

Chinese Solution for Outer Space: Building Global Community with a Shared Future

By LI Linxu

China calls on all countries to work together to build a global community with a shared future and carry out in-depth exchanges and cooperation in outer space on the basis of equality, mutual benefit, peaceful utilization, and inclusive development, according to a new white paper published on January 28.

The white paper, titled *China's Space Program: A 2021 Perspective*, details the country's mission, vision and principles of its space program, as well as its recent achievements and future plans.

For the first time, the white paper on China's space program puts forward the concept of building a community with a shared future for mankind in outer space, Xu Hongliang, a spokesperson for the China National Space Administration (CNSA), said at a press conference following the release of the doc-

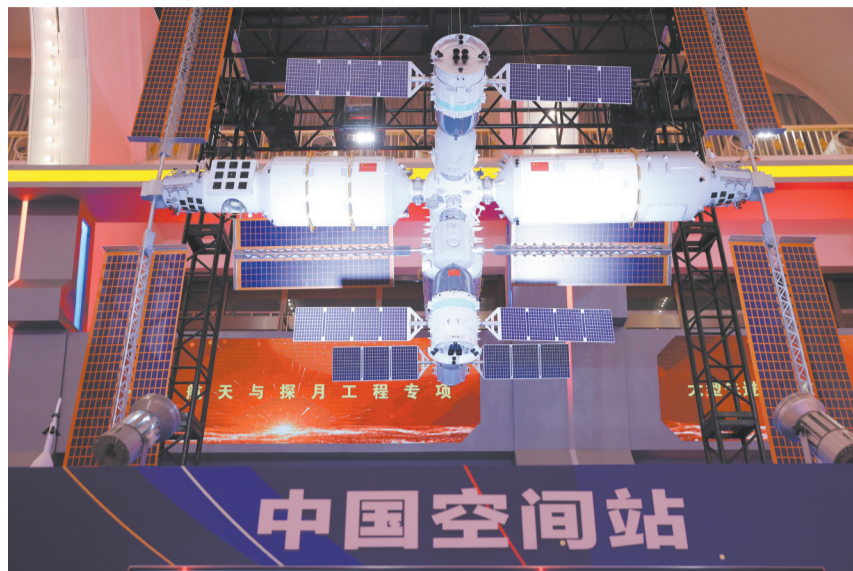
ument. Xu added that the country will be more open and active in carrying out extensive international exchanges and cooperation.

China has achieved fruitful results in the area of international exchanges and cooperation. Since 2016, the country has signed 46 space cooperation agreements or memoranda of understanding with 19 countries and regions and four international organizations.

Meanwhile, it has actively promoted global governance of outer space, and carried out international cooperation in space science, technology and application through bilateral and multilateral mechanisms.

The white paper also highlights the key areas for future cooperation, including manned spaceflight, deep-space exploration, BeiDou Navigation Satellite System, and personnel and academic exchanges.

One of the key international cooperation projects is the international lu-



China's space station model is on display at an exhibition on China's major scientific accomplishments during the 13th Five-Year Plan period. (PHOTO: XINHUA)

nar research station. As to the project, China and Russia are expected to sign an agreement later this year, according to Wu Yanhua, deputy director of CNSA. This will be a very large and long-term international scientific coop-

eration project, and all interested countries, organizations, scientists and engineers are welcomed to participate in it.

The construction of the international lunar research station will be completed by 2035, said Wu, adding that the lunar facility is like a small town equipped with energy system, communication and navigation system, long-distance transport system, space-to-ground round-trip system, ground support system, and life support system if humans are stationed there in the future.

Once completed, the station will host scientists from the international community to carry out scientific expedition on the moon.

Personnel and academic exchanges are also an important area of international cooperation. Through the Regional Centre for Space Science and Technology Education in Asia and the Pacific (China), almost 1,000 space-industry professionals from more than 60 countries have been trained, and the "Belt

and Road" Aerospace Innovation Alliance and the Association of Sino-Russian Technical Universities are established. It has also promoted personnel exchanges in remote-sensing and navigation technology through the International Training Program and other channels.

Next, China will expand personnel exchanges and training in the space industry and hold high-level international academic exchange conferences and forums, aiming to become a world center for talent and innovation in space science.

Peaceful exploration, development and utilization of outer space are rights equally enjoyed by all countries, noted the white paper, adding that China will work actively with other countries to carry out international space exchanges and cooperation, safeguard outer space security, and strive for long-term sustainability in activities related to outer space.

10 Key Projects Unveiled to Save Energy and Cut Emissions

By LI Linxu

In its latest decarbonization push, China announced a new plan to save energy and cut emissions on January 24.

The document, titled *Comprehensive Work Plan for Energy Conservation and Emission Reduction During the 14th Five-Year Plan Period (2021-2025)*, details the country's goals and measures for its green transformation efforts.

By 2025, the energy consumption per unit of GDP should decrease by 13.5 percent from the 2020 level, according to the plan released by the State Council, noting that the total energy consumption will be reasonably controlled.

Aiming to be world-class in its energy utilization efficiency in key indus-

tries and the emission control of main pollutants, China vows to reduce the chemical oxygen demand and the total emissions of ammoniacal nitrogen by eight percent each.

It also seeks to cut the total emission of nitrogen oxides and volatile organic compounds by more than 10 percent each, according to the plan.

To achieve these goals, the plan puts forward 10 key projects including green upgrade of key industries, eco-friendly uplift of industrial parks, energy conservation retrofit of towns, emission reduction of main pollutants in key regions, and improvement of environmental infrastructures.

Take the green upgrade project of key industries for example, it will focus on industries such as iron and steel,

nonferrous metal, building materials and petro-chemicals.

By 2025, at least 530 million tons of iron and steel production capacity should complete ultra-low emission transformation, said the plan.

It mandates that, through energy conservation and carbon reduction actions, at least 30 percent of production capacity in key industries, such as iron and steel, electrolytic aluminum, cement, and plate glass, would meet energy efficiency benchmarks.

The plan also calls for promoting energy conservation and emission reduction efforts in the field of transportation and logistics. By 2025, the proportion of new energy vehicle sales is expected to amount to 20 percent of new car sales, while the freight volume

through rail and water transport will be further increased.

Clean and efficient use of coal is also highlighted in the plan. During the 14th Five-Year Plan period, the coal consumption of Beijing-Tianjin-Hebei region and Yangtze River Delta region will drop by 10 percent and five percent respectively.

Coordination should be strengthened to make concerted efforts to reduce carbon emissions, cut pollution, expand green efforts and promote growth, according to a news release from a group study session of the Political Bureau of the CPC Central Committee held on January 24, stressing that the economic development and green transition should be mutually reinforcing.

Guizhou to Spearhead Western Development

By CHEN Chunyou

Since the implementation of the Great Western Development Strategy in 1999, especially since the 18th National Congress of the CPC, southwest China's Guizhou province has made major achievements in economic and social development.

The cause of poverty alleviation has been completed as scheduled, the ecological environment has been continuously improved, and high-quality development has witnessed new notable progress. Today, Guizhou has developed into a national big data hub.

In order to further support Guizhou's development, and break new ground under the Great Western Development Strategy in the new era, a guideline was released by the State Council on January 26.

According to the guideline, Guizhou is positioned to be a demonstration zone for comprehensive reform of the western regions' development, a pilot scheme for consolidating poverty alleviation achievements, exemplar of inland open economy, innovation zone for digital economic development, and pilot zone for ecological progress.

Regional interaction and cooperation will be strengthened. Meanwhile Guizhou will be integrated into the development of the Guangdong-Hong Kong-Macao Greater Bay Area. A new collaboration mode of "R&D in the Greater Bay Area and Manufacturing in Guizhou" will be explored, according to the guideline, noting that the joint building of industrial parks will be supported.

Also, Guizhou will be backed up to connect with the Chengdu-Chongqing economic circle, and cooperation in transportation, energy, big data, culture and tourism will be promoted in the region.

To accelerate the building of a modern industrial system led by the digital economy, the guideline urges efforts to

enhance scientific and technological innovation in Guizhou. The restructuring of the state key laboratory system and the fostering of a major national innovation platform in cutting-edge fields, such as digital technology, aerospace science and technology, energy conservation and carbon reduction, and green pesticides will be supported.

The capacity of Five-hundred-meter Aperture Spherical radio Telescope (FAST) for data integration will be further improved. The national science and technology plan will support the core objectives of FAST.

The leading role of enterprises in innovation is to be strengthened. A number of enterprises that specialize in niche sectors, command a high market share, and boast strong innovative capacity and core technologies are expected to be supported. The qualified provincial-level high-tech development zones will also be backed up in upgrading into national-level ones.

Leading experts in the digital economy, clean energy, high-end manufacturing and mountainous agriculture are encouraged to work in Guizhou, and a diversified and flexible mechanism for talent attraction is to be explored, says the guideline.

In addition, a digital industrial chain campaign is expected to be launched, driving the upgrade of traditional industries. The development of the National Big Data Comprehensive Pilot Zone and Guiyang Big Data Science and Innovation City plans to be accelerated, and emerging digital industries, such as artificial intelligence, big data, blockchain and cloud computing will be fostered and strengthened.

By 2025, comprehensive reforms in the province to advance the development of west China will see notable progress, and the regional economy should be more open, according to the guideline. By 2035, Guizhou should be better equipped to take part in international cooperation and competition.

Research Fund for International Scientists Calls for Proposals

By CHEN Chunyou

In order to provide more research opportunities for foreign researchers and contribute to their career development at different academic stages, the Research Fund for International Scientists (RFIS) is set up by the National Natural Science Foundation of China (NSFC) to support international scientists, who are ready to work at Chinese host institutions.

The RFIS is open to all research areas within the NSFC's funding scope,

which include mathematics and physics, chemistry, life sciences, earth sciences, engineering and material sciences, information sciences, management sciences, health sciences, and interdisciplinary sciences.

The RFIS will be conducive to enhancing the long-term, sustainable academic collaboration and exchange between Chinese and international scientists.

Three types of grants are included in this program, and all funding is for direct costs.

For the International Young Scientists, 200,000 RMB will be given per year, for the International Excellent Young Scientists, 400,000 RMB will be funded per year, and for the International Senior Scientists, 800,000 RMB will be available annually.

The applicants' affiliated universities and institutions must be based in China's mainland and have registered at NSFC.

Projects are expected to start on January 1, 2023, ending at slightly different dates depending on the types of

projects. The one-year project will end on December 31, 2023, and the two-year project will end on December 31, 2024.

The call opens from March 1 to March 20, 2022.

The requirements of eligibility for each type of the RFIS vary. In order to ensure a successful application, applicants are expected to check *The National Natural Science Fund Guide to Programs 2022*, and follow the procedures to submit all the application documents in time to NSFC.

The Path to Common Prosperity: A Provincial Practice

By ZHONG Jianli

China's eastern Zhejiang province has been designated as a demonstration zone for achieving common prosperity through high-quality development. Sci-tech innovation is expected to play a vital role in the pursuit of the goal, according to an action plan released by the Ministry of Science and Technology and Zhejiang provincial government.

By 2025, a comprehensive innovation system with Zhejiang characteristics is to be basically created, and a number of exemplary technological innovation solutions supporting common prosperity will be formed, according to the plan.

And by 2035, the province should be a high-level innovation-oriented province and become a model of innovation in China.

Coordinated urban-rural development

To achieve common development,

it is important to bridge the gap between urban and rural areas. The plan proposes to build a new mechanism, under which Zhejiang's 26 mountainous counties are expected to realize leap-forward development through science and technology.

The province also plans to accelerate the development of innovative cities and counties. Hangzhou city and Xinchang county are selected as pilot areas to achieve common prosperity with the support of sci-tech innovation, according to the plan.

In addition, it calls for accelerating high-quality development of sci-tech parks, exploring the establishment of an alliance of new-generation AI innovation and development pilot zones, and supporting Ningbo city in developing such a pilot zone.

Benefits of new technologies

To make public services inclusive and equal, the plan supports Zhejiang in carrying out demonstration projects of digital development, and setting up

leading open-source public platforms in such areas as AI, integrated circuits, and biomedicine.

It will strengthen support for research, development, and application of low-carbon, zero-carbon and negative-carbon technologies.

To improve the sci-tech support system for public health, the plan backs the establishment of major basic research platforms such as the national clinical medical research center, the human genetic resource bank, and the tumor biological sample bank in Zhejiang.

Innovation-driven development

According to the plan, focusing on the country's major strategic needs, Zhejiang should make full use of its advantageous R&D abilities to actively participate in the building of national laboratories, speed up the construction of major sci-tech infrastructure, and develop comprehensive scientific centers.

In addition, it is necessary to further boost research of key core technol-

ogies, and promote the deep integration of the innovation chain and industrial chain.

These tasks will focus on areas like advanced computing and emerging software, gene editing, magnetic materials, and carbon neutrality.

Building a global talent pool

The province hopes to improve the entire process of talent introduction, cultivation and retention. It will vigorously cultivate and make use of strategic scientists, nurture first-class innovative leaders and teams, accelerate the training of young scientists, and expand the team of highly-skilled personnel, according to the plan.

It is also expected to carry out a pilot program to jointly handle work permits and residence permits for foreigners, and build a "foreigners' work affairs management and service platform" in the national independent innovation demonstration zone, so as to offer more convenient services for expats.



Visitors at the Exhibition Center of National Big Data Comprehensive Pilot Zone in Guiyang, Guizhou province. (PHOTO: VCG)