Improving Overall Efficiency of Innovation

Policy

By CHEN Chunyou

Innovation remains at the heart of China's modernization drive. According to the report given to the 20th CPC National Congress, China will enhance basic scientific and technological capacity, and ensure better strategic input from the science and technology sector, so as to boost the overall efficiency of its innovation system.

In response, many regions have proposed their development strategies.

Optimize innovation ecosystem

Xinjiang Uygur Autonomous Region will move faster to establish an evaluation system for researchers that emphasizes innovation value, ability and contribution, and introduce additional inspiring measures to attract researchers from other provinces to come and work periodically in the region.

More efforts will be made to persuade high-level research institutes to set up innovation bases in Xinjiang, while establishing a number of clinical medical research centers and field scientific observation and research stations.

In addition, national agricultural science parks will be established in prefectures and cities, and technical task forces are encouraged to start businesses in rural areas, supporting industrial innovation and rural revitalization.

In order to unleash the vitality for innovation, major projects are expected to be carried out around advantageous industrial clusters in oil and gas production and processing, and cotton and textile production, to build a modern industrial system with Xinjiang characteristics, said Sun Yongjian, director-general at Science and Technology Department of Xinjiang.

A ship-building plant in Dalian city, Liaoning province. (PHOTO: VCG)

Take advantage of regional potential

Yunnan is widely known as the kingdom of plants and animals in southwest China for its distinctive resources in these two fields.

Centering on ecological security, biodiversity protection and plateau lake protection and management, Yunnan will carry out forward-looking innovations to help resolve major national technological tasks.

Meanwhile, Yunnan will introduce measures to upgrade its opening up to Southeast Asian countries, such as holding international talent conferences, co-building laboratories and science parks, deepening cooperation in technology transfer and dispatching national technical task forces to carry out technological services.

To promote its high-quality development, industrial innovation in such advantageous fields as green energy, new materials, plateau modern agriculture, and biomedicine will be advanced. In particular, the open competition mechanism will be adopted to select the best candidates across society to address technical problems in these sectors.

Intensify strategic sci-tech strength

Liaoning province in northeast China will lay out major sci-tech infrastructure in marine engineering, computing power and high-performance materials, and reinforce its sci-tech strength in clean energy and high-end equipment manufacturing.

An internationally leading photonics science center is planned to be built in Dalian city, where overseas scientists are welcomed to conduct cooperative research with their Chinese counterparts.

At the same time, Dalian will introduce targeted policies for high-tech enterprises and support those mastering core technologies in building key laboratories and technological innovation centers, to make more pioneering breakthroughs.

The quality of provincial and municipal key laboratories will be improved by optimizing their layout and implementing a dynamic evaluation system.

In addition, leading tech enterprises are encouraged to undertake national research projects, and establish alliances with universities, institutes and related enterprises to produce practical results that cater to market demands.

World's Largest National Park System Planned

By LI Linxu

As one of major moves to safeguard biodiversity, China is planning to build the world's largest national park system.

49 candidate sites have been selected across the country to build national parks, according to a spatial layout plan for the country's national park system, jointly released by four government bodies, including the National Forestry and Grassland Administration (NFGA) and the Ministry of Natural Resources (MNR).

The candidate sites consist of 44 land areas, two land and sea integration areas, and three sea areas, covering a total of about 1.1 million square kilometers, with land areas and sea areas accounting for about 90 percent and 10 percent of the total respectively.

By 2035, the spatial layout tasks set out by the plan are expected to be basically fulfilled, according to the plan.

The national park system incorporates the areas that are most important to natural ecosystems, most unique in natural landscapes, most prime in natural heritages, and most diverse in biodiversity, said Li Chunliang, deputy administrator of NFGA.

Among the 49 candidate sites, 13 are located on the Qinghai-Xizang Plateau and form a national park cluster accounting for 70 percent of the total coverage areas of national parks.

Meanwhile, nine and 11 candidate sites are located in Yellow River Basin and Yangtze River Basin respectively, which will play an important role in the ecological protection of corresponding regions as well as their high-quality development.

These sites include various ecosystems spanning from forests and grasslands to wetlands and deserts, involving more than 700 existing nature reserves, 10 world natural heritage sites, two world mixed cultural and natural heritage sites, and 19 world man and biosphere reserves.

There are more than 5,000 wild vertebrate species and 29,000 types of higher plants in these sites, covering more than 80 percent of the national key protected wildlife species as well as their habitats.

Of particular note is that the establishment and setup of national parks adopts a dynamic and open candidate site process, said Wang Zhigao, director of NFGA's Nature Reserve Management Department, adding that their exit and entry will be based on relevant assessment results.

A bird's-eye view of Wuyishan National Park. (PHOTO: XINHUA)

Market-oriented Green Technology Enhanced

By ZHONG Jianli

In order to better leverage the role of technological innovation in China's green and low-carbon development, the country has released an implementation plan to further improve the market-oriented green technology innovation system.

The plan, jointly released by the National Development and Reform Commission and the Ministry of Science and Technology, aims to strengthen enterprises' leading role in innovation, improve the market mechanism for the commercialization of green technology, and create an environment where all types of innovators can thrive through more efficient cooperation between enterprises, universities and research institutes.

The plan proposes to enhance green technology innovation by carrying out a number of projects, including the research and demonstration of key technologies for carbon peaking and neutralization, the comprehensive treatment of air, soil, and groundwater pollution, and the development of key technologies and equipment for the circular economy.

More efforts will be made to cultivate leading enterprises in green technology innovation and support the development of more specialized and innovative small and medium-sized enterprises in the field, according to the plan. By 2025, China will see more leading and specialized enterprises cultivated to develop green technology.

In addition, the plan encourages all kinds of innovators to develop key green technologies with independent intellectual property rights that have reached the international advanced level.

To speed up the transformation and application of green technology, the plan proposes that a green technology trading market will be promoted, and the application of green technology products will be encouraged.

The plan also calls for expanding international cooperation on green technology. Foreign investment in green technology and high-end equipment manufacturing will be welcomed, while Chinese green technology developers should actively expand the international market, so as to help address environmental challenges in other countries and regions.

Nan'an Embraces Smart Manufacturing

Case Study

By Staff Reporters

Nan'an, a county-level city in Quanzhou, southeast China's Fujian province, has stepped up efforts to upgrade its smart manufacturing industry and launched a number of high-level technological innovation platforms to develop core technologies in key areas.

In recent years, Nan'an has introduced major R&D institutions, including the National Intelligent Foundry Industry Innovation Center, and cooperated with Shanghai University Research Institute, Tongji University Design Innovation Center, and Nan'an Huada Stone Industry Technology Research Institute, to speed up the smart transformation of industry.

A robot arm works on an assembly line at a smart factory in Nan'an, southeast China's Fujian province. (PHOTO: XINHUA)

This has helped the city make great progress in such areas as 3D printing, water valves and stone materials.

In Quanzhou (Nan'an) High-end Equipment Intelligent Manufacturing Park, China's first 10,000-ton 3D printing full-process intelligent factory ushered in a new development phase in the smart transformation of the equipment manufacturing industry.

Professional teams from universities and institutes are also introduced to cooperate with local companies to make innovations in intelligent water valves.

Experts specialized in the fields of mechanical electronics, embedded systems, energy conversion and control circuits, intelligent systems, and sensor technology, have carried out key technical research on the "remote intelligent water valve," and developed a number of technologies with independent intellectual property rights.

At the same time, to accelerate the full integration of the industrial Internet and the traditional stone industry, Nan'an has established an industrial Internet platform for the application of stone materials.

Leading enterprises benefit from the major innovation platform and are able to accelerate their digital transformation. In Jiumu Group's high-end factory, which mainly produces smart toilets, all mechanical equipment is controlled by a 5G application, realizing man-machine collaboration in the production line and greatly improving production efficiency.

Through photovoltaic power generation, water saving and other emission reduction measures, the factory can achieve 18,000 tons of carbon emission reduction every year.

In the future, Nan'an will continue to support the establishment of new types of R&D institutions by adopting efficient and flexible market-based mechanisms and attracting more experts to motivate innovation and facilitate its high-quality development.

CAS Reports Focus on Resource, Environment Research

By Staff Reporters

In late 2022, the Chinese Academy of Sciences (CAS) released five research reports on lakes, wetlands, mountains, northwestern arid areas, and eastern mega city clusters, indicating that remarkable progress has been achieved in these five fields since the 18th CPC National Congress, while proposing suggestions to tackle problems occurred in development.

The Lake Ecological Environment Research Report shows the ecological environment of lakes is improving, with stably increasing biodiversity, and improved stability of the ecosystem. For example, the population of finless porpoises in Poyang Lake increased from 450 in 2012 to over 700 in 2021, and the total number of wintering migratory birds in the lake increased from 357,000 in 2012 to 689,000 in 2020.

The diversity of plant and aquatic invertebrate communities and the number of waterbirds have also seen an increase. According to the Wetland Research Report, since the implementation of the "Returning farmland to wetland" policy in 2014, a community with typical local wetland plants as the dominant species has been formed in Sanjiang Plain in 2019, and the number of aquatic invertebrates increased from 34 in 2014 to 45 in 2021.

Mountainous areas in China account for 83 percent of the most important areas for biodiversity conservation. The Development Report on Mountainous Areas said, over the last decade, protected mountainous areas increased by 14.4 percent to 1.17 million square kilometers, accounting for 65.3 percent of the country's total protected areas. Meanwhile, the habitat space of wild animals has expanded and the population of wild animals increased.

According to the Research Report on Water Resources and Ecological Environment in Arid Areas of Northwest China, water use efficiency has been improved. The area of water-saving irrigation has expanded, while the efficiency of agricultural water for production is significantly enhanced.

The Ecological Environment Research Report on Mega City Clusters in Eastern China shows that the three mega-city clusters in east China, including the Beijing-Tianjin-Hebei city cluster, Yangtze River Delta city cluster, and Guangdong-Hong Kong-Macao Greater Bay Area city cluster, account for about 31.43 percent of the country's total carbon emissions in 2019, noting that achieving carbon peaking and carbon neutrality should be set as the goal to promote high-quality growth of the eastern mega city clusters.

In the long term, urban cities should improve the efficiency of resource and energy utilization, accelerate the exploration of non-carbon energy, and explore reasonable ways to reduce high-emission industries, said researchers from CAS.