China in Action: Achieving Carbon Emissions Peak and Neutrality

By ZHONG Jianli

Achieving carbon emissions peak and carbon neutrality and striving to build a clean, low-carbon, safe and efficient energy system is a major commitment made by China. To fulfill it, concerned departments of the State Council are adopting relevant guidelines.

The Guideline on Accelerating the Development of New Types of Energy Storage

The National Development and Reform Commission and the National Energy Administration jointly issued the Guideline in order to promote the rapid development of new types of energy storage, which plays an important role in realizing carbon emissions peak and carbon neutrality in the energy sector.

The Guideline clarifies that by 2025, new types of energy storage will be transformed from the initial stage of commercial use to large-scale application. The innovation of new energy storage technology will be significantly improved, with more core technology and equipment independently controllable, and considerable progress will be made in achieving its high safety, low cost, high reliability, and long life of use. The standard and industrial systems will be basically complete. The market environment and business model is expected to reach an installed capacity of more than 30 million kilowatts.

The aim is to realize comprehensive, market-oriented development of new types of energy storage by 2030. Technological innovation and industrial levels in this field are world leaders. The standard system, market mechanism, and business model are deeply integrated with all aspects of the power system. The installed capacity can basically meet the needs of the new power system, and new types of energy storage will be one of the key supports for peaking carbon emissions and achieving carbon neutrality in the energy sector.

The Guideline also puts forward the need to improve technological innovation capabilities in developing new types of energy storage. It is necessary to carry out forward-looking, systematic and strategic research and development of key energy storage technologies, persist in the diversification of the technologies, and try to lower the cost of relatively mature technologies such as lithium-ion batteries, and make them more feasible for large-scale commercial use. Long-term storage technologies, such as compressed air and flow batteries have entered the early stages of business development, and large-scale trials of flywheel energy storage, sodium-ion batteries and other technologies should be accelerated. Research and demo applications should also be focused on hydrogen, heat and other innovative storage technologies based on demand.

The Carbon Neutrality Technology Innovation Action Plan for Colleges and Universities

Meanwhile, in order to provide sci-tech support, as well as a guarantee to provide a talent pool to achieve the goal of carbon neutrality, the Ministry of Education has formulated an Action Plan for colleges and universities.

The Action Plan asks for colleges and universities to facilitate achieving the goals of carbon neutrality, including improving the talent training and cultivation system, making breakthroughs in basic research, key technologies and innovation capabilities, transforming scientific and technological achievements into applications, strengthening international cooperation and exchange, as well as enhancing studies of carbon neutrality strategies.

According to the Action Plan, colleges and universities should take advantage of their basic research capabilities and interdisciplinary integration, accelerate the building of carbon neutrality technological innovation and talent training systems, and speed up applications of relevant scientific and technological results in key areas, industries and regions.

Achieving carbon emissions peak and carbon neutrality will not only benefit China's economic development, environment and public health, but also contribute to global climate change actions and sustainable development. To make the world a better place, China is now doing its part, and the world needs to do theirs too.

A glance of Hong Kong Science Park. (PHOTO: VCG)

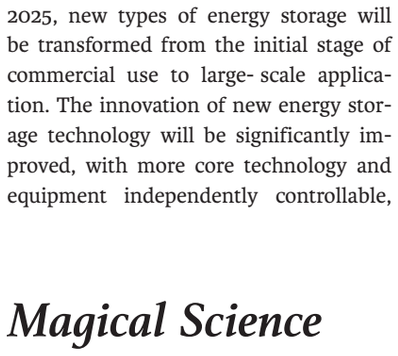
Magical Science

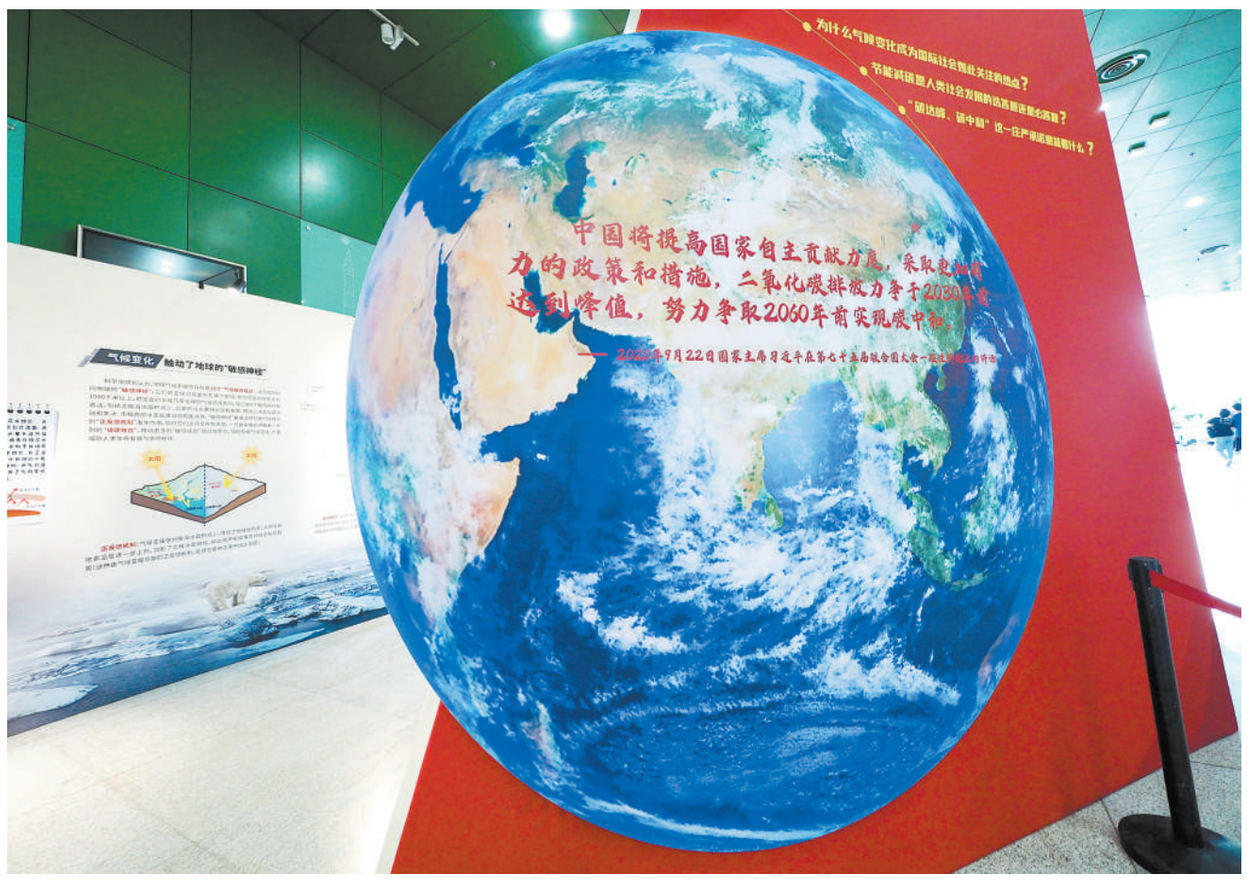
This year's National Science Popularization Day kicked off on Sept. 11 across the country.

Photo on the right shows a thematic exhibition of "Carbon Peaking, Carbon Neutrality" in China Science and Technology Museum, Beijing, Sept. 11.

Photo below shows a girl experiencing the magic of a robot in Inner Mongolia Science and Technology Museum, Hohhot, Inner Mongolia, Sept. 11.

(PHOTO: VCG)





New Measures to Support Hong Kong Sci-tech Innovation

By CHEN Chunyou

On September 7, a seminar on China's central government's sci-tech policies benefitting Hong Kong was held at the Hong Kong Science Park. Representatives from the Ministry of Science and Technology (MOST), China Association for Science and Technology (CAST) and National Natural Science Foundation of China (NSFC) introduced a number of new measures to strengthen support for science and technology innovation in Hong Kong.

The measures benefitting Hong Kong include opening up more national-level sci-tech programs, allowing young scholars to apply for the Excellent Young Scientists Fund, NSFC, welcoming Hong Kong's sci-tech personnel and experts to participate in nationwide academic associations of the CAST, and be admitted to the national sci-tech expert database and the award assessment expert database, improving the mechanism on shared use of large instruments and equipment for research and development (R&D) with Hong Kong, and deepening sci-tech exchanges between the Chinese mainland and Hong Kong.

Xu Jie, deputy director general of Office of Hong Kong, Macao and Taiwan Affairs at MOST, said Hong Kong's researchers can soon register an account through the national network management platform in response to the demand for large instruments and equipment in Hong Kong, and inquire about and reserve nationwide scientific instruments according to instrument categories, academic discipline, and geographical locations. Xu said a people-to-people exchange program on science and technology will be introduced for Hong Kong youth, including visiting national independent innovation demonstration areas, high-tech industrial development zones and leading high-tech enterprises, while supporting young scientists to conduct short-term studies in the mainland's research institutes.

Yang Shuxuan, deputy director of the Science and Technology Innovation Department of CAST, said that more than 3,000 Hong Kong industry professionals have joined the nationwide academic associations of the CAST and made positive contributions.

Meanwhile, Wang Changrui, director of Bureau of Planning and Policy of NSFC, said 64 research projects from Hong Kong and Macao have been funded by NSFC, with a total funding of 87.7 million RMB. The NSFC plans to release a guide to the young scientists fund for Hong Kong and Macao in December this year, for which young scholars eligible are welcomed to apply.

Sit Wing-hang, secretary for Innovation and Technology of Hong Kong Special Administrative Region said that opening up more projects and supplying the mainland's large instruments and equipment to Hong Kong will help the local research sector obtain more resources to conduct R&D work. The participation of Hong Kong's sci-tech personnel and experts in national academic associations of the CAST and different expert databases could allow Hong Kong's researchers to better utilize "the advantage of Hong Kong" and serve the national needs for development.

Sit stressed that the national 14th Five-Year Plan gives clear support for Hong Kong to build an international innovation and technology hub. Research teams in Hong Kong will actively integrate into the construction of the Guangdong-Hong Kong-Macao Greater Bay Area, and promote Hong Kong as an innovation hub with international influence, contributing to China's development into a sci-tech powerhouse.

Sci-tech Sparks High-quality Employment Opportunities

By LI Linxu

As a new round of sci-tech revolution and industrial transformation is gaining momentum, new job and entrepreneurship opportunities are on the rise in China.

By 2025, the newly added urban jobs will reach more than 55 million, the quality of employment will be steadily improved, and the environment of entrepreneurship will be further optimized, according to a plan issued by the State Council on August 27.

Aimed at promoting employment in the next five years, the plan pledges to take a series of measures, among which the role of sci-tech is highlighted.

"In recent years, the country's industrial structure transformation and upgrading has sped up. In particular, the application of some new science and technology is rapidly deepening and expanding, such as chips, semiconductors and new energy resources, showing a strong job demand in these fields, especially for skilled personnel," said Gao Gao, deputy secretary general of the National Development and Reform Commission during a policy briefing on August 30.

To meet the ever-increasing demand for skilled personnel, better training services and vocational and technical education are high on the agenda.

During the 14th Five-Year Plan period (2021-2025), an estimated 75 million people will receive subsidized vocational skill training, according to the plan.

"The country possesses 200 million skilled workers, of whom over 50 million are highly skilled, and they constitute a strong pillar supporting the drive of 'made in China' and 'designed in China,' " said Zhang Ying, director of the Department of Employment Promotion of the Ministry of Human Resources and Social Security.

The plan called for creating a better environment for entrepreneurship and innovation, and enhancing the driving role of entrepreneurship and innovation in boosting employment, particularly in the field of science and technology.

National sci-tech platforms, sci-tech reports, sci-tech data, sci-tech facilities and university labs will be more open to enterprises, social organizations and individuals, to create more entrepreneurship and job opportunities, according to the plan.

AI and related technologies such as robots, drones and autonomous vehicles could provide a net boost to employment in China of around 12 percent over the next two decades, equating to around 90 million additional jobs, according to a report released by PWC in 2018.

More efforts will be made in the talent cultivation and skill training of emerging industries, according to the plan, citing the examples of AI and digital technology.

"In 2020, the country's high-tech enterprises generated 37.84 million jobs, while makerspaces and incubators employed 4.8 million sci-tech personnel," said Wang Zhigang, Minister of Science and Technology, during a press conference in July.

In addition, the initiative of sci-tech entrepreneurship driving high quality employment proposed by the Ministry of Science and Technology provided 167,000 research assistant jobs, and created 150,000 new jobs by startups and incubators last year, added Wang.

BRICS Countries Up Contribution to Global Sci-tech Innovation

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By 2030, the comprehensive innovation competitiveness of the five countries will continue to increase, and the comprehensive innovation competitiveness index of each country will see a different growth rate, said the report.

According to Oleg Karasev from Lomonosov Moscow State University, we are entering an era of rapid technological changes. It is of particular practical significance to strengthen exchanges and cooperation between countries in sci-tech, so as to promote research in relevant fields and ensure the implementation of research results, he said.

The report identifies 14 priority areas for sci-tech cooperation and development, including information and communication technology, nanotechnology, advanced manufacturing and robotics, space transportation systems, energy efficiency and energy conservation, nuclear energy, renewable energy development, mineral exploration, and biotechnology, said professor Yi Degang from Donghua University, a co-compiler of the report.

China Shows Commitment to Cut Carbon Emissions

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Peaking carbon emissions and achieving carbon neutrality will bring about a sci-tech revolution, resulting in major changes in the economy and society, which is no less important than the three previous industrial revolutions, said Chinese Minister of Science and Technology Wang Zhigang.

Rectify deviations in carbon reduction efforts

The Political Bureau of the CPC Central Committee held a meeting on July 30, calling for the introduction of an action plan as soon as possible for achieving carbon peak before 2030.

It urged putting an end to "whirlwind campaigns" for carbon reduction and resolutely curbing the reckless development of high-energy intensity and highly pollutive projects.

In the process of cutting carbon emissions, some regions have set overly ambitious goals or simply chanted slogans without taking action, while some industries failed to make solid energy-saving efforts, said the National Development and Reform Commission (NDRC), adding that these issues must be addressed.

China will rectify deviations in its effort to cut carbon emissions, said NDRC.

Global challenge needs international cooperation

Climate change is a global challenge that does not respect national borders, according to the UNDP, and it is an issue that requires international cooperation to help developing countries move toward a low-carbon economy.

Compared with developed countries who have already peaked carbon emissions, carbon neutrality is a much bigger challenge for China.

The EU and the U.S. peaked carbon emissions in 1979 and in 2005, and both pledged to achieve net zero emissions by 2050, taking 71 and 45 years respectively.

While for China, there will be only 30 years from peaking carbon emissions to carbon neutrality.

This is a major strategic decision made by China to fulfill its responsibility to build a community with a shared future for mankind and to achieve sustainable development.

The Guardian calls this an "unexpectedly forthright commitment," while the UN climate chief Patricia Espinosa described it as "a big shift for curbing emissions and a significant step forward in international cooperation."

As State Councilor and Foreign Minister Wang Yi said during the meeting with U.S. Special Presidential Envoy for Climate John Kerry via video link, China-U.S. cooperation on climate change not only serves the interests of both sides, but also benefits all mankind, which enjoys broad prospects for development.