Harnessing Sci-tech Support to Build Green China

Policy

By ZHONG Jianli

The report to the 20th CPC National Congress states that Chinese modernization is committed to creating harmony between humanity and nature. To make this happen, China will continue to uphold the principle that lucid waters and lush mountains are invaluable assets, and ensure a greener country.

To act on this principle, the Ministry of Science and Technology, and other government bodies, recently released the *Special Plan on Scientific and Technological Innovation in the Field of Ecological Environment for the 14th Five-Year Plan Period (2021-2025)*.

"The issuance of the plan is another important step taken by China toward building a beautiful country. The plan lays out 50 main technology development tasks in ten fields, including eco-environment monitoring and climate response. The aim is to accelerate an all-round transition to a model of green economic and social development," said Foreign Ministry spokesperson Zhao Lijian at a regular press conference on November 4.

Black-necked cranes and other migratory birds perch and fly in the Napa Sea of Shangri-La, Yunnan province. (PHOTO: VCG)

The eco-environment monitoring should become more precise, dynamic and intelligent, according to the plan. To this end, it is necessary to make breakthroughs on intelligent correlation sensing and integrated remote sensing technologies to monitor the PM2.5 and O3 as well as their main precursors, and develop pollution leakage and discharge early warning and tracing technology.

For water pollution prevention and control, the plan proposes to develop new technologies for restoring urban water ecology, preventing and utilizing industrial waste water, and purifying drinking water.

Addressing climate change issues is also an important focus of the plan.

China has announced the vision of carbon peaking and carbon neutrality, and established the "1+N" policy framework for achieving these goals.

The plan emphasizes the development of an early warning platform for identifying and assessing climate change risks, and the research on decarbonization technology in thermal power, steel, cement, chemical, non-ferrous metal, and transportation industries. Development of carbon capture, utilization and storage (CCUS) technologies is also encouraged.

Meanwhile, providing technological support for the implementation of international ecological and environmental conventions, including the Stockholm Convention on Persistent Organic Pollutants, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the Vienna Convention for the Protection of the Ozone Layer, is a highlight of the plan.

Furthermore, China will deepen international bilateral and multilateral sci-tech cooperation and personnel exchanges on eco-environment protection. To do this, it will actively establish a system of technical standards that is in line with international standards.

China also expects to promote relevant programs on climate change and biodiversity with EU, Germany, Canada, Singapore, Norway, the U.S. and other countries.

To enhance the sharing of innovation achievements, the country will drive South-South cooperation in sustainable development, and build a Belt and Road innovation community, says the plan.

Pilot Program Launched to Reform Appraisal of Experts

By ZHONG Jianli

China has carried out a two-year pilot program to explore new ways to evaluate and motivate sci-tech experts, aiming to consolidate talent support for realizing sci-tech self-reliance and self-strengthening. That's according to a recent plan issued by the Ministry of Science and Technology and eight other government departments.

Titled the *Work Plan on Pilot Reform of Evaluation for Sci-tech Experts*, the document has identified 12 research institutes, nine universities or their affiliated institutions, and six localities to implement the two-year pilot program.

The goal is to explore different evaluation indexes and methods for sci-tech professionals engaged in different types of innovative activities, thus improving mechanisms for identifying, training, using and motivating those professionals, so that they can better serve the national sci-tech innovation requirements.

It is expected that an appraisal system will be set up to prioritize the innovation value, competency and contribution of experts, instead of only considering their education background, the number of research papers they have published, or the prizes they have won.

On the basis of strengthening the evaluation of scientific spirit and academic ethics of scientists and professionals, the pilot program is assigned according to four types of innovation activities: undertaking major national research projects, basic research, applied research and technology development, and public welfare research.

The plan also proposes that local governments should organize and guide the leading local scientific research institutions to deepen reform, take bold moves to innovate the mechanisms of talent appraisal, and explore regional experiences that can be popularized and replicated nationwide.

AI Empowers Comprehensive Health Care

By CHEN Chunyou

On November 12, the WYSS 2022 International Forum on Comprehensive Health Care themed "Changes and Opportunities of Comprehensive Health Industry in AI Era," was held in Wenzhou, east China's Zhejiang province.

Representatives from universities, institutes, and industrial circles discussed the opportunities and challenges of AI, big data, and Internet of Things in R&D of new medicines, medical health and comprehensive health industry application.

The report to the 20th CPC National Congress said that China will advance the Healthy China Initiative, and give strategic priority to ensuring people's health. Under the guidance of the country's policies of AI and the application of innovative technologies, the comprehensive health industry will develop towards a more digital, intelligent and inclusive direction, said Zhang Biyong, a member of the CPC leading group of the Ministry of Science and Technology, and president of *Science and Technology Daily*, at the opening ceremony of the forum. He stressed that science holds the key to solving human health issues, and humans should seek impetus from innovation.

Participants exchange their ideas on AI and medical health at the Comprehensive Health Care forum. (PHOTO: WYSS 2022 Organizing Committee)

The traditional methods of curing chronic diseases are less effective, which requires new theories and strategies. Li Xiaokun, an academician of the Chinese Academy of Engineering (CAE) and president of Wenzhou Medical University, said that with remarkable ability in data transmission, information integration, and statistical analysis of a large number of samples, AI conducts medical experiments closer to the real world.

Zheng Yuguo, an academician of CAE, said the production of medicines should meet the requirements for green development, adding that AI can advance the deep integration between green manufacturing and smart manufacturing, in which researchers could explore the method of improving the quality of health products and reducing costs.

The development of data, algorithms and computing power makes AI a reality. Hua Fengmao, chairman of China Finance Strategies Investment Holdings Ltd, believed that AI will greatly shorten the production cycle of innovative medicines and provide better and safer options.

Although we are entering the AI era, the research on human brain mechanisms should not be ignored, said Luo Qingming, an academician of the Chinese Academy of Sciences. Fan Daiming, an academician of CAE, also stressed that researchers can use AI to analyze scientific research, but should not overly rely on it.

Cyberspace Vision for a Shared Future Unveiled

From page 1

The Roadmap of Practical Cooperation on Ensuring Security in the Use of ICTs with BRICS countries in 2017, and the China-LAS Cooperation Initiative on Data Security launched in March 2021, are both examples.

With the rapid development of information technology, the Internet has not only penetrated into all aspects of human life and work, but also made people face increasing prominent threats and challenges, said Cao Shumin, deputy head of Cyberspace Administration of China, adding that the situation calls for more just, reasonable and effective cyberspace governance through joint efforts, as well as a strong global response.

In the congratulatory letter to the opening of 2022 World Internet Conference Wuzhen Summit on November 9, President Xi Jinping said that China is willing to work with countries around the world to blaze a global digital development path that features joint building and sharing of digital resources, vibrant digital economy, efficient digital governance, flourishing digital culture, guaranteed digital security, and mutually beneficial digital cooperation.

Hi-tech Zones

Longxi Eyes TCM National Hub Status

By CHEN Chunyou

Natural advantages can be transformed into the momentum for development if well exploited, something that rings true for Longxi county.

Longxi, in northwest China's Gansu province, has a long history of traditional Chinese medicine (TCM). It has a mild and semi-arid monsoon climate and diverse ecological environment, which match the biological characteristics of medicinal herbs. Benefiting from the innate natural gift, medicinal materials production has formed obvious advantages whether in varieties, planting area or yield. Now it has become an important planting base of TCM.

According to the report to the 20th CPC National Congress, China will promote the preservation and innovative development of TCM. This will become the blueprint for the TCM industry in the years to come.

Longxi High-tech Zone (LHZ) was established in 2021, based on its long-standing industrial foundation. This September, LHZ was designated as an industrial base for developing TCM by the Torch High Technology Industry Development Center under the Ministry of Science and Technology, marking the birth of the third industrial base featuring TCM industry in Gansu province.

The cultivation of herbs used in TCM contributes much to Longxi's economy. Astragalus and Codonopsis, among other medicinal plants, flourish here and have been processed over the years.

Longxi has built up the comprehensive industrial chain of the TCM sector, producing decoction pieces, herbal extracts and patent medicines. Now, there are about 299 TCM enterprises in LHZ.

In 2021, Longxi's TCM industry contributed 16.7 percent to the county's GDP, 21.9 percent to local fiscal revenue, and about 40 percent to farmers' per capita disposable income, becoming the county's primary industry.

Meanwhile, LHZ has introduced measures to make the TCM industry prosper, including initiating an industrial innovation alliance, and establishing a TCM testing alliance and incubation platforms.

The construction of a logistics port infrastructure project with an investment of 2.43 billion RMB kicked off in the county this September. It will improve traffic efficiency, and promote high-quality development of the TCM industry after becoming operational.

Longxi gives priority to cultivating talented individuals. Now, a large number of experts in standardized TCM herbs-planting, storage, processing, marketing, R&D, and enterprise operation and management, have been attracted to the area.

"Through training, I learned the techniques of mulch outcrop cultivation, soil treatment, and ditching. I have not only mastered a lot of new knowledge, but also confirmed the idea of planting Chinese medicinal plants in the future," said Quan Shulin, a local farmer at the county.

Of note is that digital technology is also used in the TCM industry, with a digital trading center in operation to promote the online sales of local medicine businesses.

This July, the development plan for the biomedicine industry in the 14th Five-year Plan period was released by Gansu provincial government, which proposed to build Gansu into a leading national hub for TCM industrial innovation and form a distinctive biomedical industry cluster by 2025. This will create additional opportunities for Longxi to achieve more breakthroughs.

Aerial photo shows the standardized planting base of Chinese medicinal herbs in Kezhai town, Longxi county, Gansu province. (PHOTO: VCG)

Four National Standards Released to Evaluate Research Projects

By LI Linxu

A batch of standards concerning the evaluation of sci-tech research projects was recently released by the State Administration for Market Regulation (SAMR).

One of the newly released standards is the general rules for sci-tech research projects evaluation.

The other three standards are guidelines for evaluation of sci-tech research projects in the field of basic research, application research, and development research.

The standards classify the evaluation of sci-tech projects into four categories, that is, project initiation evaluation, interim evaluation, acceptance evaluation and follow-up evaluation.

In light of the activities of each category, the standards have laid out specifics of evaluation for reference.

For basic research, the relevant standard emphasizes evaluation in its original, theoretic, and experimental aspects.

In application research, the corresponding standard highlights evaluation in its innovative, pioneering and applicable characteristics.

In development research, the relevant standard attaches great importance to innovation, applicability and sustainability.

Targeting different evaluation needs, the set of standards put forward a range of optional evaluation methods, such as peer review, technical report, and multi-dimensional index evaluation.

The standards are one of important measures to improve sci-tech innovation system, and will speed up the transformation of sci-tech achievements, according to SAMR.

SAMR says these four standards are recommended national standards, and will provide a set of general frameworks and classified evaluation methods for sci-tech research projects.