Structural Reform Drives Sci-tech Innovation

Policy

By LIU Yin & ZHONG Jianli

Over the past decade, China has prioritized structural scientific and technological reform as a crucial aspect of comprehensively deepening reforms, laying the foundation for a systemic framework to support sci-tech innovation.

This focus has assisted the country to enter the ranks of innovative nations on the global stage.

In 2023, China's total social R&D expenditure exceeded 3.3 trillion RMB, ranking second globally. It has also led the world in the number of patent applications under the *Patent Cooperation Treaty*, while the scale of its manufacturing industry has maintained global dominance for 14 consecutive years.

These impressive statistics underscore China's strides towards becoming a technological powerhouse. By driving technological and institutional innovation in tandem, China has cultivated a favorable environment for innovation, allowing both a diverse innovation drive and an opportunity to boost the national innovation system.

Removing institutional barriers

The call to deepen structural sci-tech reform has spurred actions across various sectors and regions, focusing on top-level design and meticulous execution of measures.

The Several Opinions on Deepening Structural Reform to Accelerate the Implementation of the Innovation-Driven Development Strategy, issued by the State Council in 2015, articulated 30 reform proposals across eight areas, fostering innovation vigor and vitality throughout society.

Revision and implementation of laws, including the *Law of the People's Republic of China on Scientific and Technological Progress* and the *Law of the People's Republic of China on Patents*, have made reform achievements legal.

"In accordance with the arrangements of the CPC Central Committee, the Ministry of Science and Technology (MOST) will further deepen the reform of the science and technology system, continuously remove institutional barriers that restrict the vitality of sci-tech innovation, and improve the overall efficiency of the national innovation system," said Yin Hejun, minister of science and technology.

Yin also noted that the MOST will continue to improve the governance mechanism for sci-tech innovation, the legal system for the research, development and application of new technologies, and the market environment for fair competition that encourages innovation.

Driving economic growth

The structural reform in the sci-tech field has driven reforms in various other sectors including the economy, culture and society.

"The technological system reform has always revolved around promoting the integration of science and technology with the economy and mobilizing the enthusiasm of researchers," said Ding Minglei, a researcher at the Chinese Academy of Science and Technology for Development.

During the 2023 Central Economic Work Conference outlining the economic agenda for 2024, emphasis was placed on using sci-tech innovation to lead the construction of a modern industrial system and enhancing the role of enterprises in innovation.

This not only signifies a crucial step in deepening structural scientific and technological reform but also signals the importance of integrating technological and industrial innovation.

In terms of bolstering the role of enterprises in sci-tech innovation, China has continuously improved policies, resources and projects. For instance, almost 80 percent of the national key R&D plans are involved in or led by enterprises. In addition, the proportion of deductible R&D expenses of eligible enterprises has been largely increased from 75 percent to 100 percent.

The country has also accelerated the commercialization of technological achievements, seeing a number of R&D achievements going from the "shelf" to the market.

Igniting talent creativity

Renewing the project and talent appraisal systems to better stimulate researchers' innovative potential has been another reform focus.

On July 3, 2018, China issued a guideline on deepening the reform of project evaluation, talent appraisal, and institution assessment. This 14-page document aimed to explore categorized evaluation and establish a scientific, standardized, efficient and trustworthy sci-tech assessment system.

In the subsequent four years, the country carried out three rounds of actions to reduce researchers' burdens, including addressing reimbursement complexities, and issues related to the overemphasis on publications, professional titles, academic degrees, and awards.

With these efforts, researchers can focus on research while relieved from tedious administrative work. More young sci-tech talent is also enabled to take the lead in major national R&D tasks.

A talent evaluation system oriented towards innovation value, capability, and contributions is taking shape, empowering scientists with greater decision-making authority over their research plans and funding usage.

Looking ahead, the country will keep perfecting its sci-tech innovation system to unleash the potential of technology as its main productive force, thereby speeding up technological achievements.

Case Study

Shanghai Pudong, A Magnet for Global Talent

By Staff Reporters

Malaysian scientist Xu Jinxiang, who works at the Tsung-Dao Lee Institute at Shanghai Jiao Tong University, finds the research atmosphere in Shanghai's Pudong New Area highly conducive.

As a scientist specializing in neutrino physics, Xu is particularly excited about the hard X-ray free electron laser facility being built in Zhangjiang Science City in central Pudong. He also likes the fact that there are 18 roads named after scientists in Zhangjiang.

The industries, such as intelligent manufacturing, data and chips in Pudong, have witnessed a fast-growing development in recent years. A comprehensive talent service system is urgently needed to attract experts to advance its growth.

To attract more talents like Xu, Pudong has recently implemented more convenient talent policies.

This started with a guideline in 2021 to support high-level reform and build Pudong into a pioneer area for socialist modernization.

For example, in order to provide a one-stop comprehensive service for experts of different backgrounds and age groups to familiarize themselves with Pudong and consider starting a career there, Pudong established many talent service platforms in 2023, such as the International Talent Station and the International Talent Port.

The Pudong International Talent Station offers international talents seven to 14 days of free accommodation and places to start businesses free for three to 12 months, as well as services such as policy consultation.

The Pudong International Talent Port has served over 261,000 domestic and international experts in the past five years.

By following the concept that "talent is the first resource," Pudong has long been at the forefront of pioneering open and convenient policies for talent acquisition, creating an ideal environment for global talent innovation and entrepreneurship.

Select Green Tech Targeted for Promotion

By CHEN Chunyou

China will organize a selection of advanced green technologies and release a green technology promotion catalog (2024 edition), according to a notice released by the National Development and Reform Commission and seven other government departments.

Technologies listed in the catalog will be promoted nationwide, aiming to accelerate the application of advanced green technologies, especially in key production processes.

According to the notice, the recommended technologies should be related to the following industries: energy conservation and carbon reduction, environmental protection, resource recycling, energy green and low-carbon transformation, ecological protection and restoration, and green upgrading of infrastructure.

The recommended technologies should have a significant impact on energy conservation and utilization. They should also be able to elevate the green quotient of related industries.

Those claiming the technology should have independent intellectual property rights for their technology, and have obtained a test report or technical evaluation report issued by a qualified third-party institution.

In addition, the selected technologies should be mature and reliable, and have promising application prospects, evidenced by at least two successful application implementations during at least one year.

Various relevant departments, industry associations, and central enterprises are urged to actively promote the application of green technologies listed in the promotion catalog.

Platforms such as the National Green Technology Trading Center, will be utilized to organize activities to promote the commercialization and industrialization of these green technologies.

Projects that carry out upgrades and transformations using these green technologies will receive support from the central budget.

Financial institutions are encouraged to bolster financial support for green technologies listed in the promotion catalog through green credits, green bonds, and tools supporting carbon emission reduction.

China's Success in Marine Improvement

By WANG Jing

As China's long-term marine eco-environment protection efforts see remarkable results, it is calling for international collaboration to further improve the global ocean environment. A white paper released by China's State Council Information Office on July 11 details all the achievements, methods used, and appeals made.

Sun Shuxian, vice natural resources minister and head of the State Oceanic Administration, highlighted that China is participating in the formulation of international rules on environmental protection and resource conservation.

Since 2012, China has submitted more than 800 proposals to international organizations, aligning closely with major cooperation initiatives such as *Transforming our world: the 2030 Agenda for Sustainable Development* and the *United Nations Decade of Ocean Science for Sustainable Development*.

Major changes have taken place in marine ecological and environmental protection in China.

By 2023, the proportion of near-shore waters with good to excellent quality rose to 85 percent, a 13.7 percentage point increase from 2018 levels, marking six consecutive years of growth.

China has amended seven administrative regulations and more than 10 departmental rules to protect the ocean. More than 53,000 sewage discharge points in and out of the sea have been investigated, more than 16,000 have been rectified, and special supervision actions have been carried out.

China has also harnessed and restored 1,680 kilometers of coastline and more than 750,000 mu (50,000 hectares) of coastal wetlands since the 13th Five-Year Plan period. A red line for marine ecological protection of 150,000 square kilometers has been drawn, forming an important ecological barrier at sea.

In the field of marine economy, China's gross domestic marine product reached about 9.9 trillion RMB (1.4 trillion USD) in 2023, an increase of six percent over the previous year, with a growth rate 0.8 percentage point higher than that of the national GDP.

China is committed to the protection of the marine eco-environment. Significant strides have already been made in the construction of beautiful bays, as outlined in policies such as the *14th Five-Year Plan for Marine Eco-environment Protection*.

At present, China is focusing on building more than 110 beautiful bays and clearing up marine garbage in 65 bays.

Advancing Patent Open License System

By ZHONG Jianli

The China National Intellectual Property Administration (CNIPA) recently issued a notice to facilitate the efficient operation of the patent open license system by expanding the modes and channels for the transformation and application of patents.

The notice clarifies how the system works: patent holders voluntarily submit declarations for opening the patent license and specify the licensing fee, which will be publicized by the State Council's patent administrative departments. Any organization or individual can obtain a license by notifying the patent holder in writing and paying the fee. The system ensures fairness and equality in granting licenses.

Universities and research institutions in China possess a considerable number of effective invention patents. However, many enterprises lack patented technologies, especially small and medium-sized businesses. So it is essential to improve the industrialization of patent achievements by removing the barriers to patent transformation.

The patent open license system, a critical institutional innovation, was introduced in the fourth amendment to the Patent Law, which came into force on June 1, 2021.

Implementing a straightforward "one-to-many" patent licensing approach will enhance efficiency, reduce transaction costs, and promote the transformation of sci-tech achievements into new quality productive forces, according to the notice.

It calls for collaborative efforts to operate the patent open license system and guides patent holders to standardize their submission of open license declarations and reasonably estimate the license fees, facilitating open sharing of licensing declaration information.

Regarding the standards for licensing fees, the notice specifies that for fixed licensing fees, the amount generally should not exceed 20 million RMB; for flexible ones, the rate typically should not exceed 20 percent of net sales or 40 percent of profits.

According to CNIPA statistics, China had over 4.99 million valid invention patents by the end of 2023.