluable assets”, laying a sound foundation for reduced pollution and carbon emission at the city level. China has strengthened coordinated planning for climate change and ecological environment protection, established systems and mechanisms of unified planning, unified arrangement, unified implementation and unified appraisal in light of the concept of carbon reduction being key to tackling pollution at the root source, piloted the coordinated management of the “3 line-plus-1 list” (the red line for ecological conservation, the bottom line for environmental quality, the upper line for resource utilization and the list for ecological and environmental compliance) in 16 cities, made the overall consideration of climate change factors while analyzing ecological and environmental implications of 17 pilot policies, gleaned the experiences in optimizing development paradigms, synergizing reducing pollution and bringing down carbon emissions and improving environmental management from seven pilot industrial parks to build replicable and propagable cases, and explored technical methods and management approaches for coordinated management

of reduced pollution and carbon emissions in key industries and sectors in nine pilot provinces. In addition, China has also optimized the function of the national information platform for pollutant discharge permit management to facilitate the unified collection, mutual complementation and cross-check of related data at pollutant and GHG dischargers.

2.7 Deepening Pilot and Demonstration Programs

China has carried out low-carbon pilot and demonstration programs in energy, industry, construction, transport and finance. China has since 2010 launched low-carbon pilot projects in six provinces and 81 cities (scattered across 31 provinces and the five independently planned municipalities) and seen the carbon intensities in these pilot provinces and cities fall faster than the nationwide average level. China has built a flexible DC power grid, the first in the world, contributing to powering all the Winter Olympics venues with clean and green energies, and has efficiently and smoothly operated a PEDF (photovoltaic, energy storage, direct current and flexibility) facility, the first across the globe, for one year at Zhongjian Green Industrial Park in Shenzhen-Shantou Special Cooperation Zone. Quzhou City in Zhejiang Province is spearheading digital carbon control, having established carbon accounts for 2.342 million enterprises and individuals and innovatively launched carbon account financial products. By June 2022, 27 financial institutions in the city took part in the pilot program of financial application scenarios of carbon accounts and lent carbon account loans of CNY 19.5 billion.

3. Adapting to Climate Change

China has proactively adapted to climate change. China has enacted and implemented the *National Strategy for Climate Change Adaptation 2035*, incorporated climate change adaptation into its overall plan for economic and social development, strengthened the monitoring, early warning and risk management of climate change, enhanced the capabilities of its natural ecological system and economic and social system in adapting to climate change, and reinforced the climate resilience of key vulnerable areas. Thanks to these efforts, China has achieved positive results in climate change adaptation.

3.1 Strengthening Climate Change Monitoring, Early Warning and Risk Management

Strengthening monitoring, forecasting, early warning and impact risk assessment and enhancing the capabilities in climate risk management.

China has actively worked on the selection of national observation stations and the layout design for the greenhouse gas observation network, accelerated the IT applications in natural disaster monitoring and early warning, expedited various application systems of comprehensive monitoring and early warning of natural disasters, and constantly improved the IT applications in disaster monitoring and early warning, consultation and evaluation, emergency command and dispatch, etc., developed the long time series disaster database of regional meteorological disasters such as drought, rainstorm, high temperature, dust, typhoon, snow disaster, and low-temperature freezing

damage, pushed ahead with the development of the risk census database, and completed the national meteorological hazard zoning and risk zoning. China has carried out the first national comprehensive risk census of natural disasters in an orderly manner, identifying the tasks of national census and survey, zoning pilot evaluation areas and establishing and improving the operation and technology systems, technical specification system and institutional system.

China has explored and deployed inter-departmental early warning information release centers, multi-disaster early warning systems and risk management operation systems in urban areas and meteorological disaster monitoring, early warning and emergency response systems in rural areas. China has strengthened multi-factor monitoring and risk assessment in areas vulnerable or sensitive to climate change, constantly been improving the layout of monitoring networks in forest, hydrology, ocean, ecological environment, health and other fields, established offshore and South China Sea observation networks, island and offshore hydrometeorological monitoring networks, the Yellow Sea and the Bohai Sea observation networks. A ministry-province-city-county disaster information dispatching system covering the whole country has been developed, and agriculture-meteorology consultation mechanism has been improved, enhancing capability in agricultural disaster risk prevention and early warning. China has instituted a long-term mechanism for emergency broadcasting and initially laid out a nationwide emergency broadcasting system framework throughout all levels from the state, provinces, cities, counties and townships to villages for increasing capability to release and receive early warning information of extreme meteorological disasters, secondary and derivative disasters. Likewise, China has also set up a geological disaster monitoring, early warning and forecasting system, improved its nationwide monitoring and prevention system

throughout four levels from counties, townships and villages to teams, institutionalized meteorological early warnings on geological disasters, largely covering all mid/high risk-prone areas.

Strengthening the capabilities in disaster prevention and mitigation and climate change adaptation. China has promulgated and implemented the *National Disaster Prevention and Mitigation Plan during the 14th Five-Year Plan Period*, revised the *National Emergency Plan for Natural Disaster Relief* and the *National Emergency Plan for Flood Control and Drought Relief*, arranged and implemented major projects of comprehensive disaster prevention and mitigation while adapting to climate change, established and improved a linkage mechanism of early warning and emergency response. Focusing on the weak links of flood control, such as rivers, tributaries, vulnerable reservoirs and mountain torrents, China improved its capability in flood control and disaster reduction, made an all-out response to severe flood and drought disasters, enhanced its capability in preventing and tackling marine disasters, continuously strengthened the risk management and adaptation to meteorological disasters, and reinforced the comprehensive prevention and control of geological disasters. China has established and improved a linkage mechanism of disaster prevention and mitigation in key river basins, facilitated the capacity building in disaster prevention and mitigation at the grass-roots level, launched the initiative of building national demonstration communities for comprehensive disaster reduction, and actively promoted the development of disaster information officer teams at the grass-roots level. By the end of 2021, a five-level disaster information officer system of provinces, cities, counties, townships and villages has been built, with a total of nearly one million members. In addition, China has also optimized the distribution of reserved disaster relief goods and materials at

both the national and local levels and improved the IT applications in emergency materials support. For instance, right now, national authorities operate 12 reserve warehouses of forest and grassland fire-fighting materials, 46 of flood control and drought relief materials, and 56 of daily relief supplies.

3.2 Improving the Capability of Natural Ecosystems in Climate Change Adaptation

China takes a holistic and systematic approach to the conservation and management of mountains, rivers, forests, farmlands, lakes, grasslands, and sandylands, optimizing national ecological security barriers. For example, it launched 10 integrated conservation and restoration programs in 2021. China deploys a coordinated arrangement of various efforts to enhance land and sea climate change adaptation, explores Nature-based Solutions, and seeks to fully improve adaptation of the natural ecosystem focusing on: water resource, terrestrial, marine and coastal ecosystems.

Improving the capability of water resource in climate change adaptation.

China has quickened its water infrastructure development, launching 62 major water conservancy projects, completing 20 major watercourse conservancy projects, harnessing 11,000 kilometers of rivers, dredging 175 main gullies, and clearing up 11,000 prominent problems hindering flood discharge, thus effectively improving the water security in basin areas. China has implemented a series of water resource allocation and water source projects to enhance the capabilities in water supply security and emergency drought relief in urban and rural regions. China has intensified the conservation and management of water resources, comprehensively promoted the national water-saving campaign, and established an inter-ministerial coordination

mechanism for water conservation actions. China set the national and provincial targets for the volume and intensity of water consumption during the 14th Five-Year Plan period, promulgated the *Code of Conduct for Residents to Save Water*, issued and implemented 1,966 national and provincial water quotas, added 478 counties/districts that have met water-saving standards in the fourth national campaign of building a water-saving society, 262 water-saving universities and 1,914 water-saving entities in water conservancy sector, and recognized 168 leaders of water efficiency in the public institution sector and 15 leaders in the irrigation sector. China has intensified the conservation and management of the water ecology, and continuously advanced the comprehensive management of groundwater overexploitation in northern China, resulting in an overall rise of the groundwater levels in target areas. China has also implemented many national key water and soil conservation projects, including integrated control and management of small watersheds, sloping farmlands, vulnerable dams, check dams and silt arresters, expanded the acreage of controlled soil erosion lands to 63,600 square kilometers, and largely accomplished the target of building an ecology-friendly countryside in the first 55 pilot counties, significantly improving the ecological environment of rural rivers and lakes.

Improving the capability of forest and other terrestrial ecosystems in climate change adaptation. China has intensified efforts to conserve and restore resources, formulated and implemented the *Master Plan on Major Projects for the Conservation and Restoration of National Key Ecosystems (2021-2035)*, evaluated the implementation effects of grassland ecological restoration projects, popularized no-tillage seeding techniques and improved 3.07 million *ha* of grasslands by planting grass in 2021. China launched the five-year campaign against pine wilt disease, increasing the acreages of pest

control in forestlands and grasslands to 10 million *ha* and 13.73 million *ha* respectively, and pushed ahead with wetland conservation and restoration, implementing a series of relevant programs, such as ecological benefit compensation and subsidy for conserved wetlands and conversion of farming lands to wetlands.

Improving the capability of coastal zones and coastal ecosystems in climate change adaptation. China has implemented risk assessment projects on sea level rise, rolled out a series of technical standards for risk assessment, carried out the attribution research and prediction of global and regional sea level changes, enhanced the adaptation of coastal erosion areas to climate change, particularly, implemented *the Special Action Plan for Mangrove Conservation and Restoration (2020-2025)*, and issue the China Sea Level Bulletins and the China Marine Disaster Bulletins every year. China has implemented 31 marine ecological conservation and restoration projects for blue carbon ecosystems, including mangroves, salt marshes and seagrass beds, and launched the “Blue Bay” remediation action in coastal cities. In addition, China has strictly controlled and regulated coastal reclamation activities, launched the demonstration initiative of “Building Harmonious and Beautiful Islands”, strengthened the conservation and restoration of coastal zones, and promoted the economical, intensive, scientific and reasonable use of marine resources in offshore wind power projects.

3.3 Strengthening the Capability of Economic and Social Systems in Climate Change Adaptation

In order to prevent the spread of climate risks between natural ecosystems and economic and social systems, China has striven to enhance the resilience of

economic and social systems by prioritizing key sectors sensitive to climate change, following the philosophy of treating with mitigation, adaptation and sustainable development in an overall and balanced way.

Strengthening the capability of the agricultural sector in climate change adaptation. China promoted the development of high-quality farmlands, and in 2020, cultivated 7.03 million *ha* of high-quality farmlands of stable and high yields and high drought/flood resistance, and developed 1.88 million *ha* of high-efficient water-saving irrigation areas. China has continued to enhance the climate resilience of agricultural ecosystems, adhere to the principle of ecological priority in agricultural development, strengthen soil and water conservation and ecological protection, popularize reasonable intercropping and undercropping systems, encourage the adoption of cost-effective pesticides and promote the technologies integrating prevention, management and green control. In 2020, China increased its utilization rate of pesticides to 40.6 percent, expanded its eco-friendly farming area to nearly 66.67 million *ha*, and increased its coverage of green pest and disease prevention and control with main crops to more than 41.5 percent. China also takes proactive measures to prevent and control alien invasive species and protects its agricultural biodiversity.

Strengthening the capability of urban areas in climate change adaptation. China has pushed ahead with the program of “Building Climate Resilient Cities” in 28 pilot cities, actively explored the region-specific management modes, and progressively popularized the experience of “Building Sponge Cities” in 30 pilot cities to another 45 demonstration cities since 2021, systematically promoting demonstration sponge city construction, China has promulgated the *Implementing Opinions of the General Office of the State*

Council on Strengthening Urban Waterlogging Control and the *Action Plan for Urban Drainage and Waterlogging Control in the 14th Five-Year Plan* to improve urban flood control and drainage systems, and established an urban “health examination and assessment” system, incorporating urban safety and resilience into the urban “health examination and assessment” indicator system, to promote the transformation into low-carbon and resilient cities. China has also promoted urban landscaping and has built some 80,000 kilometers of greenways and 220,000 urban parks, enhancing the ecological resilience and livability of cities and effectively improving urban and rural ecology and living environments.

Strengthening the capability of the human health sector in climate change adaptation. China has given great importance to health impact monitoring and response and conducts continuous monitoring and risk assessment of the impacts of air pollution (haze) on human health. It operates 167 monitoring stations in 87 cities in 31 provinces, researches the impacts of extreme weather events on human health and the impacts of climate change on parasitic disease spreads, conducts special surveys on climate-sensitive diseases among regional populations, and explores strategies, tactics and technologies of assessing health risks of climate change.

3.4 Improving the Climate Resilience of Key Vulnerable Areas

Developing regional patterns in climate change adaptation. According to natural resource distribution, resource and environmental affordability and climate adaptability of regions and in light of requirements of economic and social development, China has worked out and implemented the

regionally-differentiated national spatial plans, strengthened the assessment of climate resources, climate changes and climate risks, and made an overall layout of functional zones in a scientific and orderly approach, such as agricultural production, ecological conservation and urban development, to enhance the adaptability of major functional zones to climate change, strengthening resilience of and space security. China has conducted regional climate risk assessment, establishes demonstration zones, and plans and implements key demonstration projects. Under the guidance of the national major regional development strategies, China has weaved its climate change adaptation strategy into national major regional development strategies, including the Coordinated Development of the Beijing-Tianjin-Hebei Region, the Yangtze River Economic Belt, the Guangdong-Hong Kong-Macao Greater Bay Area, the Integrated Development of the Yangtze River Delta and the Ecological Conservation and High-quality Development of the Yellow River Basin, and constantly stepped up its efforts in enhancing climate change adaptation in key vulnerable areas, including the Qinghai-Tibet Plateau, thus forging a regionally coordinated and balanced dynamic of climate change adaptation.

Qinghai-Tibet Plateau's Adaptation to Climate Change

Since the 1960s, the climate on the Qinghai-Tibet Plateau has been becoming warmer and wetter, resulting in more abundant vegetation but also more extreme weather, more frequent extreme climate events and more secondary disasters. Over recent years, China has launched multiple actions to adapt to climate change on the Qinghai-Tibet Plateau, including adding observation stations of plateau glacier and frozen soil to monitor and forecast glacial lake outburst flood; strengthening the network of natural conservation areas (incl. Sanjiangyuan National Park) to comprehensively conserve the ecosystems of mountains, rivers, forests, farmlands, lakes and grasslands; implementing grassland

conservation and development projects, such as conversion of grazing lands into grasslands, to effectively mitigate the degradation of alpine grasslands; demonstrating and popularizing climate-change-resilient ecological restoration techniques, such as ecological reseeded and photovoltaic sprinkler irrigation on degraded grasslands, to effectively mitigate the adverse effects of seasonal drought; intensifying ground temperature monitoring to forestall the impacts of climate change on major facilities and projects, such as the Qinghai-Tibet Railway; and taking adaptive engineering measures to reduce frozen soil degradation and ensure the stability of frozen soil bases and sub-bases based on predicted warming profiles of the Qinghai-Tibet Plateau and areas along railways and major roads.

In 2021, *the Plan for Strengthening Climate Change Work in the Qinghai-Tibet Plateau (2021-2025)* issued by China Meteorological Administration identifies 12 work priorities, including comprehensive climate observation and IT application, the capability building in risk identification and early warning of extreme climate events, the reasonable utilization of climate resources and ecological restoration support, the capability building of supporting technological innovations, and science popularization on climate change.

The *National Climate Change Adaptation Strategy 2035* released in June 2022 also articulates a series of actions and tasks specific to the Qinghai-Tibet Plateau region: to strengthen the monitoring of the plateau climate profile and ecological environments, strengthen the monitoring, early warning and emergency response to ecological, ice and snow disasters and geological disasters in water sources, strengthen climate risk assessment and meteorological support services to forestall the shallowing and unstabilization of frozen soil and frequenter disasters, and adjust the layout and technical standards of major projects and infrastructure to ensure their safe operation; to improve the ecological conservation systems on the plateau, build ecological corridors, improve the habitat environments for rare animals, and conserve the plateau biodiversity and the Tibetan ecological and cultural heritage; to strengthen the conservation of alpine

grasslands and the assessment of the climate carrying capacity and determine the livestock based on the carrying capacity of grasslands; to improve the stand structure, prevent and control forest fires, pests and rodents, and comprehensively control land desertification and grassland degradation; to adjust the layout of crops and varieties, moderately expand the planting scales and irrigation areas in valley plains; and to moderately develop ecotourism and ethnic cultural tourism, promote adaptive technologies in climate-sensitive industries, increase income-generating channels for farmers and herdsmen, speed up urbanization and develop the railway economic belt.

4. Improving Policy Systems and Support

Since 2021, the Chinese government has continuously improved its policy systems and support for climate change, and achieved positive results in all aspects, including legislation, standards, economic policies, development of the national carbon emission trading market (national carbon market), technological innovation, personnel training, capacity building, and national green and low-carbon actions.

4.1 Promoting Legislation and Standard Formulation

China has accelerated climate change legislation, pushed forward research and establishment of the legal framework on climate change response; carried out the special demonstration of incorporating greenhouse gas control into environmental impact assessment and the research of proposals for amending the *Law on Environmental Impact Assessment*; revised and issued the

Technical Guidelines for Planning Environmental Impact Assessment - Industrial Parks and instituted the evaluation requirements oriented toward reduced pollution and carbon emissions; actively advanced the legislative process of the *Provisional Regulations on the Administration of Carbon Emission Trading* to further improve the legislative support of the national carbon market; encouraged and promoted local governments to formulate relevant local rules and regulations. For example, the separate Chapter: Respond to Climate Change in Shenzhen's *Regulations of Shenzhen Special Economic Zone on Ecological Environmental Protection* makes institutional arrangements for climate change response and greenhouse gas emission reduction. China promoted the revision of the *Management of Ozone-Depleting Substances* to incorporate HFCs and other greenhouse-effective ozone-depleting substances into the environmental protection control system. In addition, China has continuously improved its standard system of climate change response to enhance the alignment and integration of new and existing standards and norms; approved two national carbon emission-related measurement benchmarks and 57 carbon emission-related measurement standards and developed 229 carbon emission-related standardized substances; and approved and issued multiple national standards in the fields of energy conservation, high-standard farmland and ecological conservation and restoration. The first national carbon measurement center has been approved for preparation.

4.2 Improving Economic Policies

Developing green finance. China has established and improved the system of standards for green finance, and issued and implemented the *Green Bond-endorsed Projects (2021 Edition)* to promote green bonds to be

domestically unified and internationally harmonized. China has gradually improved its incentive and constraint mechanism, carried out green financial evaluations, developed lending facilities for carbon reduction, and guided financial institutions to provide carbon reduction loans according to the principle of independent decision-making and risk-taking to enterprises in key sectors, such as clean energy, energy conservation and environmental protection, and carbon emission reduction technologies. By the end of 2021, China provided refinancing funds of CNY 85.5 billion through carbon-reduction facilities, and lent eligible carbon reduction loans of CNY 142.5 billion through financial institutions, contributing to annual the carbon emission reduction by about 28.76 million metric tonnes of carbon dioxide equivalent. China has improved the law-based disclosure system of environmental information, reinforced information disclosure requirements and financial institution regulation, constantly diversified green financial products and market systems, promoted green credit to develop steadily, facilitated the expansion of the green bond market, innovatively introduced financial products such as carbon-neutral bonds and sustainability-linked bonds, and promoted financial institutions to carry out carbon financial innovation. By the end of 2021, the balance of green loans of financial institutions reached CNY 15.9 trillion, up by 33 percent year on year. Among them, the balance of loans for clean energy industries, including wind and photovoltaic power generation was CNY 4.2 trillion and the balance of onshore green bonds was CNY 1.1 trillion, up by 31.7 percent and 33.2 percent year on year respectively. In 2021, various entities issued carbon-neutral bonds totaling CNY 274.3 billion. Intensified efforts were put into the work of climate investment and financing. China launched pilot projects for climate investment and financing. The Ministry of Ecology and Environment and other eight authorities jointly issued the *Circular*

Announcing the Pilot List of Climate Investment and Financing, creating a sound environment for exploring differentiated investment and financing modes, organizational forms, service methods and management system innovation.

Improving fiscal and taxation policies. The central government has continuously increased its investment, implemented a fixed-electricity-price-linked subsidy policy for renewable energy generation, established a sound policy system of financial support for new energy vehicles, and allocated funds for addressing climate change, including air pollution prevention and control, major ecological conservation, restoration and management, marine ecological conservation and restoration, and ecological conservation and restoration of forestry and grasslands. A series of preferential tax policies have been introduced.

- enterprises that engaged in qualified environmental protection, energy and water conservation projects can enjoy corporate income tax reduction or exemption according to regulations,
- enterprise income tax shall be levied at a reduced rate of 15% on qualified third-party enterprises engaged in pollution prevention and control
- the contract energy management project is exempt from VAT
- new energy vehicles are exempt from vehicle purchase tax and vehicle and ship tax
- under the Environmental Protection Tax Law where the concentration of air pollutants or water pollutants is lower than the pollutant discharge standards set by the state or local authorities, two levels of reduction and preferential treatment shall be set according to the reduction ratio, etc.

Improve value-added tax policy for the comprehensive use of resources, and

the list of preferential income taxes for environmental protection, energy and water conservation projects, and enterprises that make comprehensive use of resources. For industries such as ecological protection and environmental improvement, the policy of reserving VAT tax rebates at the end of the period will be enhanced, the increment VAT tax rebates will be fully refund on a monthly basis, and refund the existing VAT tax credits in a lump sum.

Actively improving the green government procurement policy. China has supported green building materials and facilitated building quality improvement by experimenting with government procurement. Six cities, including Shaoxing, adopted green building materials and new construction modes such as assembled and intelligent construction modes in public buildings like hospitals and schools to promote green buildings. By the end of 2021, 222 pilot projects with a total investment of nearly CNY 100 billion had purchased green building materials of CNY 5.3 billion. China has formulated government procurement standards for various demands, like green data centers and printing and copying supplies, revised and improved the standards of relevant commodity packaging, and guided buyers to acquire green and low-carbon products that meet the standards.

Accelerating the reform of electricity pricing mechanism. China has deepened the market-oriented reform of on-grid electricity price of coal-fired power generation, introduced the parity grid access policy for new energy, innovated the pricing mechanism of pumped storage, optimized the time-staggered pricing mechanism, implemented stricter tiered electricity pricing policies for energy-intensive industries, and accelerated the establishment of an energy pricing policy system that meets the requirements of high-quality development and carbon dioxide peaking and carbon neutrality.

4.3 Promoting the Development of the National Carbon Emission Trading Market

Launching the national carbon emission trading market. China national carbon market covering the largest amount of GHG in the world, started online trading on July 16, 2021. During its first compliance cycle it has run 114 trading days, with the cumulative turnover being 179 million tonnes by the quota and CNY 7.661 billion by the value, and the quota compliance rate being 99.5 percent. It closed at CNY 54.22/ton on December 31, rising by 13 percent from that of the first session on July 16, and has steadily risen. Carbon trading pilots in seven provinces and cities (Beijing, Tianjin, Shanghai, Chongqing, Guangdong, Hubei and Shenzhen) have also run smoothly covering nearly 3,000 key emission entities in more than 20 sectors, such as power, steel and cement. By July 8, 2022, the trading volume of CEA in carbon trading pilots reached 537 million tonnes with a turnover of CNY 13.676 billion.

Continuously developing the national carbon market institutional system. China has built up a national carbon market institutional system consisting of departmental regulations, normative documents and technical specifications, and implemented on February 1, 2021 the *Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)*, establishing a series of institutions and protocols for registration, trading and settlement of carbon emission rights, and accounting and reporting of corporate greenhouse gas emission. Now, China is revising the *Interim Measures for the Administration of Greenhouse Gas Voluntary Emission Reduction Trading* and related technical specifications. All helps lay down rules and regulations on the operation of the national carbon market and the rights and responsibilities of

stakeholders, providing a basis for the establishment, operation and regulation of the national carbon market. In addition, China has conducted special supervision and assistance on carbon emission disclosures by enterprises in the power generation industry and imposed strict punishments on any falsified acts.

First Compliance Cycle of the National Carbon Market Completed with Success

On December 31, 2021, the first compliance cycle of the national carbon market completed in success, with 2,162 key traders in the power generation sector covering greenhouse gas emissions of about 4.5 billion tonnes of carbon dioxide per year.

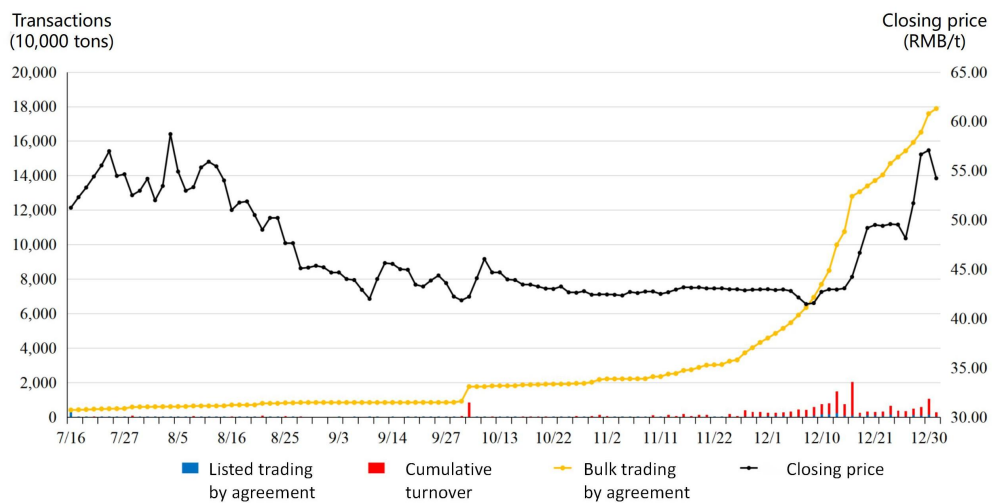


Figure 2. Turnover and Price (July 16 - December 31, 2021)

The carbon market has made initial progress. The national carbon trading market is an important policy tool for achieving carbon dioxide peaking and carbon neutrality targets and has played an effective role in promoting structural adjustments in various sectors, such as energy, energy conservation, energy efficiency improvement, ecological conservation compensation, etc.

Due to market mechanisms, local governments and enterprises are motivated to pursue emission reduction while ensuring people's livelihood, properly balancing the relations between development and emission reduction. The incentive and constraint mechanism has also achieved initial results: effectively enhancing enterprises' awareness and capabilities in carbon emission reduction and encouraging them to shift towards the modes of green and low-carbon development through reduced greenhouse gas emissions.

4.4 Accelerating the Development of Greenhouse Gas Statistical, Accounting and Monitoring System

Promoting statistics and accounting of carbon emissions. China has set up a working group for carbon emission statistics and accounting, established a multi-level carbon emission statistics and accounting system covering the state, localities, industries, enterprises, facilities and products, and formulated an implementation plan for establishing a unified and standardized carbon emission statistics and accounting system. China has published and updated its greenhouse gas emissions inventory on a regular basis, established an accounting and release mechanism for carbon emission intensity indicators and a verification system for carbon emission accounting reports of key industries and enterprises. China has launched a special action of accounting and reporting carbon emissions from 2013 to 2021 by key emission entities and sectors such as electric power, steel and cement. Relevant enterprises have set up professional management departments, developed management information systems, and examined their greenhouse gas emissions.

Launching the pilot program of carbon monitoring and evaluation. China has experimented with carbon monitoring and evaluation in key industries,

cities and regions. At the key industry level, five industries of thermal power, steel, petroleum and gas exploitation, coal mining and waste disposal, were selected for pilot monitoring. At the city level, some cities were selected for pilot monitoring of atmospheric greenhouse gases and ocean carbon sinks. At the regional level, the space-ground integrated monitoring of the concentrations of main greenhouse gases in the atmosphere was strengthened, and the pilot monitoring of carbon sequestration in typical regional ecosystems and the monitoring of annual changes in land use were carried out.

Carrying out statistics and monitoring of energy conservation and emission reduction. China has strictly implemented the statistical investigation system and measures, improved the review methods and optimized the review contents. It has stepped up its efforts to track and monitor the output of energy-intensive products, the electricity consumption of energy-intensive industries and the progress in achieving the targets for the volume and intensity of energy use at the national and regional level, and timely tackle new situations, new features and new problems in energy conservation and consumption reduction. China has actively developed and used online monitoring systems for energy consumption per unit of key energy users. By the end of 2021, its online monitoring system for energy consumption was connected to more than 12,500 enterprises in 31 provinces.

4.5 Strengthening the Support of Scientific and Technological Innovation

Strengthening the research deployment on climate change. China has implemented special programs, including the Earth System and Global Change, the Comprehensive Management of Water Resources and Water Environments

in Key River Basins such as the Yangtze River and the Yellow River and the Conservation and Restoration of Typical Vulnerable Ecological Environment, to promote scientific and technological research and development in water resources, ecology and other fields to adapt to climate change, and has released the *Fourth National Assessment Report on Climate Change*, which comprehensively and systematically evaluates the results of scientific, technological, economic and social research in the field of climate change, and accurately and objectively reflects the latest progress in China's climate change research since 2015.

Carrying out major scientific and technological projects on low-carbon, zero-carbon and negative-carbon. Focusing on research and development of key low-carbon, zero-carbon and negative-carbon technologies in energy, industry, construction and transportation, China has undertaken major scientific and technological projects, such as “Renewable Energy Technology” and “Research and Demonstration of Key Technologies in carbon dioxide peaking and carbon neutrality”; encouraged institutes to make breakthroughs in key technologies, including solar energy and fuel thermochemical complementarity, hydrogen-rich fuel internal combustion engines, carbon dioxide reduction photocatalysts, and the system integration and commercialized application of key technologies. China supported central government-administered enterprises to plan, research and develop the technologies of advanced nuclear power, clean coal power and advanced energy storage, and actively carried out research on the clean and efficient utilization of coal. In addition, China has promoted the construction of the “cradles” of original technologies, such as clean and efficient utilization of coal and carbon dioxide capture and storage (CCUS), set up the offshore wind power technology innovation consortium and the CCUS technology

innovation consortium, and supported electric power enterprises to launch the largest CCUS whole process demonstration project in the country.

Strengthening scientific and technological innovation in key areas. China has actively promoted the research and development of basic science and technology on climate change. China has formulated and issued the scientific and technological innovation plan in the energy sector during the 14th Five-Year Plan period, strengthening research on key technologies, such as monitoring, evaluation and prediction of greenhouse gases and carbon neutrality. China has promoted the research, development and application of green intelligent technologies for inland ships, supported technological research on pure electric aircraft and hybrid aircraft, and strengthened core technology research, such as the monitoring, evaluation and prediction of greenhouse gases and carbon neutrality.

China CCUS Programs are Gaining Traction

About 40 CCUS demonstration projects are in operation or under construction in China, with a capture capacity of 3 million tonnes/year.

China has the capability of massively capturing, utilizing and storing CO₂ and is actively preparing for developing a whole-process CCUS industrial cluster. China Energy Ordos has completed a 100,000 tons/year whole-process CCS demonstration project. The Enhanced Oil Recovery (EOR) Project of PetroChina Jilin Oilfield, the only Chinese project among the 21 large CCUS projects in operation in the world and the largest one in Asia, has completed a total CO₂ injection of more than 2.5 million tons. In 2019, Guohua Jinjie Power Plant of China Energy launched a 150,000 tons/year post-combustion CO₂ capture and storage whole-process demonstration project, the would-be largest coal-fired power CCUS demonstration project in China. In July 2021, Sinopec officially launched

China's first million-ton-level CCUS project (Qilu Petrochemical Refinery-Shengli Oilfield CCUS project).

China's CCUS technology projects are distributed in 19 provinces, involving multiple industries, capture sources and several types of storage and utilization. The total CO₂ capture scale of 13 pure capture demonstration projects at power and cement plants is 856,500 tonnes/year. Eleven CO₂ geological utilization and storage projects have a scale of 1.821 million tons/year in total, of which the CO₂ utilization scale of EOR is about 1.54 million tons/year. The CO₂ capture sources in China cover various technologies, such as pre-combustion, post-combustion and oxy-combustion capture in coal-fired power plants, post-combustion capture in gas-fired power plants, CO₂ capture in the coal chemical industry and post-combustion capture of tail gas in cement kilns. CO₂ sequestration and utilization involve multiple ways, such as saline-aquifer sequestration, EOR, enhanced coal bed methane (ECBM), in-situ leaching of uranium, CO₂ mineralization and utilization, synthesis of degradable polymers from CO₂, reforming to prepare synthetic gas and microalgae fixation.

4.6 Strengthening Professional Training and Capacity Building

Strengthening the professional training system for carbon dioxide peaking and carbon neutrality. China has developed the training system of higher education professionals for carbon dioxide peaking and carbon neutrality, actively developed disciplines and specialties related to climate change response. China has optimized specialty structures and the types and structure of personnel training, strengthened high-level teacher cultivation and teaching resource development, deepened the cooperation among research education and industry in training talents, and encouraged degree-awarding units to set

up relevant degree authorization sites.

Adding the occupation of carbon emission manager. In March 2021, China added “Carbon Emission Manager” to the fourth category of new occupations in the national occupational classification code, and in September 2022, “Carbon Management Technician” to the second category of new occupations in the national occupational classification code, and embarked on developing vocational skill standards and related training documents for carbon emission managers, laying a sound foundation for the efficient development of training documents for carbon emission managers.

Strengthening capacity-building training. China has strengthened the training in climate change response on government officials and enterprises at all levels and all sectors and has since 2018 provided support to carbon market capacity-building training centers, industry associations and research institutions in provinces and cities for holding more than 60 national training events. The two training events in 2022 focusing on carbon emission data quality management received an attendance of 17,800 person-times, and their training videos were viewed by more than 100,000 person-times. China has embarked on developing a series of training documents for climate change capacity building and the national carbon trading market.

4.7 Action for Green and Low-carbon Society

The government provided active guidance. China has launched various mass campaigns, events and initiatives on environmental protection, such as the National Energy Conservation Week, the National Low-carbon Day and the World Environment Day; popularized the knowledge of climate change to

the public through the World Meteorological Day, the Meteorological Science and Technology Activity Week and the National Science Popularization Day; released reports on scientific facts and impacts of climate change through the China Weather Network; strengthened the publicity and presentations of IPCC report results; and actively enhanced the green travel awareness through the Green Travel Month and the Public Transportation-based Travel Week. China has explored and implemented the innovative mechanism of voluntary emission reduction - Tanpuhui - to encourage the whole society to participate in carbon emission reduction. Guangdong, Shenzhen, Chengdu and other provinces and cities have introduced management measures for Tanpuhui initiatives. On October 22, 2021, Chongqing launched the Tanpuhui Traffic platform integrating carbon reduction compliance, carbon neutrality and Tanpuhui. Shenzhen Power Supply Bureau of China Southern Power Grid, Ecology and Environment Bureau of Shenzhen Municipality and Shenzhen Emission Equity Exchange worked together to launch the first-ever Tanpuhui application for low-carbon electricity consumption for domestic residents. The Tanpuhui Cooperation Network, an innovative Tanpuhui mechanism, was set up with support from multiple institutions to encourage citizens to practice green and low-carbon behaviors and explore and establish a diversified and socialized participation mechanism.

**Ministry of Ecology and Environment Holds the 10th National
Low-carbon Day Event in Jinan, Shandong province**

June 15, 2022 marks the 10th National Low-carbon Day. The Ministry of Ecology and Environment and Shandong Provincial People's Government jointly held the event of the 2022 National Low-Carbon Day in Jinan, Shandong province. Themed "Implementing Actions for carbon dioxide peaking and carbon neutrality and Building a Better Homeland", the Event aims to encourage the whole society to embrace green, low-carbon

and sustainable production ways and lifestyles, and rally the whole society's efforts for a green and low-carbon transition to build a beautiful China and a clean and beautiful world.

At the Event, youth representatives launched a low-carbon initiative. Representatives of typical green and low-carbon cases in 2021 and the 2021 National Children's Low-carbon Painting and Calligraphy Competition respectively delivered their speeches and launched related activities in 2022. In particular, the "Qilu Low-carbon Forest" cloud tree planting platform was launched, the Shandong Low-carbon Development Alliance was set up, the theme activity of "Low-carbon China Tour" was initiated, and the bids for the 2023 National Low-carbon Day Event were invited.

This Event itself was also so held in a carbon neutrality-oriented way through the donation of carbon allowances and procurement of certified voluntary emission reductions from enterprises. During the Event, two panel forums on "Implementing Actions for carbon dioxide peaking and carbon neutrality and Building a Beautiful Homeland" were also held.

Enterprises took active actions. Central government-administered enterprises have all made their action plans for carbon dioxide peaking and carbon neutrality, and many have also set up research institutes to conduct basic research on carbon dioxide peaking and carbon neutrality. Particularly, China Three Gorges Corporation successfully issued the first-ever carbon-neutral bond, and many others launched special funds for green and low-carbon development. Central government-administered enterprises in various sectors, including petroleum, power, transportation, construction and telecommunication, have declared their green and low-carbon statements, calling the whole society to participate in the carbon emission reduction drive for a cleaner and beautiful homestead.

The public played an active role. China has launched a campaign themed “Being a Contributor to a Beautiful China” to encourage the whole society to participate in developing ecological civilization to foster a positive atmosphere of everyone having a stake in, supporting and participating in eco-environmental conservation and protection; incorporated developing ecological civilization into the national education system to strengthen education in ecological civilization at primary and secondary schools; launched the “Green Family” campaign to give full play to the important role of women and families in building ecological civilization; and held a series of forums and science population events on carbon dioxide peaking and carbon neutrality to raise social awareness on green development and guide the public to practice green and low-carbon lifestyles. The 6th China (Shenzhen) International Climate Film and Television Conference in October 2021 calls on the public to actively respond to climate change through films and videos.

Beijing Holds the First-ever Carbon-neutral Winter Olympics in 2022

China has faithfully practiced the concept of holding Green Olympics, renovating existing venues and constructing new ones in a pro-environmental way, such as Bird’s Nest, Water Cube and Wukesong Gymnasium, to reduce the impact on the environment at the root sources.

The National Speed Skating Oval “Ice Ribbon”, the first of its kind in the world with a carbon dioxide transcritical direct cooling system, has a near-zero carbon emission, all venues meet green building standards and are completely powered by green electricity, and energy-saving and clean energy vehicles make up 84.9 percent of the service fleet, hitting the record level. The low-carbon and pro-environmental practice of “fire-free” and “smaller fire” at the opening ceremony marks a new starting point for the Olympics. The innovations, such as being powered mainly by photovoltaic and wind energy, donating

forestry carbon sinks and purchasing certified carbon reduction allowances, have fulfilled China's promise to have carbon neutrality at the Beijing Winter Olympics. China holds the first-ever carbon-neutral Winter Olympics.

5. Actively Getting Involved in Global Governance in Response to Climate Change

China attaches great importance to international cooperation on climate change, firmly upholds multilateralism, supports the multilateral process on climate change, and plays a constructive role in international negotiations on climate change. It engages in dialogue, exchanges and pragmatic cooperation with all parties, actively promotes South-South cooperation on climate change and green development of the Belt and Road Initiative, and puts forward global development proposals, playing an important role in building a equitable and rational global climate governance system for win-win results.

5.1 Deepening High-Level Exchanges on Climate Change

Climate Change has become a top priority in Chinese leaders' diplomacy. In 2021, President Xi Jinping delivered important speeches on multiple international occasions, which promoted significant progress in global climate governance. In April, President Xi Jinping attended the Leaders' Climate Summit, comprehensively and systematically explaining the rich connotation and essence of the concept of "For Man and Nature: Building a Community of

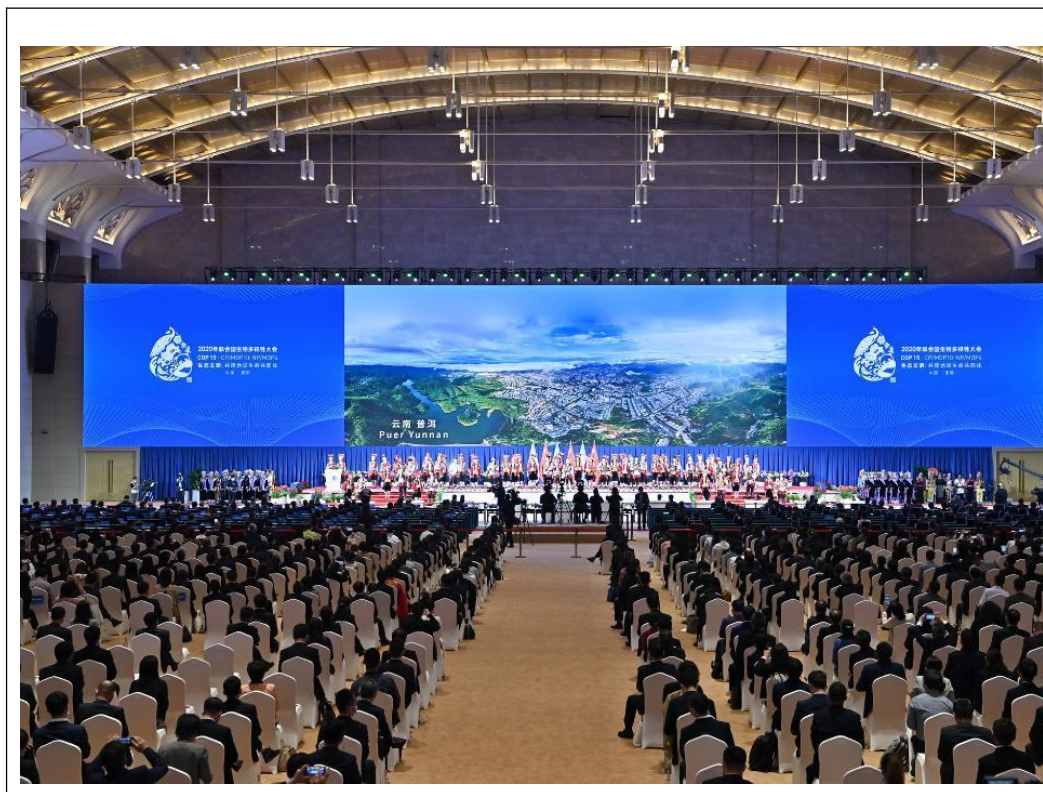
Life Together” for the first time and putting forward China’s proposals for strengthening global environmental and climate governance. In September, at the general debate of the 76th session of the United Nations General Assembly, President Xi Jinping proposed that China will step up support for other developing countries in developing green and low-carbon energy, and will no longer build new coal-fired power projects overseas, continuously demonstrating China’s resolution and strength in tackling climate change. In October, President Xi Jinping attended the Leaders’ Summit of the 15th Meeting of the Conference of the Parties to the *Convention on Biological Diversity (COP15)* and delivered a keynote speech, stressing that to achieve its targets of carbon dioxide peaking and carbon neutrality, China will release action plans in key areas and sectors as well as a series of support measures, and will put in place a “1+N” policy framework for carbon dioxide peaking and carbon neutrality. In November, President Xi Jinping delivered a written speech at the World Leaders Summit at the 26th Session of the Conference of the Parties (COP26) to the *United Nations Framework Convention on Climate Change* (the Convention), putting forward three proposals, namely, upholding multilateral consensus, focusing on concrete actions and accelerating green transition, giving a strong political impetus to the COP26 achieving positive results. In 2021, President Xi Jinping had telephone conversions and video meetings respectively with UN Secretary-General Guterres, US President Biden, British Prime Minister Johnson, etc., pointing out that actions speak louder than words in climate change response and China will do its part under the principle of common but differentiated responsibilities to promote international cooperation. At the China-France-Germany Leaders Video Summits, the Chinese leader and his counterparts reached a series of important consensus on cooperation in tackling climate change.

15th Session of the Conference of the Parties to the *Convention on Biological Diversity*: Making Concerted Efforts to Tackle Climate Change

On October 11-15, 2021, China successfully held the first phase of the 15th Session of the Conference of the Parties to the *Convention on Biological Diversity* (COP15) in Kunming, Yunnan. Under the theme of “Ecological Civilization: Building a Shared Future for All Life on Earth”, the Conference was attended online and offline by more than 5,000 delegates from 150 parties and over 30 international institutions and organizations, and adopted the Kunming Declaration.

President Xi Jinping attended the COP15 Leaders’ Summit via video and delivered a keynote speech. He stressed that for achieving its targets of carbon dioxide peaking and carbon neutrality, China will release action plans for carbon dioxide peaking in key areas and sectors as well as a series of supporting measures, and will put in place a “1+N” policy framework for carbon dioxide peaking and carbon neutrality. China will continue to adjust its industrial structure and energy structure, vigorously develop renewable energy, and make faster progress in planning and developing large wind power and photovoltaic bases in sandy areas, gobi areas and deserts. The first phase of projects with an installed capacity of approximately 100,000 megawatts has recently started construction in a smooth progress.

The Kunming Declaration deeply recognizes the relationship between biodiversity loss and climate change and the necessity of combined measures (including climate change mitigation) to curb and reverse biodiversity loss, and commits to further strengthening the cooperation and coordination with the *United Nations Framework Convention on Climate Change*, the *United Nations Convention on the Prevention and Control of Desertification* and other biodiversity-related conventions.



Promoting high-level dialogues and exchanges and building political consensus. In 2021, the China-U.S. climate change consultation team held more than 30 intensive consultations. The two sides issued the *China-U.S. Joint Statement on Addressing the Climate Crisis* in Shanghai in April 2021 and the *China-U.S. Joint Glasgow Declaration on Enhancing Climate Action in the 2020s* in Glasgow in November 2021, and set up a “Working Group on Enhancing Climate Action in the 2020s”. However, despite China’s strong opposition and solemn representations, Nancy Pelosi, speaker of the US House of Representatives, visited the Chinese Taiwan region in August 2022, severely impacting the political foundation of China-US relations, and as a result, China announced the suspension of China-U.S. climate change talks.

China held three high-level dialogues on environment and climate with the European Union, and the Joint Press Communique of the Second High-Level Environment and Climate Dialogue between China and the EU was issued. China continued its efforts to promote bilateral climate change dialogues such as the China-EU Carbon Emission Trading Policy Dialogue and continuously strengthened China-EU cooperation in carbon markets and low-carbon cities. China hosted the BRICS High-level Meeting on Climate Change for the first time, hosted the 5th Ministerial Conference on Climate Action, co-hosted the 6th Ministerial Conference on Climate Action, participated in the G20 Energy and Climate Joint Ministerial Conference, and promoted the G20 to reinstitute the sustainable finance research group and upgraded it to a working group with China as a co-chairman. China attended the 30th BASIC Ministerial Meeting on Climate Change and the LMDC Ministerial Meeting on Climate Change, and formed a common position to safeguard the institutional rules of the Convention and its *Paris Agreement*. China participated in meetings and forums, including the high-level meeting on climate change of the 76th Session of the United Nations General Assembly, the sub-forum on “Addressing Climate Change” of the World Economic Forum’s Davos Agenda Meeting, the ministerial meeting of Major Economies Forum on Energy and Climate, the ministerial video meeting of the 12th Petersberg Climate Dialogue, and the China Tibet Trans-Himalaya Forum for International Cooperation, in an effort to actively promote the multilateral process of climate change. China conducted bilateral talks and exchanged in-depth views with the United Nations and its related agencies, the Convention secretariat, the International Energy Agency, the International Renewable Energy Agency, countries like Germany, Britain, Russia, Japan, Egypt, India and South Africa and relevant think tanks.

First BRICS High-Level Meeting on Climate Change Successfully Held

On May 13, 2022, the BRICS High-level Meeting on Climate Change was held via video link. The meeting was hosted by China and Huang Runqiu, Minister of Ecology and Environment of the People's Republic of China, chaired the meeting and delivered a speech. The meeting was attended by Xie Zhenhua, China Special Envoy for Climate Change, Zhao Yingmin, Vice Minister of Ecology and Environment of the People's Republic of China, Mr. Joaquim Leite, Minister of the Environment of the Federative Republic of Brazil, Mr. Sergey Anoprienko, Deputy Minister of the Natural Resources and Environment of the Russian Federation, Mr. Bhupender Yadav, Minister of the Environment, Forest and Climate Change & Labor and Employment of the Republic of India and Ms. Barbara Creecy, Minister of the Forestry, Fisheries and Environment of the Republic of South Africa .

The meeting adopted the *Joint Statement of BRICS High-level Meeting on Climate Change*, reiterating that all parties should commit to the goals, principles and institutional framework of the Convention and its *Paris Agreement*, adhere to multilateralism and support COP27. It emphasizes that developed countries should take the lead in scaling up mitigation actions, fulfilling their climate funding commitments, and improving their capability to adapt to climate change and financial support; and BRICS countries have played an active and leading role in the multilateral process on climate change and contributed greatly to global low-carbon, climate resilient and sustainable development. BRICS countries will carry out information exchanges and cooperation at the national, local, industrial and enterprise levels, in multiple fields including clean energy, low-carbon technology, sustainable and resilient infrastructure construction, carbon market and climate change adaptation, and jointly promote the policy research on low-carbon green growth, technology cooperation and joint pilot projects.

5.2 Promoting Multilateral and Bilateral Climate Change Negotiations

Fully and deeply participating in main channels of international negotiations like the Convention and its *Paris Agreement*. China attended activities such as the Ministerial Preparatory Meeting of the Conference of the Parties to the Convention, the Video Meeting of Informal Ministerial Consultation on Article 6 of the *Paris Agreement*, the Ministerial Meeting on Climate Change in London, and the Ministerial Consultation on Common Time Frames for NDCs, and promoted the formation of consensus.

The Chinese delegation attended COP26. They fully participated in the negotiations and consultations on various issues of the meeting, and actively engaged in dialogue and coordination with all parties, playing an active and constructive role. They promoted the meeting to complete the negotiation on the remaining issues of the implementation rules of the *Paris Agreement* and to make positive progress on the issues of funding and adaptation generally concerned by developing countries, contributing Chinese wisdom to helping the conference achieve a balanced package of results. Before the meeting, China submitted the updated *China's Achievements, New Targets and New Measures for Implementing Nationally Determined Contributions* and the *China's Mid-Century Long-term Low Greenhouse Gas Emission Development Strategy*, which is a practical action to support COP26. China participated in the meetings of subsidiary bodies of the *Convention*, the monthly consultations on key negotiation issues organized by the presidency of COP, a series of coordination video meetings of Like Minded Group of Developing Countries and the coordination meetings of "G77 and China" on climate change negotiation issues, maintaining coordination on key issues and playing an

active role at these events. China carried out the implementation work such as formulating the *Fourth National Communication on Climate Change of the People's Republic of China* and the *Third Biennial Update Report on Climate Change*.

Actively participating in negotiations outside the Convention, and jointly promoting the multilateral climate process. China is committed to the principles of equity, common but differentiated responsibilities and respective capabilities and the bottom-up institutional arrangement of NDCs, and firmly safeguards the status of the main channel of the *Convention*. China completed four government reviews of the 6th assessment report of the Intergovernmental Panel on Climate Change (IPCC) with high quality, participated in three IPCC plenary sessions and two meetings of the presidium, and actively maintained the scientificity, comprehensiveness and objectivity of the assessment conclusions. China actively participated in the dialogues and consultations on climate change through various channels such as the International Maritime Organization (IMO), the Asia-Pacific Economic Cooperation (APEC), the World Trade Organization (WTO) and the International Civil Aviation Organization (ICAO), explaining China's positions and propositions on key issues in international negotiations on climate change and guiding all parties to bridge their differences and work towards the common goal. China advocates a equitable, balanced and pragmatic IMO strategy on the reduction of greenhouse gas emissions from ships, and participated in international cooperation projects such as IMO-Norway Green Voyage 2050 Project as one of the first demonstration countries. China took part in the Trade and Environmental Sustainability Structured Discussions (TESSD), signed with relevant countries the Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade,

and promoted the 12th WTO Ministerial Conference to make progress. China attended the 53rd session of the United Nations Statistical Commission, and participated in the formulation of the *Global Set of Climate Change Statistics and Indicators*. It attended the High-level Group for Partnership, Coordination and Capacity-Building for Statistics for the 2030 Agenda for Sustainable Development, and the Committee of Experts on Environmental-Economic Accounting of United Nations, and put forward China's proposals.

5.3 Strengthening Pragmatic Cooperation on Climate Change

Deepening the bilateral and multilateral cooperation mechanism in climate field. China promoted the co-construction of the Asian NbS Center, hosted the second Ministerial Conference of China-Central and Eastern European Countries on Environmental Protection with the theme of “Nature-based Solutions Help Achieve Carbon Neutrality” and the China-French Working Group Meeting on Green and Low-carbon Economy, held the China's observance of 2021 World Cities Day, the China-German Symposium on Carbon Neutrality and Climate Change, the China-German Working Group on Environment and Climate Change and the China-ASEAN Ministerial Meeting on Disaster Management, carried out the China-UK dialogue on climate change and implemented the China-EU climate change flagship plan. China worked with EU on the China Biodiversity Fund policy dialogue project, with Germany on various projects, including climate partnership, NDCs, carbon market, low-carbon transportation and the comprehensive action of low-carbon and resilient urban land space planning (China's component), with Norway on various projects, including carbon emission trading system, and with Switzerland on the China-Switzerland zero

carbon buildings project. China also made efforts to promote exchanges and cooperation with the EU, Germany, the ASEAN, the United Kingdom, Finland, Denmark, Japan, South Korea, New Zealand, Singapore, South Africa, Uruguay in fields such as energy transition, clean energy technology, and green and low-carbon industrial development. As the biggest donor country to developing countries, China has donated USD 31.9 million to the Eighth Replenishment of the Global Environment Facility (GEF), helping it to achieve the largest capital increase of USD 5.25 billion. China promoted the Green Climate Fund (GCF) to remain committed to the principled consensus of the *Convention* and its *Paris Agreement*, and provided a total of over USD 10 billion of climate finance support to developing countries. China also promoted international financial institutions including the World Bank, the Asian Development Bank, the Asian Infrastructure Investment Bank and the BRICS New Development Bank to enhance fund mobilization and support developing countries to tackle climate change and achieve sustainable development in a balanced way. China has been actively providing professionals to international organizations, such as the Convention Secretariat, the Climate Adaptability Technical Committee of the World Road Association, the Food and Agriculture Organization of the United Nations and the International Union for Conservation of Nature, and strengthening international training of international professionals.

Achieving new progress in South-South cooperation. By July 2022, China allocated funds totaling over CNY 1.2 billion for South-South cooperation on climate change, and signed 43 cooperation documents on climate change with 38 developing countries. China worked with Laos, Cambodia and Seychelles on developing low-carbon demonstration zones and with more than 30 developing countries, including Ethiopia, Pakistan, Samoa, Chile, Cuba and

Egypt, on 40 climate change mitigation and adaptation projects. Meanwhile, China took an active approach in capacity-building training, holding 45 training sessions on the South-South cooperation on climate change and training about 2,000 officials and technicians in the field of climate change from more than 120 developing countries. China has put forward multiple new initiatives since 2021 in the field of South-South cooperation on climate change, issued with the African Union the *Declaration on China-Africa Cooperation on Climate Change*, launched the China-Africa three-year action plan on climate change, and established the China-Pacific Island Countries Climate Action Cooperation Center, which has officially come into operation. In 2022, China held the first online training session on South-South cooperation on climate change for Pacific island countries since the outbreak of the pandemic. In addition, supported by the South-South Cooperation Assistance Fund, China implemented nearly 30 assistance programs in the field of climate change for developing countries in Asia, Africa and Latin America, including the post-disaster reconstruction after tropical cyclone Idai in Mozambique, the post-hurricane building reconstruction in Dominica and post-disaster reconstruction in Nepal. China also donated CNY 8 million of humanitarian aid to Madagascar to cope with hurricane disasters, provided emergency humanitarian aid to Tonga and Pakistan to cope with natural disasters, gave supplies for addressing climate change to various countries, including Costa Rica, Panama, Cuba and Uruguay, decided to set up the China-Caribbean Disaster Prevention and Mitigation Fund, and established the China-Pacific Island Countries Disaster Prevention and Mitigation Cooperation Center. China held the seminar on China supporting the building of Africa's Green Great Wall, with the online participation of more than 20 officials from six countries, including Burkina Faso and Chad.

Joining hands to build a Green Silk Road. In 2021, China jointly launched the Belt and Road Green Development Partnership Initiative with 28 countries, constantly improved the construction of the Belt and Road Initiative International Green Development Coalition, and held nearly 20 thematic activities in the field of environment and climate, such as the Roundtable on BRI Green Development and the BRI International Green Development Coalition Policy Studies Release and the BRI Green Innovation Conference. China launched the Green Silk Road Envoy Program to build up international consensus, which attracted over 500 representatives from more than 30 partner countries. China put forward the Qingdao Initiative for Belt and Road Green Energy Cooperation, set up regional energy cooperation platforms with the ASEAN, the EU, the Arab League, the AU, and central and eastern Europe, and held the Second Belt and Road Energy Ministerial Conference and the 2021 International Energy Reform Dialogue and other activities, further consolidating the global consensus on green development and transition.

China held the Belt and Road Ministerial Forum for International Cooperation in Disaster Risk Reduction and Emergency Management in 2021, which adopted the Beijing Declaration, and promoted the establishment of the China-CELAC disaster management cooperation mechanism. China signed memorandums of understanding with various countries, including Hungary, Russia, Kyrgyzstan, Argentina, Serbia, Papua New Guinea and Singapore to promote investment cooperation in the field of green development, and provided more than ten online foreign-aid training courses on water resources management, flood and drought disaster prevention and other topics for over 2,000 trainees from BRI partner countries. China issued the *Green Development Guidelines for Foreign Investment and Cooperation* and the *Guidelines for Ecological Environmental Protection of Foreign Investment*

Cooperation and Construction Projects, and trained more than 130,000 enterprise professionals. Based on the BRI environmental big data platform, China also developed environmental risk assessment tools for foreign investment and formulated the BRI environmental big data reports, so as to guide enterprises to implement the green development concept, carry out green investment cooperation, and facilitate the construction of a green Belt and Road.

6. Basic Positions and Propositions on the 27th Conference of the Parties to *the United Nations Framework Convention on Climate Change*

COP27 will be an important meeting in the climate multilateral process. China is willing to fully support Egypt, the presidency of COP27, in hosting a successful conference of the Parties, and looks forward to working with all parties to translate this gathering into an event focusing on “implementation” and delivering on adaptation and funding.

First, implementing institutions and rules. All parties should remain, as have been over the past 30 years, committed to the status of the main channel of the *Convention* and the positioning of “strengthening the implementation of the *Convention*” in the *Paris Agreement*, implement the objectives and principles of the *Convention* and its *Paris Agreement* in good faith and in the right way,

especially the principles including common but differentiated responsibilities and the institutional arrangement of NDCs, implement the results and consensus reached by the COP26 in good faith and in the right way, stick to the goal of “ensure to keep the global average temperature rise within 2 degrees Celsius but strive to keep it within 1.5 degrees Celsius”, and build an equitable and reasonable global climate governance regime that is cooperative and beneficial to all.

Second, focusing on implementing commitments. The key to addressing climate change lies in action instead of slogans. All parties should focus on the paths and measures of actions to make balanced progress in mitigation, adaptation and support. At present, with insufficient inputs, adaptation and funding are daunting challenges and lag behind mitigation. China fully supports Egypt, the presidency of COP27, and promotes the Glasgow-Sharm el-Sheikh work program to achieve phased and substantive results on the global goal on adaptation. China urges developed countries to honor their commitments of 100 billion U.S. dollars before COP27 and come out with their road maps for doubling adaptation funds, so as to enhance mutual trust and joint action between the North and the South.

Third, strengthening pragmatic actions and cooperation. COP27 should advocate all parties to translate NDC targets into concrete actions, earnestly examine their progress and gaps in implementation, identify difficulties and challenges, and summarize experience and lessons so as to effectively enhance the global capability and effectiveness in addressing climate change. Developed countries should respond to the call of the international community to uphold multilateralism, abandon unilateral measures, restrain from politicization and exclusive blocs, maintain the status of the main channel of

the *Convention and its Paris Agreement*, and work with developing countries to tackle the climate crisis under the framework of sustainable development.

China is willing to play an active and constructive role and work together with all parties in accordance with the principles of openness, transparency, extensive participation and consensus and the party-driven mode, and is willing to turn the COP27 into a success and contribute its wisdom and efforts to building an equitable and reasonable global climate governance regime that is cooperative and beneficial to all.