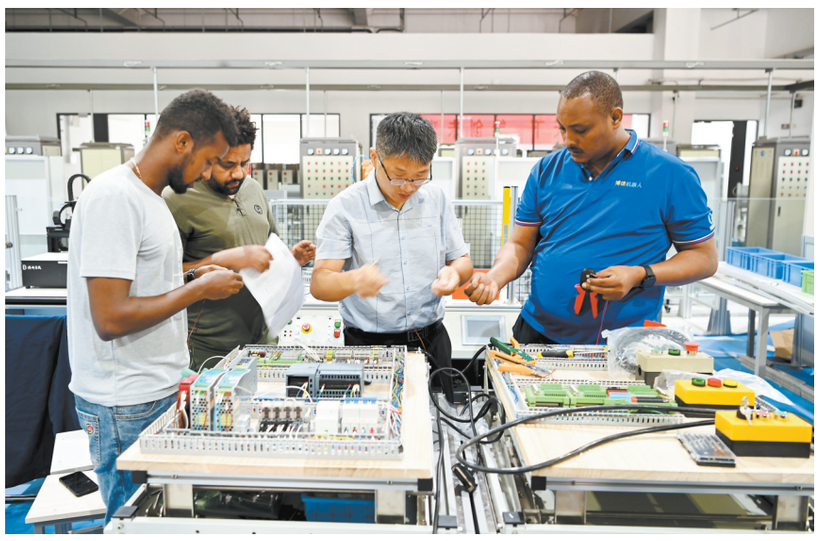
Vocational Education: Key to High-quality Growth

Policy

By CHEN Chunyou

China will promote collaborative innovation in vocational education, higher education and continuing education, according to the report to the 20th CPC National Congress. This offers guidance for the reform and innovation of vocational colleges.

Over the decades, vocational colleges have continued to promote educational reform, and contributed to the country's high- quality development. Now, the country is promoting integration between vocational education and general education, between industry and education, and between science and education.



More and more international students pursue their doctoral degrees or attend short-term training at Tianjin University of Technology and Education. Photo shows the lecturer conducts experiments with students at a training base. (PHOTO: XINHUA)

Create platforms

Tianjin University of Technology and Education in north China has set up a training center, which has advantages in theoretical research and developing talent.

Based on the national needs of such strategic emerging industries as intelligent technology, new energy and new materials, the university has built an Industry 4.0 technology platform, and a high-level social training and technical service center, to provide strong support for high- level technical college teachers throughout the country.

Notably, it established the China Research and Training Center for World Skills Competition, which is expected to play a bigger role in information sharing, research and consultation, exchange and cooperation, and technology transfer.

Innovate training mode

Wuxi Institute of Technology in east China's Jiangsu province has established the national standards in intelligent manufacturing and teaching standards for high-level vocational colleges.

It has opened a cluster of majors centered on intelligent manufacturing. Students here can obtain more than 200 patents each year. They have won more than 800 awards in various competitions above the provincial level to date.

The institute also cooperates with enterprises, such as Schneider Electric (China) Co., Ltd., to promote integration between industry and education.

Every year it proposes solutions for nearly 200 enterprises, which not only help solve technical problems, but also offer students a platform to practice their skills.

Serve local development

Bailie Vocational College in northwest China's Gansu province has close relationships with domestic enterprises, and has co-built training bases and practice workshops, including a seed production and breeding workshop, laying a solid foundation for improving students' ability and quality.

Globally, the college has worked with University of Agriculture, Faisalabad, in Pakistan to upgrade modern agricultural skills. It also has enrolled 20 international students this year and signed a memorandum of cooperation with South Korea's Woosuk University, to expand more platforms for developing talent.

Centering on the socioeconomic development of the Hexi Corridor and Gansu province, the college will optimize the structure of course majors, and plans to introduce new majors like hotel management and digital operation, smart healthcare service, and big data and accounting, so as to better serve local development, said Yan Cheng, president of the college.

China's Regional Sci-tech Innovation Shines

By ZHONG Jianli

China's regional sci- tech innovation capabilities have been enhanced over the past decade, and its multi-level, distinctive regional innovation system keeps improving. That's according to the China Regional Sci-Tech Innovation Evaluation Report 2022 released by Chinese Academy of Science and Technology for Development.

The report selects a series of indicators from five aspects: sci- tech innovation environment, sci- tech activity input, sci- tech activity output, high- tech industrialization, and sci- tech's contribution to economic and social development, to measure and evaluate the level of sci- tech innovation in 31 provinces (autonomous regions, or municipalities) of China.

In terms of their comprehensive sci-tech innovation levels, the 31 regions are divided into three tiers.

Shanghai, Beijing, Tianjin, Guangdong, Jiangsu and Zhejiang belong to the first tier of leading innovative regions, with their strong innovation levels higher than the national average.

The leading role of Beijing, Shanghai, and the Guangdong-Hong Kong-Macao Greater Bay Area as sci-tech innovation hubs has been further strengthened, according to the report.

Beijing has accelerated its efforts to build a national sci-tech innovation center with global influence. In 2022, its comprehensive sci- tech innovation index reached 86.2 points, ranking second in China. Its R&D input intensity was 6.44 percent, ranking first in China, while its turnover of exported technologies was up to 631.62 billion RMB, accounting for 22 percent of the national total.

The spillover effect of Beijing's innovation capacity is obvious. The value of technology contracts exported from Beijing to Tianjin and Hebei reached 34.75 billion RMB, an increase of 22.9 percent over the previous year.

Shanghai has ranked first for many years in terms of its comprehensive sci-tech innovation level, and its financial investment in sci- tech activities also topped all regions.

Led by Shanghai, the Yangtze River Delta region has become one of the most competitive regional communities in China. The collaborative innovation system of the region has been continuously optimized, and its level of openness and innovation also continues to improve.

The Guangdong- Hong Kong- Macao Greater Bay Area also performed well according to the report. Guangdong's comprehensive sci- tech innovation level ranked fourth in China. Its manpower input in sci- tech activities, technological achievements commercialization, and capital productivity, all rank first in China.

Meanwhile, the World Intellectual Property Organization says the "Shenzhen- Hong Kong- Guangzhou" sci- tech cluster has ranked second in the world for many consecutive years.

In addition, the report says that sci-tech has played a leading role in promoting the development of regions along the Yangtze River Economic Belt, while the sci- tech innovation capacity of regions along the Yellow River Basin has steadily improved, and can support ecological protection and high-quality development.

Urban Development Gets Sci-tech Boost

By ZHONG Jianli

To make urban planning and construction more scientific and promote a low- carbon transformation of urban- rural development, China recently issued a special plan to strengthen its sci-tech innovation abilities for urban development.

Titled the *Special Plan on Sci-Tech Innovation for Urbanization and Urban Development during the 14th Five- Year Plan Period*, the document was formulated by the Ministry of Science and Technology and the Ministry of Housing and Urban-Rural Development. It is aimed at providing sci-tech support for the country to build livable, innovative, smart, green, people- centered and resilient cities.

By 2025, the sci- tech innovation system in the field of urbanization and urban development should be improved. Optimized technological solutions are expected to be provided for urbanization, and vigorously support the low- carbon and sustainable development of cities, according to the plan.

Specifically, the plan lists seven key tasks to strengthen research:

- Urban development trends and urban spatial layout;
- Urban renewal and life quality improvement technology;
- Core technology and equipment for smart construction, operation and maintenance;
- Green, healthy and resilient buildings and infrastructure;
- Low-carbon transition system for urban development;
- Protection of urban historical and cultural heritage;
- Integrated development of culture and tourism.

To realize the goals, the plan proposes a host of measures, including encouraging young scientists to do original and pioneering research on urban development.

It supports technological exchanges and cooperation between domestic and foreign research institutions, enterprises and industry organizations in the field of urban development.

What's more, multinational companies and foreign institutions are encouraged to set up relevant R&D institutions in China.

An aerial view of Shanghai Synchrotron Radiation Facility at Zhangjiang Hi-Tech Park, Pudong New Area. (PHOTO: VCG)

More Bases Approved to Popularize Science

By LI Linxu

In recent years, China has made significant achievement in science popularization, laying a solid foundation for the country to build a moderately prosperous society. As part of efforts to boost its citizens' science literacy, China has set up 474 additional national education bases to make science more popular.

A number of national museums and national R&D centers, including China Printing Museum, China Surveying and Mapping Museum, National New Energy Vehicle Technology Innovation Center, and National Engineering Research Center for Floriculture, are on the list.

Some provincial museums and libraries are also on the list, such as Shanghai Auto Museum, Liaoning Provincial Museum, and Hubei Provincial Library.

The newly approved bases are expected to play an active role in the transformation and upgrade of science popularization, according to China Association for Science and Technology (CAST).

The bases cover various sci- tech fields including aerospace, physics, mathematics, medical science, agriculture, transportation and nuclear industries.

They are urged to continuously improve their public service capabilities, promote the spirit of science, and strengthen cooperation with schools.

In April 2022, CAST released the first batch of national education bases for science popularization, with a total of 800 entrants.

Statistics show that the proportion of scientifically literate Chinese has increased from 6.2 percent in 2015 to 10.56 percent in 2020.

By the end of 2025, the figure is expected to rise to more than 15 percent, according to a specialized development plan for science popularization during the 14th Five- Year Plan period, which pledges to improve infrastructure to bring science to the general public.

Huzhou Sets Green Standard

By CHEN Chunyou

On December 8, 2022, Huzhou city, in east China's Zhejiang province, was honored as the international cooperation demonstration zone of ecological civilization in recognition of its contribution to environmental protection, at a forum of the 15th meeting of COP15 held in Montreal.

Huzhou is where the ecological civilization vision of "lucid waters and lush mountains are invaluable assets," was proposed in 2005.

Over the decades, Huzhou has been adhering to the green development path mapped out by the vision. The city puts environmental protection front and center when planning its development. In order to strengthen public ecological awareness, August 15 every year was designated as Huzhou's ecological civilization day in 2015.

In 2019, Huzhou launched 10 special actions to promote a green lifestyle across society, including advancing green and smart manufacturing, low-carbon transportation and zero- carbon buildings, and encouraging the public to save energy wherever possible.

In 2021, Huzhou introduced the carbon efficiency code system, which can evaluate enterprises from three dimensions, including carbon emission intensity, industrial utilization efficiency and energy consumption structure. Enterprises input this data into this system and get relevant results, which guide them to carry out further low- carbon transformation.

According to statistics from the Huzhou Economy and Information Bureau, about 3,800 industrial enterprises are using this system. This new model allows enterprises to become more engaged in energy conservation and emission reduction, instead of being instructed by authorities to make adjustments.

Another application called South Taihu was introduced in August 2022. People can earn credits if they take part in low- carbon activities. Those credit points could be used for bus rides or as coupons for shopping.

In addition, to promote the transformation of production modes, Huzhou has pushed ahead with the elimination of outdated production capacity, and carried out a campaign to promote green development in more than 10 sectors, including textile, dyeing and printing, and battery.

As a result, more than 1,520 enterprises have been upgraded. The number of lead battery enterprises reduced from 225 to 16, while the output value increased by 14- fold. Subsequently, two globally leading green energy suppliers, Tianneng Battery Group and Chilwee Group, became popular.

Since the advent of online shopping, express delivery is an emerging sector with the potential to cause much pollution. In response, Huzhou promotes the recycling of delivery packaging, and plans to gradually ban the use of non-degradable plastic bags in disposal centers and terminal outlets, said an official at the market supervision department of Huzhou Municipal Postal Administration.

Huzhou is advancing the building of a low-carbon city in every respect. In 2022, notable progress has been achieved. Buses in service are all electric. A total of 16 million square meters of buildings were constructed in accordance with green building standards, and 42 piloted future community projects with better energy- efficient performance are being built.

Management Reform Piloted in Research Institutes

By LI Linxu

In its latest move to deepen sci-tech management system reform, China plans to carry out pilot reform in research institutes.

Targeting major basic, strategic, and frontier scientific and technological fields, the pilot management reform will be mission- oriented, according to a notice jointly released by four government bodies, including the Ministry of Science and Technology and the Ministry of Finance.

A series of goals, tasks and measures were put forward, so as to better boost China's self- reliance and self-strengthening in science and technology, and serve the country's innovation-driven development strategy.

The reform will focus on strengthening the research institutes' mission awareness and improving their abilities to fulfill duties.

A batch of replicable and promotable experience is expected to be gained in clarifying the relationship between research institutes and relevant competent authorities, improving their governance mechanism, and exploring ways to build a modern research institute system.

To achieve these goals, the roles and responsibilities of research institutes should be clearly defined, said the notice.

Meanwhile, the assessment and evaluation systems, as well as internal distribution and incentive systems in research institutes, should also be improved.

In the report to the 20th CPC National Congress, China vowed to boost the country's strength in strategic science and technology, better allocate innovation resources, and better define the roles of national research institutes, advanced- level research universities, and leading high-tech enterprises to improve their layout.

The pilot reform in research institutes, released shortly after the conclusion of the 20th CPC National Congress, is one of specialized policies to improve systems for sci-tech innovation.