

# Double First-class Initiative Enters a New Phase

By LI Linxu

Aiming to build more world-class universities and disciplines, China expanded Double First-class Initiative list on February 11.

The list now consists of 147 universities, up by seven percent compared to the previous list, and 331 disciplines, ranging from science and engineering to social sciences.

Meanwhile, 16 disciplines at 15 universities have been warned and told they must improve to preserve their status on the list, with their progress to be reviewed again in 2023.

The initial plan, conceived in 2015, is going to develop a growing number of world-class universities and disciplines by 2030 and build an education powerhouse by 2050.

As a flagship initiative to boost the high-quality development of China's higher education sector, it runs in a five-year cycle.

In its first round, significant progress has been made in terms of faculty team, talent cultivation, key core sci-tech breakthroughs, international cooperation, as well as governance mechanisms, said an official from the Ministry of Education (MOE) during a media briefing, adding that more efforts should be made to meet the urgent



Degree Awarding Ceremony of Beijing Institute of Technology. (PHOTO: XINHUA)

needs of the country's economic and social development.

In the new round, the initiative will focus on serving national strategic needs, developing top talent for the country, striving to make breakthroughs in key core technologies, boosting the country's competitiveness internationally, and optimizing management and evaluation mechanisms, said a MOE's official, suggesting that the government will increase investment in basic research and emerging interdisciplinary

subjects. Of note is that Peking University and Tsinghua University are empowered to develop disciplines at their own discretion during this time. Peking and Tsinghua were the only two Chinese mainland's universities in the top 100 of four prominent global rankings for the world's top universities in 2015, when the country first conceived the initiative. Since then, more and more Chinese universities have joined those

global lists, including Shanghai Jiao Tong University, Fudan University, Zhejiang University, and the University of Science and Technology of China.

Last year, Chinese mainland's universities dominated in the Times Higher Education (THE) Asia University Rankings 2021, with a total of 91 universities coming from Chinese mainland in the ranking.

Prior to the updated list, an important policy concerning further implementation of the Double First-class Initiative was released by the MOE, in conjunction with the Ministry of Finance and the National Development and Reform Commission.

The policy attaches great importance to the cultivation of strategic sci-tech talent in key core fields and first-class leading talent and innovative teams.

International cooperation is also greatly highlighted in the policy, calling for further promoting of high-level opening and cooperation, and deeply integrating into the global innovation network, while actively participating in the research of major global issues.

Internationally competitive and attractive high-end platforms, resources, and environment will be provided, so as to attract global talent coming to work in China, as per the policy.

## Policy Watch

# Revised Sci-tech Progress Law Highlights Openness, Sharing

By CHEN Chunyu

China's commitment to open science through legislation has been placed front and center in a revised version of its *Law on Progress of Science and Technology*, which came into effect on January 1, 2022. This is born out by the fact that in the previous version of this law the word "openness" appeared three times, while in the latest legislation, it appeared 15 times.

According to Yan Wenjun, a professor of University of Chinese Academy of Sciences, the open science movement aims to remove access barriers to scientific research, enabling researchers to share findings, data and facilities, and promoting the free dissemination of science.

Many global challenges today need to be solved by cross-regional and interdisciplinary cooperation, said Yan in an article published on *S&T Daily*, noting that the traditional communication and management mode, characterized by seclusion and paid use, hinders the openness and sharing of sci-tech resources and affects innovation.

Since the 21st century, the call for open science has become more and more popular. China has taken the lead in legislating for open science.

The phrase "openness and sharing" appeared four times in the revised law. Article 24 of the law stresses the openness and sharing of the basic research bases, saying that the building of these bases will be strengthened nationally.

For research institutes already funded, article 54 stipulates that a mechanism for opening and sharing sci-tech resources should be established and improved, so as to facilitate effective utilization.

The sharing mechanism in article 46 of the former version of the law mainly refers to the sharing between sci-tech R&D institutions. With the word

openness added in the revised version, the sharing becomes open to the public. The scope of sharing is therefore greatly expanded.

In addition, there are new regulations on the openness and sharing of non-state-owned sci-tech resources, noting that the R&D institutes established by social capital are encouraged to open and share sci-tech resources to a reasonable extent. This is absent in the former version.

In terms of the openness and sharing in regional sci-tech innovation, article 77 says that major national strategic regions can rely on regional innovation platforms to establish a benefit-sharing mechanism, and push ahead with the openness and sharing of scientific instruments, equipment and sci-tech information resources, to improve the efficiency of regional commercialization of sci-tech achievements.

The regulations on openness and sharing mainly revolve around sci-tech resources. Yan said this is vital to both basic research and regional sci-tech innovation.

There is a long road ahead to fully open up science. Based on the international experience and Chinese situations, the revised law proposed new regulations on open science. Yan believes it will work as a guide and standard for law legislation in the future, and exert a profound influence on Chinese sci-tech progress.



UNESCO Recommendation on Open Science adopted in 2021. (PHOTO: VCG)

# Tech Experts Gather to Further 6G Development

By Staff Reporters

"Online discussion + Remote interaction," that's the theme for the 2nd Global 6G Conference to be held in Nanjing from March 22 to 24. Technology academics from China and other countries will focus on topics such as 6G application scenario and requirement, 6G network architecture and 6G wireless transmission technology.

The Conference will include one symposium, nine theme forums, and two international panel discussions during the three-day session. Universities and colleges, research institutions, telecommunication operators, equipment manufacturers from countries around the world, including the U.S., UK, Canada, Finland, Sweden, Japan, Singapore, Greece and Saudi Arabia will attend. It is expected that a multiple white paper series on 6G technology will be released.

As 5G technologies are already commercialized on a large scale, research on next-generation mobile communications has begun in the industry around the world. Based on 5G, 6G will further develop from serving people and things, to supporting the efficient interconnection of intelligent terminals. It is expected to link the real physical world with the virtual digital world, continuing to improve people's quality of life and encouraging the transformation and upgrading of social production methods.

Some countries such as China, the U.S., South Korea and Finland have launched 6G research projects, catalyzing the development of 6G technology by increasing funding for R&D. China has prioritized the development of 6G. The *Outline of the 14th Five-Year Plan (2021-2025)* clearly states that, "The forward-looking 6G network technology reserves need establishing." It has successively established the National 6G Technology R&D Promotion Working Group and General Experts Group and IMT-2030 (6G) Promotion Group, which contribute to the work of 6G.

Since 2019, FuTURE FORUM the Conference organizer has launched a series of 6G white papers on 15 themes, such as application requirements, new antenna technology and space-air-

ground integration. This research has comprehensively directed the current innovation path of 6G.

The 2021 Global 6G Conference will comprehensively present innovative ideas and the latest achievements in 6G technology R&D and build a bridge for global sci-tech cooperation and collaborative innovation. The Conference is expected to contribute to establishing globally unified 6G standards and support the sustainable development of the information and communication industry.

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## Case Study

# Sanjiangyuan National Park: An Ecology Protection Solution

By ZHONG Jianli

In recent years, China has made great strides in developing its national park system.

The system aims to maintain the integrity of natural ecosystems, protect biodiversity, and leave precious natural assets to future generations.

In 2021, the first batch of five national parks, including the Sanjiangyuan-

an National Park, were officially established. This is not only a milestone in the development of China's ecological civilization, but a landmark in the history of nature conservation in the world.

**An example of ecological protection**

Located in Qinghai province, Sanjiangyuan National Park, with a complete ecosystem, is the largest national park in China. Known as the "water tower of

China," it is home to the headwaters of the Yangtze River, Yellow River and Lancang River.

Before the Sanjiangyuan National Park was set up, thanks to more than a decade of ecological protection and restoration, the degradation of its ecosystem was alleviated. The water resources increased by nearly eight billion cubic meters, and the grassland yield rose by 30 percent.

However, some problems constantly emerged as the area was previously managed by different departments or jurisdictions.

To end the segmented management of the Sanjiangyuan area, Qinghai province upgraded its policy system. Eighteen management policies and four technical standards for developing the area were formulated. In addition, a standardized and unified system for protecting the natural reserves was finally formed.

With all these efforts, the protected area of Sanjiangyuan was expanded to more than 190,000 square kilometers, covering 15 towns and 68 administrative villages.

To date, 109 natural reserves of

various types in Qinghai province have been integrated into 79. A new system of protecting natural reserves, centering on the national park, has basically taken shape in the province.

**"One household, one post" system**

Different from national parks in other countries, a lot of herdsmen live in the Sanjiangyuan National Park. How to ensure they live a better life while protecting the ecological environment is a big question facing the authorities.

The idea of employing park rangers was proposed, and the "one household, one post" system was established.

Under this system, as long as one member of the household is hired as a park ranger, the whole family can participate in the subsidized job.

According to statistics, 17,211 herdsmen have been hired as park rangers, and the average annual income of each household has increased by 21,600 RMB.

This system not only helps herdsmen increase their incomes, but also enables them to participate in the management of the national park, reflecting the harmony between human and nature in the park.



A snow leopard, captured by an infrared camera in Sanjiangyuan National Park, July 2020. (PHOTO: XINHUA)

# Nanfan: Breeding Seeds of Hope

From page 1

Over the years the Chinese Government has improved the working and living conditions for agricultural experts on the island. 268,000 mu of land was designated for Nanfan base. Laboratories, apartments, schools and hospitals have also been built. This has allowed scientists to focus their energy on seed breeding.

**Common mission**

On October 26, 2021, at an experimental base in Yazhou District (Batou), Sanya City, the yield of double-cropping rice developed by Yuan Longping and his team exceeded 1,500 kg per mu, fulfilling Yuan's last wish.

Yazhou, 40 kilometers west of downtown Sanya, has seen many breakthroughs in seed industry development, which has become a common mission for the community.

The Sanya Yazhou Bay Science and Technology City has pooled a variety of talent and resources, in the process attracting more than 20 institutes and universities, along with 420 agriculture-related enterprises. Libraries, classrooms and labs are open to all students, and even courses and teachers can be shared.

On November 29, 2021, the Hainan Yazhou Bay Seed Laboratory unveiled the first batch of major projects, and the project leaders made a pledge to fulfill 75 major tasks. There is no upper limit for funds, only assessment, said Xia Mian, director of the laboratory's cooperation and exchange department.

To transform research results into

productivity, a public service platform was established to facilitate transaction of intellectual properties (IP). More than 2,000 IPs were sold at a high price in Yazhou, among the 20,000 IPs listed at the platform.

**Spiritual heritage**

Seed breeders harvest better crop varieties, which also breeds the Nanfan spirit of brave, pioneering, innovative and practical.

Cheng Xiangwen still goes to the field every day, dedicated to breeding high-yield corn varieties with stronger resistance that are easier to harvest with machines. Most of his life has been spent studying and cultivating corn.

Today the Nanfan spirit is being embraced by young farmers, who still work in the fields, using more technology than their predecessors.

Zhu Lin, PhD student from the China Agricultural University, said that compared with the pioneers, they use more advanced equipment and convenient facilities and will take full advantage of local conditions.

"Top agricultural experts in China gather here. We learn from their experience as well as their spirit," said Wei Yuanhao, postgraduate student from Nanjing Agricultural University, impressed by the openness and sharing of knowledge in Yazhou.

"The amazing innovative environment inspires me to do something for the seed industry," said Di Mengliang, R&D staff member from Hainan-based Yuan Longping High-tech Agriculture Co., Ltd, whose estimated value exceeds 2.5 billion RMB.