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CHINA'S EXPERIENCE IN ADAPTATION TO THE CONSEQUENCES OF CLIMATE CHANGE

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Abstract
The article analyzes China's experience in mitigating and adapting to climate change, in particular the main measures set out in the "National Climate Change Adaptation Strategy 2035" adopted in 2022, including measures to monitor climate change, early warning and risk management, improve the climate adaptation of natural ecosystems, improve the climate adaptation of economic and social systems, and build territorial structures adapted to climate change. It also discusses the application of these experiences in the conditions of Uzbekistan.

Introduction

Climate change is exacerbating a number of environmental, social and economic problems in the Central Asian region, requiring the study of advanced experiences of foreign countries in mitigating and adapting to climate change. In particular, the decrease in the volume of water in rivers, the melting of glaciers and the uncertainty of precipitation are increasing the shortage of water resources, the increase in desertification of areas located in arid and semi-arid climatic zones, high temperatures, droughts and floods are causing serious damage to agricultural productivity and public health, leading to a decrease in agricultural productivity and posing a threat to food security. In this regard, there is a growing need for an in-depth analysis of the measures taken by China to mitigate and adapt to climate change and the application of positive experiences in Uzbekistan.

In 2022, China adopted the "National Climate Change Adaptation Strategy 2035", which set out 5 priority areas for ensuring the adaptation of regions and economic sectors vulnerable to climate change. In particular,

1) strengthening climate change monitoring, early warning and risk management. In this regard, improving the climate change observation network, strengthening climate change monitoring, forecasting and early warning, assessing the impacts and risks of climate change, and comprehensively improving emergency prevention and mitigation;

2) improving the adaptation of natural ecosystems to climate change. In this regard, ensuring the adaptation of water resources, terrestrial ecosystems, marine and coastal zones;

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3) improving the climate resilience of economic and social systems: agriculture and food security, health and public sanitation, infrastructure and large engineering projects, urban and human habitation, protection of vulnerable medium and low-level industries;
4) building territorial structures adapted to climate change: building a territorial space adapted to climate change, strengthening regional efforts to adapt to climate change, improving climate adaptation in key strategic regions;
5) implementing the strategy: strengthening organization and implementation, strengthening fiscal and financial support, strengthening technology support, strengthening capacity building, deepening international cooperation.

Analysis and Result

China has introduced a number of mechanisms to adapt to the consequences of climate change, and has set clear goals to be achieved by 2025 and 2035.

In particular, in this strategy, the main emphasis in adapting to climate change is on improving climate risk monitoring and early warning systems, and a comprehensive meteorological observation system has been created, including an automatic meteorological station, radar and meteorological satellites covering the entire territory. In particular, a flood control engineering system in river basins, flood risk prevention and control measures have been taken.

In addition, a "National Comprehensive Fire Early Warning System for Forests and Grasslands" has been established, and the fire control rate in key areas has been increased to over 95%. A network of monitoring and early warning sites has been created to detect the spread of climate-related diseases and biological pests, and biological, ecological, and other preventive control technologies have been introduced in all regions.

The awareness of regional authorities and the population on climate change adaptation has been raised, and measures have been taken to analyze the negative impacts of climate change and assess risks in large cities. A regional multidisciplinary, long-term climate database has been created based on Earth observation and satellite remote sensing. A quantitative analysis of climate change impacts and risk allocation plans have been developed, and indices and technical systems have been created to assess the impacts and risks of climate change. The climate resilience of vulnerable areas and sectors has also been assessed, and technical standards have been introduced.

In order to develop adaptation strategies, technologies and countermeasures, it has been determined to conduct research on the impacts of extreme weather, heat, heat waves and floods in vulnerable areas. On this basis, guidelines, standards and plans for assessing and eliminating health risks by 2025 have been developed.

Based on the characteristics of the climate, ecological environment and regions, pilot projects on climate change adaptation have been carried out in cities, villages, neighborhoods and public places (schools, medical institutions, etc.). In addition, the "Early Warning Action Plan on Climate Change Adaptation" for

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2025-2027 has identified issues of strengthening international cooperation, information exchange and strengthening early warning systems[1].

To increase the efficiency of water resources use, measures have been taken to implement water resources regulation, conservation and distribution projects, increase taxes on water resources, reform water prices in agriculture, establish a strict system of water resource restrictions, implement large-scale projects on water basins and interregional water diversion, and build emergency reserve water sources for extreme droughts.

As a result, by 2025, the share of the rural population covered by water supply projects has reached 55%, and the share of the rural population using piped water has reached 88%. In 2035, it is set to coordinate economic and social development with the potential of water resources, and increase the potential for water supply to cities and villages.

To ensure agricultural adaptation and food security, cropping systems and crop variety configurations have been optimized, agroclimatic resources have been dynamically assessed and accurately zoned, measures have been taken to increase crop varieties in China's mid- and high-latitude regions, expand the cultivation of heat-loving crops in northern regions, and expand the scale of winter crops in lower latitudes. Measures have been taken to breed high-yielding and heat-stress-resistant crops. A certification system for climate-friendly and low-carbon agricultural products has been established.

To effectively use land and water, agroforestry and "3D farming" have been developed in mountainous areas, pesticide doses in agriculture have been reduced, and a green control system has been introduced. Strategies for increasing productivity and introducing modern technologies through scientific research on land use have been implemented.

Measures have been taken to bring 71.75 million hectares of farmland to high standards by 2025 by strengthening agricultural land protection. Within the framework of China's "Climate-Smart Agriculture Project", a climate-based agricultural technology system has been established, and experimental and demonstration bases have been built in major food-producing areas[2].

The "Health Action Plan for Climate Change Adaptation 2024-2030"[3] has been developed, which stipulates the creation of a comprehensive and integrated interagency system that includes "planning-monitoring-alert-assessment-intervention", strengthening data exchange, creating emergency medical supplies and medical supplies, upgrading pharmaceutical and medical equipment production capacities, creating a network of emergency medical care, treatment, nursing and rehabilitation for

[1] Jiang Zhiqing, Li Yutong. China's Action Plan on Early Warningfor Climate Change Adaptation (2025-2027) // https://www.cma.gov.cn/en/international/news/202411/t20241116_6694945.html

[2] Agricultural adaptation sought as weather grows more extreme. July 6, 2022. // https://english.www.gov.cn/policies/policywatch/202207/06/content_WS62c4e00cc6d02e533532d3d7.html

[3] China National Climate Change Health Adaptation Action Plan (2024–2030). 24.02.2025. // https://en.chinacdc.cn/health_topics/environment_health/202502/t20250221_304471.html

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climate-sensitive diseases, and organizing mental health services for victims of extreme weather and climate events.

China has adopted the "Plan for Piloting Climate-Resilient Cities" and selected 28 cities to build climate-resilient cities. 1,116 areas prone to waterlogging and 60 cities with serious impacts of waterlogging have been redesigned. Measures have been taken to promote climate-resilient construction of infrastructure and major engineering projects, integrate urban and rural infrastructure construction with nature-based solutions, promote the construction of smart cities and digital villages, apply adaptive technologies in infrastructure construction, develop new corrosion-resistant dam construction materials for hydraulic infrastructure, strengthen urban climate risk assessment, establish a "physical inspection" assessment system such as "one-year inspection, five-year assessment" of urban construction, and prepare urban climate risk maps.

Building standards have been revised taking into account climate risks, and the city has scientifically planned and improved the layout of green areas, green corridors, green streets, and green roads, and has established a system of systematically connected and evenly distributed parks with large, medium, and small gardens, and has achieved the goal of "plants every 300 meters and gardens every 500 meters"[4].

Measures have been taken to enhance the capacity of cities to cope with climate risks, prevent climate-related financial risks, enhance the climate resilience of the energy sector, develop climate-friendly tourism, build climate-adapted territorial structures, and build a climate-adapted territorial space.

In order to organize and improve the protection and monitoring of terrestrial ecosystems, it is planned to expand the scale of reserves and bring their management to international standards, and increase the total area to more than 18% of China's land area. The "Regulations on Ecological Protection Compensation" have been developed and implemented to establish climate-adapted forest and grass seed resource conservation centers and strengthen the protection of natural ecosystems. It is planned to change grazing livestock methods, restore degraded grasslands, enhance the ecological function of wetlands, increase China's forest coverage to 26%, grassland vegetation to 60%, wetland protection to 60%, and cultivate more than 75% of sandy land by 2035.

The "Master Plan for Major Projects for the Protection and Restoration of China's Key Ecosystems" for 2021-2035 has been formulated, and it is planned to implement construction work in national parks and other protected natural areas, wildlife protection, and major projects supporting ecological protection and restoration. Measures have been taken to protect the ecology of major rivers and lakes, enhance management capacity, ecologically restore damaged rivers and lakes, and continuously improve groundwater management, and to achieve more than

[4] National Climate Change Adaptation Strategy 2035. August 29, 2022// https://cset.georgetown.edu/publication/national-climate-change-adaptation-strategy-2035/

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90% of major rivers and lakes meeting ecological flow standards by 2025, and to increase the national soil and water conservation rate to more than 73%[5].

It is planned to intensify the protection and restoration of coastal ecosystems, promote the comprehensive protection and restoration of typical coastal ecosystems, increase the area of reclamation and restoration of coastal wetlands to 50 thousand hectares by 2035, achieve at least 98% of the approved main forest strips of coastal forests, restore at least 400 km by 2025 and 1,200 km by 2035 to preserve at least 35% of natural coastlines, and strictly monitor compliance with the fishing moratorium system. It is planned to sustainably improve the marine ecological environment and increase the share of high-quality water in the sea to 79% by 2025[6].

Technologies and practices have been developed to help the agricultural sector adapt to climate change, including improved weather forecasting, water conservation and rational use, drip irrigation, sustainable soil management, improved livestock management, and crop and plant species modification.

Conclusion

China's "National Climate Change Adaptation Strategy 2035", adopted in 2022, demonstrates a comprehensive and systematic approach to mitigating climate change and reducing its negative impacts. One of the most important aspects of the strategy is to create opportunities for accurate identification of climate risks and timely response by creating advanced meteorological and hydrological observation systems covering all regions. The strategy also highlights the rational use of irrigation water and natural resources, the introduction of low-carbon and climate-resilient technologies in agriculture, the adaptation of urban infrastructure and social systems to eliminate climate risks, and measures aimed at protecting public health. The implementation of this strategy will not only ensure environmental sustainability, but also create an important foundation for economic growth and the well-being of the population.

Therefore, in Uzbekistan, there is a need to develop climate change risk monitoring and early warning systems, expand the network of meteorological and hydrological observations, and strengthen preparedness for floods, droughts, and other extreme events through automation and effective use of satellites. To ensure climate adaptation in agriculture, food security can be ensured by introducing climate-resistant crop varieties, strengthening agrotechnical research, and disseminating low-carbon, sustainable agricultural methods. Protection and restoration of natural ecosystems In areas of Uzbekistan affected by desertification and land degradation, comprehensive measures should be implemented to restore forests and grasslands, protect water

[5] Feng-jun G. and others. Systematically promoting the construction of natural ecological protection and governance capacity: Experts comments on Master Plan for Major Projects of National Important Ecosystem Protection and Restoration (2021-2035)[J]. JOURNAL OF NATURAL RESOURCES, 2021, 36(2): 290-299 https://doi.org/10.31497/zrzyxb.20210202

[6] National Climate Change Adaptation Strategy 2035. August 29, 2022// https://cset.georgetown.edu/publication/national-climate-change-adaptation-strategy-2035/

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bodies, and preserve biodiversity. Raising awareness and supporting climate adaptation in social areas Education, training, and involvement of local communities are important to increase the role of the population in combating the effects of climate change.

Overall, this Chinese strategy is an example for developing countries, and its implementation will significantly increase the country's capacity to adapt to climate change.

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