

Action Plan for Carbon Peaking During 15th FYP

Policy Express

By TANG Zhexiao

China's State Council has issued an action plan for achieving carbon peaking during the 15th Five-Year Plan (FYP) period (2026-2030), outlining key tasks and measures to achieve the goal.

By 2030, China's carbon dioxide emissions per unit of GDP are projected to drop by 17 percent compared with 2025, and non-fossil energy will account for a quarter of total energy consumption.

The five major tasks include accelerating energy structure adjustment and optimization, advancing the green and low-carbon transformation of industries, and deepening the green and low-carbon shift in key sectors.

Newly added electricity demand will be fully met by power generated from new clean energy sources. By 2030, the total installed capacity of wind and solar power will exceed 2.8 billion kilowatts, installed conventional hydropower capacity will reach around 410 million kilowatts, and operational installed nuclear power capacity will stand at approximately 110 million kilowatts.

A prominent feature of the action plan is intensified efforts to advance



A photovoltaic power plant in Sixi village, Yichang city, central China's Hubei province. (PHOTO: VCG)

green and low-carbon industrial development.

On the one hand, energy-saving and carbon reduction upgrades will be carried out for traditional industries, with dedicated energy-saving and carbon-cutting projects launched in key sectors such as iron and steel, electrolytic

aluminum, cement, flat glass, petrochemical and chemical industries. On the other hand, emerging green and low-carbon industries including green energy, green manufacturing and green services will be fostered.

Around 100 national-level zero-carbon industrial parks and 500 zero-

carbon factories will be built. A number of zero-carbon transport corridors will also be developed, covering zero-carbon highway and water transportation routes.

For the construction sector, the action plan calls for projects with low-carbon and zero-carbon heating, cooling and green lighting, wider application of high-efficiency LED lighting, and accelerated development of building-integrated photovoltaics. Direct carbon emissions per unit building floor area will fall by three percent within the period.

In the transportation sector, low-carbon energy use will be promoted. By 2030, new energy vehicles are expected to make up 30 percent of all vehicle stock, while new energy commercial vehicles will account for 25 percent of operational transport fleets.

Ecological priorities include strengthening protection and sustainable utilization of forest resources. China's national forest stock volume will reach 22.4 billion cubic meters by 2030.

The plan also calls for ramping up technological support and talent training, and deepening international cooperation on green and low-carbon development.



New Rules to Regulate Human-like AI Interactive Services

By CHEN Chunyou

The Interim Measures for the Management of Anthropomorphic AI Interactive Services, jointly issued by five departments, including the Cyberspace Administration of China (CAC), the National Development and Reform Commission and the Ministry of Industry and Information Technology, took effect on July 15.

The measures will promote the healthy development and regulated application of anthropomorphic AI interactive services, safeguard national security and public interests, and protect the

legitimate rights and interests of citizens, legal persons and other related organizations, according to CAC.

Anthropomorphic AI interactive services are defined as sustained emotional interactions that simulate the human personality traits, thinking patterns and communication styles. From intelligent customer service to psychological healing, from childcare to elderly companionship, anthropomorphic AI interactive services have demonstrated vast application potential across multiple domains. However, deep-seated risks such as user emotional dependency have

gradually become more prominent, making regulatory governance increasingly urgent.

The measures encourage the innovative development of anthropomorphic AI interactive services, supporting independent innovation in algorithms, frameworks, chips, and other technologies, and promoting R&D and the establishment of standards. They also call for exploring the application of electronic signature authorization in this field.

Service providers are encouraged to expand applications in areas such as cultural dissemination, childcare, elderly companionship, and support for people with special needs.

The measures lay out a clear set of prohibitions. Service providers are barred from generating content that glorifies or encourages self-harm, suicide, or verbal violence — all of which can harm users' physical health, personal dignity or mental well-being. The extraction of state secrets, trade secrets or personal information through deceptive means is also strictly forbidden. Special safeguards are required for minor users: Content that may trigger unsafe imitation, extreme emotions, or harmful habits is off-limits.

Beyond these content restrictions, the measures also prohibit providers from overaccommodating users to the point of fostering emotional dependency or addiction, or from manipulating users emotionally to push them toward unreasonable decisions that undermine their legitimate rights and interests. Any other activities that violate laws, administrative regulations or relevant state provisions are also prohibited.

The measures bring not only compliance obligations but also a critical opportunity to push the industry toward transformation. Legislation will compel providers to shift from pursuing immersive experiences and high user stickiness to exploring healthy, beneficial and well-defined new models of human-machine interaction, said Chen Liang, dean of the School of Artificial Intelligence and Law at Southwest University of Political Science & Law.

He said this will ultimately direct resources toward application innovations with genuine social value and regulatory compliance, spurring the healthy and orderly growth of the AI industry.



A child plays Go with a robot in Chengdu, Sichuan province. (PHOTO: XINHUA)

NCGC: A Noah's Ark for Seeds

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The work identified elite germplasm, such as high-quality multi-disease-resistant wheat, drought-tolerant corn, high-oil high-yield soybean and salt-tolerant rice germplasm.

Based on this, the germplasm resource project Tianshu 2.0 was jointly launched by CAAS and institutions like the NCGC in May 2025, with CAAS taking the lead.

Zhou Wenbin, director of the Institute of Crop Sciences of CAAS, said the project will establish a core germplasm collection that covers more than 95 percent of the diversity of four major food crops, namely rice, wheat, corn and soybeans. It will build a "genotype + phenotype + environmental" standard data set, and a crop gene resource bank. This will advance an integrated breeding system incorporating resource, data, analysis and design.

Researchers have made a series of breakthroughs in identifying elite genes and cultivating major new species via innovation platforms like the NCGC.

For example, they successfully assembled high-quality genome sequences of representative wheat varieties from different stages of China's wheat breeding history, revealing patterns of genomic variation and the evolutionary trajectory of wheat cultivar improvement. Key genes controlling high yield in rice have been cloned, the mechanisms underlying their yield-enhancing effects illustrated, and core targets for high-yield rice breeding located.

All these achievements provide new theoretical basis and technological approaches for molecular design breeding and the development of high-yield, high-quality crop varieties.

Planning for the future

Against the backdrop of accelerating

climate change and more frequent extreme weather events, traits such as disease resistance, drought tolerance, salinity tolerance and heat tolerance have become increasingly important in crop breeding.

As a "natural gene pool" for crop breeding, crop wild relatives — undomesticated ancestors or cousins of modern crops — harbor valuable genes for disease and pest resistance, stress tolerance and other desirable traits, Xin said.

Through hybridization with wild relatives, valuable genes can be introduced into cultivated crops, thereby increasing crop yields and enhancing crops' ability to cope with climate change and other adverse environmental conditions.

To this end, the NCGC has led the whole-genome resequencing of 24,000 wild rice germplasm accessions, identifying 385 superior alleles associated

with disease and pest resistance, stress tolerance and other desirable traits. It has also carried out precise phenotyping of 15 agronomic traits in wild rice germplasm resources, including basic agronomic, yield and quality traits, as well as resistance to rice blast and tolerance to cold.

As a result, more than 100 wild rice core parental lines with significant breeding potential have been identified. They include those exhibiting salt tolerance throughout the entire growth period, resistance to the brown planthopper and resistance to rice blast.

The research has also elucidated the molecular genetic mechanisms underlying important traits in wild rice, providing core germplasm resources and theoretical support for rice genetic improvement and national seed security.

In this "Noah's Ark" for seeds, each seed carries a possibility for the future.

Global Journal Observatory

Global Change Biology: Advancing Science for a Rapidly Changing Planet

By Danielle WAY

The past few decades have been marked by unprecedented environmental change. Climate warming, biodiversity loss, land-use transformation and biogeochemical disruptions are reshaping ecosystems across the globe. Addressing these challenges requires not only scientific excellence, but also truly interdisciplinary thinking and international collaboration.

Global Change Biology (GCB) was founded to serve precisely this purpose. Since its launch in 1995, GCB has been dedicated to publishing research that improves our understanding of biological responses to global environmental change and informs solutions for a more sustainable future. Our mission has been clear and consistent: to provide a rigorous, inclusive platform where science can contribute meaningfully to societal decision-making.

A journal at the intersection of disciplines

Research published in *GCB* spans ecology, evolution, biogeochemistry, agriculture, forestry, marine and freshwater science, and Earth system science, united by a shared focus on biological change in a rapidly evolving world. By bringing together these perspectives, the journal encourages synthesis, comparison and conceptual innovation.

We particularly value work that connects fundamental biological processes with large-scale environmental drivers and real-world implications. From climate impacts on food security to ecosystem feedbacks that shape the carbon cycle, *GCB* seeks to highlight research that advances both theory and application.

Supporting global research community

GCB has always welcomed submissions worldwide. In recent years, contributions from China and the broader Asia-Pacific region have grown significantly, reflecting both the scale of environmental change in these regions and the strength of local research communities.

Chinese scientists have made important contributions to topics such as terrestrial and marine carbon dynamics, ecosystem responses to climate extremes, land-use change, and conservation biology. *GCB* values these contributions and is committed to fostering strong engagement with researchers in China and globally, including early-career scientists.

Beyond publishing research, the journal promotes scientific exchange through editorial participation, invited pieces that make novel work more broadly accessible, and community engagement. These efforts help ensure that



Front cover of Global Change Biology, Volume 32, Issue 7. (COURTESY PHOTO)

cutting-edge science is shared across borders and disciplinary divides.

Science with responsibility and impact

GCB strives to uphold the highest standards of research integrity, transparency and peer review, while also supporting practices aligned with open and responsible science.

We encourage the clear communication of complex findings and welcome research that informs policy discussions, management strategies and long-term planning. By publishing robust evidence on biological responses to global change, *GCB* aims to support informed decision-making at local, national and international levels.

Beyond academia, *GCB* also contributes to global science-policy processes. Research published in *GCB* has been widely cited in major synthesis efforts, including reports by the Intergovernmental Panel on Climate Change, particularly in areas such as terrestrial carbon cycling, ecosystem responses to climate extremes, and land-climate feedbacks. By encouraging interdisciplinary research with real-world relevance, *GCB* supports the translation of scientific understanding into assessments that shape international climate discourse.

As environmental challenges intensify, *GCB* will continue to adapt — embracing new methodologies, supporting interdisciplinary collaboration, and amplifying diverse scientific voices — while remaining anchored in its core mission.

We look forward to working with researchers worldwide to advance knowledge, inspire collaboration and contribute to a shared understanding of how science can help societies navigate global environmental change.

The author is the editor-in-chief of Global Change Biology and a professor at The Australian National University.

Journal Review

GCB was launched in 1995, at a pivotal moment when global change ecology was transitioning from theoretical groundwork to rapid growth. Over the past 30 years, it has remained focused on the major scientific questions of global change, chronicling and guiding the development of global change biology and ecology. It has grown into a key platform linking China with the world and advancing exchanges in this field.

For Chinese researchers, *GCB* has long been a window onto international frontiers and a compass for the discipline's direction. My personal journey with the journal — from first reading it as an undergraduate to later serving on its editorial board — reflects a path shared by many mid-career and early-career global change scientists in China. The journal has helped bring cutting-

edge theories and methods into China, while deepening the integration of Chinese research with the international academic community.

At the same time, *GCB* has served as a bridge through which the world has come to know China's contributions. Over two decades, Chinese scientists have published substantial high-impact, original work in the journal, showcasing the country's achievements in global change biology and ecology and steadily raising China's international standing in the field. I look forward to seeing more Chinese scientists leverage this platform to contribute China's wisdom to global change science.

— Piao Shilong, academician of the Chinese Academy of Sciences and vice president of Peking University