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WEEKLY EDITION

## Sci-tech Innovation to Make Solid Progress in 2022

By Staff Reporters

China held its annual sci-tech work conference in Beijing on January 6, issuing a list of sci-tech achievements made in 2021 and setting out a blueprint for major sci-tech tasks in 2022. Wang Zhigang, minister of Science and Technology, delivered a working report at the conference.

With great achievements in various fields in the sci-tech sector, sci-tech innovation played an important role in pandemic control and prevention, while also promoting the high-quality development of China last year, which is also the first year of the 14th Five-Year Plan period.

In terms of sci-tech work in 2022, the annual Central Economic Work Conference held earlier proposed to firmly advance the implementation of policies related to science and technology.

The sci-tech work conference agreed that accelerating the process of achieving sci-tech self-reliance and self-strengthening at higher levels should be the goal of sci-tech work in 2022, and the focus should be put on the following aspects:

- China will fully promote the im-

plementation of sci-tech plans so that the plans can play a better role in strategy orientation.

- A ten-year action plan for basic research will be carried out with an emphasis on the implementation of major R&D tasks and breakthroughs in core technologies in key areas.

- The national laboratory system must be more effectively operated, so as to play a leading role as strategic sci-tech strength.

- The country will boost the principal role of enterprises in innovation, encourage the flow of resources to enterprises, and cultivate leading enterprises, hi-tech enterprises and small and medium-sized enterprises in sci-tech sectors.

- The pace of realizing sci-tech breakthroughs and application of sci-tech achievements will be accelerated, to support stable economic growth and improve people's livelihoods.

- China will also accelerate the transformation to a green and low-carbon development mode by supporting actions to achieve carbon peaking and carbon neutrality using sci-tech means.

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## Green Olympics

### Low-carbon Olympic Villages Ready for Beijing 2022

Edited by TANG Zhexiao

Designed and constructed with the highest standards for green and sustainable housing, the three Olympic villages of the Beijing 2022 Winter Olympics, two in Beijing's Chaoyang and Yanqing districts and one in Zhangjiakou, Hebei province, are getting ready to accommodate 5,500 athletes and team officials from around the world.

The Olympic villages incorporate the characteristics of Chinese culture and environmental protection, as well as delivering an athlete-centered concept, according to the organizers. The villages took almost five years from site selection to construction completion.

With the help of a self-developed energy consumption monitoring system, equipment efficiency and system stability are optimized. It is estimated that the energy saving rate of the entire building can reach 82 percent, which can reduce carbon dioxide emissions by about 42.4 tons per year.

Fifteen old mill buildings with a to-

tal of 12,600 square meters of outer wall were repurposed to be the reception area in Beijing's Chaoyang Olympic Village, with re-laid pipelines of water, gas and electricity.

All three Winter Olympic villages meet the three-star green building standard. The buildings in Yanqing Winter Olympic Village use electric boilers to supply heating. The off-peak power at night is used to heat the water in boiler to about 80°C, and the heat energy stored in the water at night is used for heating during the day. In this way, the energy saving rate can reach 60 percent.

In addition, during the transition period of the Beijing Winter Olympics and Paralympics, each bed in the Olympic villages will be disassembled and reduced by 30 cm in height, to provide convenience for paralympic athletes through facilities renovation.

In terms of post-match utilization, Chaoyang's village will become accommodation for talents, Yanqing's village will be deconstructed and operated as a hotel, while Zhangjiakou's village will be rented or sold as ski apartments.



Beijing's Winter Olympic Village. (Graphic design: TANG Zhexiao; PHOTO: VCG)



Danjiangkou Reservoir is the water source of the middle route of the South-to-North Water Diversion Project. (PHOTO: XINHUA)

## Editor's Pick

### From South to North, Resolving Water Imbalance

By LU Zijian

The imbalance of water resources, more plentiful in the south than that in the north, has been a worrying issue for China for decades. In order to rectify the situation, the South-to-North Water Diversion Project was launched after many years' construction.

On December 12, 2014, the middle route of the project began operation, supplying water for Beijing, Tianjin and other cities on the North China Plain.

By January 7, water transferred by the project had reached 50 billion cubic meters, benefiting 140 million people.

#### Mega project

The southern region of China enjoys abundant water resources, which can even cause floods or heavy rains. But the northern region, conversely, is faced with a severe water shortage.

The South-to-North Water Diver-

sion Project was proposed to solve this problem. The overall plan of the project was approved in 2002 after decades of research. The construction work began at the end of that year.

According to the overall plan, there are three routes of water diversion.

The middle route starts from the Danjiangkou Reservoir in central China's Hubei province and flows across Henan and Hebei before reaching Beijing and Tianjin.

The eastern route transfers water from Jiangsu province to areas including Shandong province and Hebei province.

The western route is still under planning.

As the middle route supplies water for Beijing, it has drawn more attention than the other two.

Pipelines are used to transfer water in urban areas of Beijing and Tianjin

along the middle route, which reduces the waste of water and prevents its pollution.

#### Overcoming water imbalance

Thanks to the project, people living in the northern region of the country have been relieved from water shortage.

More than 70 percent of the water supply in the urban areas of Beijing comes from the south, and almost all water used by residents in the main urban area of Tianjin is provided by the project.

The quality of drinking water has also been improved. The hardness of tap water in Beijing dropped from 380 mg per liter to 120 mg per liter. More than five million people, who live along the basin area of Heilonggang River in Hebei, no longer have to drink bitter, salty water.

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### Broadband Access Supports China's Rural Development

By WANG Xiaoxia

All of China's administrative villages had broadband network services by the end of November 2021, bringing great convenience to residents in rural areas and providing solid support for China's rural vitalization and modernization.

To narrow the digital divide between urban and rural areas, the Ministry of Industry and Information Technology (MIIT) and the Ministry of Finance (MOF) jointly worked out a compensation mechanism for telecommunication services in 2015.

Since then, the country has allocated more than 22 billion RMB (about 3.46 billion USD) to support the building of communication networks in rural and remote regions, according to Zou Suping, an official with the MOF.

Optical fiber networks have been

constructed in 130,000 administrative villages with 60,000 4G base stations, said Tian Yulong, chief engineer from the MIIT.

Efforts have been made to ensure the affordability of Internet services and promote the development of rural area.

State-owned telecommunication enterprises offered favorable discounts for rural residents, which has benefited more than 28 million rural households who had been lifted out of poverty. It takes only 30 to 40 RMB (around six USD) to cover the mobile Internet, family broadband and Internet TV services for each household.

Rural residents can download files at a rate of 100Mb/s, equal to that in the cities, sharing the welfare brought by the development of cyber technology.

Primary and secondary schools in rural areas are almost all connected to

the Internet. Online education has played a vital role during the pandemic, and telemedicine has effectively consolidated medical services in rural areas, said Tian.

The application of broadband services accelerates the upgrading of agricultural industries in rural areas. People who have been lifted out of poverty are embarking on a new journey to prosperity.

Online retail sales of agricultural products nationwide exceeded 300 billion RMB (over 47 billion USD) in the first three quarters of 2021, up 1.5 percent year-on-year, according to the Ministry of Commerce.

Tian added that in the future, local governments will promote the wider application of the Internet and facilitate its in-depth integration with e-commerce, tourism and agriculture.

## WEEKLY REVIEW

### World's Most Advanced Floating Pile Driver Delivered

With a pile frame of 142m, the first of its kind in the world, the pile-driving barge is delivered in Jiangsu province on January 7. The floating pile driver also has the world's largest pile-lifting capacity, longest pile-driving length and strongest resilience against wind and wave.

### Taikonauts Complete First Rendezvous and Docking with Manual Teleoperation Equipment

Shenzhou-13 astronauts in Tianhe core module completed the manual rendezvous and docking experiment with the Tianzhou-2 cargo craft on January 8, said China Manned Space Agency. It was also the first time that Chinese astronauts used manual teleoperation equipment to conduct such operation.

### Yutu-2 Travels over 1,000 Meters on Far Side of Moon

Three years since the landing of China's Chang'e-4 probe on the moon, the rover Yutu-2 has traveled 1,003.9 meters on the far side of the moon, as of midnight on January 6, according to the Lunar Exploration and Space Program Center of the China National Space Administration.

### Genomic Footprints of Sorghum Domestication and Breeding Selection Unveiled

Based on a population genomics study of a collection of 445 sorghum accessions all over the world, Chinese scientists found out that there were frequent genetic exchanges among various subpopulations despite that they are relatively independent from each other.

### New Discovery by the China Sky Eye

Using the Five-hundred-meter Aperture Spherical Radio Telescope (FAST), scientists have obtained accurate magnetic field strength in molecular cloud, a region of the interstellar medium that seems ready to form stars. This discovery has been able to challenge classical theories on star formation. The study was published in *Nature* on January 6.



Aerial panoramic photo shows Five-hundred-meter Aperture Spherical Radio Telescope (FAST) in southwest China's Guizhou Province. (PHOTO: XINHUA)

WECHAT ACCOUNT

E-PAPER



# FOCUS

## RCEP Presents Businesses with Huge Opportunities

By ZHONG Jianli

The Regional Comprehensive Economic Partnership (RCEP) agreement came into force on January 1, 2022, creating the world's largest free trade area.

The RCEP was signed by 15 participating countries including 10 ASEAN members, China, Japan, South Korea, Australia and New Zealand. The total population, economic and trade volume of the 15 states all account for about 30 percent of the world total.

This is a "new milestone" in China's opening up, and will make China more closely connected with the world, said Ren Hongbin, vice minister of commerce, at a recent press conference.

With the RCEP officially coming into force, the proportion of zero-tariff products between China and ASEAN, New Zealand and other member countries increases significantly, and participating members are moving toward the goal of making more than 90 percent of trade in goods eventually tariff-free.

In east China's Qingdao city, shortly after the RCEP agreement took effect, the Qingdao Taxation Bureau accepted the 2.06 million RMB of export tax rebate application submitted by Qingdao Associated Textiles Group Import and Export Co., Ltd. This is the first application of its kind accepted by the tax authority, indicating that the RCEP brings tangible benefits to businesses engaged

in foreign trade.

Local governments and businessmen in other parts of China are also seizing the opportunities brought about by the RCEP to promote international trade cooperation.

"RCEP will significantly reduce the operating costs of enterprises in the region, drive enterprises to restructure the supply chain and value chain, and optimize the flow of goods, technology, services, and capital," said Yang Chunting, director general of the Department of Commerce of the Guangxi Zhuang autonomous region.

As Guangxi has already established a RCEP Enterprise Service Center, Yang said the region will strengthen industrial cooperation with RCEP members, and promote the development of electronic information, new chemical materials, processing of traditional Chinese medicine, automobiles and new energy vehicles, among others.

At the junction of the Belt and Road Initiative and the Yangtze River Economic Belt, Chongqing Municipality has a unique location advantage in deepening cooperation with RCEP members.

The municipality will build a RCEP economic and trade cooperation pilot zone and an international logistics hub connecting RCEP member countries, speed up connections with RCEP members in aviation and railway, and enhance the trade distributing capacity with RCEP members.



A lovely panda robot at China Pavilion of Expo 2020 Dubai. (PHOTO: XINHUA)

## Notable Progress Achieved in ICSE Trial

By CHEN Chunyong

On December 28, 2021, a meeting of the pilot plan of innovation credit-based system of enterprises (ICSE) in national high-tech industrial development zones (high-tech zones), was held in Changsha, Hunan province, to measure progress since the launch a year ago.

At the meeting, Jia Jingdun, director general of Torch High Technology Industry Development Center (Torch Center), the Ministry of Science and Technology said the ICSE should be seen as a policy tool for supporting enterprise's innovation, and help to achieve national sci-tech self-reliance and self-strengthening at higher levels.

The evaluation index system of enterprise innovation credits should be further improved, so as to accurately identify and discover the technology-oriented small and medium-sized enterprises and start-ups with outstanding innovation ability as early as possible, said Jia.

It is necessary to guide the innovation factors, such as technology, capital, talent and public service, to accumulate in sci-tech enterprises, so as to promote their growth, said Jia.

During the meeting, Changsha high-tech zone released a list of top 100 enterprises in sci-tech innovation in 2020, and signed a cooperation agreement on enterprise innovation credit-based loan with nine banks, including Bank of China.

The ICSE was first initiated in December 2020, by the Torch Center covering 13 national high-tech zones. Over the past year, high-tech zones in the pilot plan have actively promoted the practical use of the enterprises' innovation credits. The supporting policies in finance, talent recruitment and use of land are provided for the enterprises.

About 22,000 enterprises were enrolled into the pilot plan in the past year. Financial support worth 5.63 billion RMB was provided to the innovation credit-holders, and social capital worth 28.98 billion RMB was leveraged to upgrade their credit rating and grant them loans.

In the next step, the Torch Center will launch the second phase of the pilot plan of ICSE in 46 other national high-tech zones.

To make full use of the ICSE, the Torch Center has set up a cooperation mechanism with the financial institutions, and established the innovation credit-based loan for these enterprises.

## China Unveils Plan to Become An Innovation Hub for Robotics

By LI Linxu

China has unveiled a five-year plan to become a global innovation hub for robotics, vowing to make core technology breakthroughs.

The country aims to become an innovation, high-end manufacturing and integrated application hub for robotics by 2025, according to a plan jointly released by 15 government agencies including the Ministry of Industry and Information Technology (MIIT), and the Ministry of Science and Technology (MOST).

The document, titled the *Robotics Industry Development Plan During the 14th Five-Year Plan Period*, details the country's roadmap to achieve a series of concrete goals.

During the period (2021-2025), the average annual growth rate of operating income in the country's robotics industry is expected to exceed 20 percent, according to the plan.

China's robotics industry has witnessed a rapid growth in recent years, and the country has been the world's

largest consumer of industrial robots for eight consecutive years, said Wang Weiming, a senior official from MIIT.

In 2020, China's robotics industry's operating income exceeded 100 billion RMB, while the output of industrial robots increased to 212,000 sets.

The robots have been widely applied in various industries, including manufacturing, construction, household services, public services, medical and health.

In 2020, China's robot density in the manufacturing industry reached 246 sets per 10,000 people, nearly twice that of the global average.

The robots have demonstrated their value in fighting against the COVID-19 pandemic. They have been deployed by field hospitals and front line medical workers to screen temperatures, provide food, drinks and medicine to patients, and spray disinfectant.

Today, China's robot density ranks 9th globally compared to 25th just five years ago, according to the statistics released by the International Federation

of Robotics.

While the robotics industry is booming in China, there are still some gaps compared with overseas advanced levels in the field of technology accumulations, industrial foundations and high-end supply, said Wang, adding that a new phase of sci-tech and industrial revolution opens a window for industrial upgrading and leapfrog development.

The plan puts forward a series of measures, such as improving industrial innovation capabilities, consolidating the industrial foundation, boosting the supply of high-end products, expanding the depth and breadth of applications, and optimizing industrial structure.

To boost the innovation capabilities in the robotics industry, the country will strengthen core technology breakthroughs, improve innovation systems and support technology integration, said Song Xiaogang, secretary-general of the China Robot Industry Alliance, adding that the collaborative research and development will be encouraged.



The RCEP Qingdao Innovation Pilot Zone for Economic and Trade Cooperation is set up. (PHOTO: VCG)

## Quality Services Attract Global Talent: A Case Study

By JIANG Yun

As one of Zhejiang's manufacturing hubs, the Beilun district of Ningbo is home to more than 80,000 private enterprises, bolstering a strong economy.

Starting in the 1980s, it was the first national demonstration zone to attract foreign talent, bringing in foreign engineers to help local enterprises solve their technical problems. Over the past four decades, more and more foreign experts have been attracted to the district, significantly boosting the transformation and upgrading of local industries.

It took Konstantinos Pouleros just six months to decide to move back to Beilun after his first visit. Now, his wife works as a kindergarten teacher, and his son studies in an international primary school and speaks Chinese better than him.

Pouleros was a production manager in a Greek branch of Nexans, one of the world's top three cable and fiber optics companies, and a contributor to a dozen world-famous submarine cable projects.

In June 2019, Pouleros was invited to visit the Ningbo Orient Wires & Cables Co. Ltd. Impressed by the compa-

ny's openness and future mission, he agreed to take charge of its Ocean Innovation Center as the chief engineer, focusing on the management of critical production processes of ultra-high voltage submarine and land cables, and core technology R&D. He was also a consultant to the company's submarine cable marketing department, helped boost productivity and expanded overseas markets.

In April 2020, the Ningbo High-End Equipment Overseas Engineers Collaborative Innovation Center (Overseas Engineers Center), a pilot project grouping specific related industries in Zhejiang, was founded in Beilun.

In recognition of Pouleros' contribution to local industrial growth, the Overseas Engineers Center assisted him in applying for a talent program, ensuring such foreign excellent talent could fully enjoy Beilun's policy dividends.

Enterprises that successfully attract foreign engineers will be granted annual salary funding, according to the district's Bureau of Science and Technology. Beilun district contributes the same amount of funding to the engineers as the Ningbo municipal government, with the total money from the

two administrative levels potentially being as much as 40 percent of an engineers' annual salary.

For top foreign experts and overseas engineers who possess a doctorate degree and work full time in the district, they could also be subsidized by as much as one million RMB per year. The district will also allocate a maximum of one million RMB to support programs aimed at making technological breakthroughs and the commercialization of technological achievements. Those engineers whose children study in Beilun's international school will get tuition fee subsidies of 50,000 RMB.

To further improve service efficiency, Beilun managed to synergize the authorization of entry-exit and work permits for overseas engineers in June 2021, enabling the two permits to be issued almost simultaneously, the first of its kind in Ningbo.

In 2021, Beilun received more than 3,000 resumes from foreign doctorate candidates, finally selecting 1,000 who conformed to its industrial layout and strategic emerging industries. A regional talent pool has since been set up to strengthen, complement, and expand the original industrial chains in Beilun.

To better empower the manufactur-

ing industry in Beilun, the Overseas Engineers Center streamlined the district's list of single-product champion enterprises, listed companies, and leading small and medium-sized enterprises that specialize in niche sectors, command a high market share, and boast strong innovative capacity and core technologies. A joint service list for these 120 enterprises was formulated. The center's staff visited the enterprises 220 times and concluded that there were 960 demands for experts and 200 for technological assistance.

By November 2021, the center had introduced 340 experts to 82 enterprises, and 62 talents were contracted.

Observing the principles of co-sharing talent and resources, co-building platforms, and jointly meeting challenges, Beilun is exerting great efforts to establish a centralized service platform for overseas engineers, innovate an integrated platform for talent resources, build a precise docking platform for technological supply and demand, and provide quality services to foreign experts. More and more enterprises in Beilun will become empowered to break bottlenecks in the fields of technology, management and marketing, as it gains in reputation globally.

## A3 Foresight Program Calls for Proposals

By CHEN Chunyong

The sponsored research topic for this year's A3 Foresight Program is "Approaches for Future Earth in Northeast Asia—Climate Change and Its Effects." The program is calling for relevant research projects from universities and research institutions in respective countries.

The A3 Foresight Program is a cooperative research program, initiated in 2005 by the National Natural Science Foundation of China (NSFC), Japan Society for the Promotion of Science (JSPS), and National Research Foundation of Korea (NRF).

Based on an agreement among NSFC, JSPS and NRF, the three countries support this collaborative program under which their researchers carry out joint projects.

The program works to create world-class research hubs in terms of common interest and special importance within the Asian region.

Project applicants are required to find another two eligible partner re-

searchers in the counterpart countries, and submit the application documents to their own affiliated institutions for authenticity checks.

Chinese universities and research institutions submit their project applications to NSFC, while the Japanese and Korean counterpart institutions submit matching proposals to JSPS and NRF respectively.

The application period starts from January 14 to 24, 2022, but the applicant's affiliated institutions may set earlier deadlines.

To make sure the application process runs successfully, the candidates are expected to submit their application documents to their affiliated institutions before the due date.

Once the applicant's proposal is accepted, a five-year research period will be given from August 2022 to July 2027, with funding support from the home country.

Applicants can check the eligibility of the candidates in the application guidelines provided by the three partners for their domestic applicants.

## Five Permanent Members of UNSC Say No to Nuclear War

### Voice of the World

Edited by QI Liming

As five permanent members (P5) of the United Nations Security Council (UNSC), the world's largest nuclear powers pledged on January 3 to work together toward a world without nuclear weapons. "A nuclear war cannot be won and must never be fought," said the joint statement, issued simultaneously by the U.S., Russia, China, the UK and France. The five nuclear weapons states are also recognized by the 1968 Nuclear Non-Proliferation Treaty (NPT).

#### Commitments from UNSC P5

China's Vice Foreign Minister, Ma Zhaoxu, welcomed the statement as "positive and weighty," adding it would "help increase mutual trust and replace competition among major powers with coordination and cooperation."

Russian Foreign Ministry spokeswoman Maria Zakharova said the five-nation statement was initiated by Moscow. She told the TASS news agency, "Given the importance and self-sufficiency of this joint statement, the nuclear powers decided not to delay its publication."

Kremlin spokesman Dmitry Peskov told TASS the statement "was negotiated through diplomatic channels" and "comprehensively reflects the positions of the parties and the leaders."

France also released the statement, underscoring that the five powers reiterated their determination for nuclear arms control and disarmament. They said they would continue bilateral and multilateral approaches to nuclear arms



Nuclear weapon. (PHOTO: VCG)

control.

The U.S. and UK released the Joint Statement on the White House website and GOV.UK website respectively.

#### Remarks from policy researchers and officials

"France has a nuclear doctrine reserving the right to use nuclear weapons as a 'final warning' to warn off an aggressor or even a state sponsor of terrorism," said Oliver Meier, senior researcher at the Institute for Peace Research and Security Policy. Meier said the UK's reservations were not so clearly expressed but he believed them to be similar.

"Given the security environment, I'm pretty shocked that the P5 could agree to this much," said Heather Williams, a senior lecturer in defense studies at King's College London.

Williams and other nuclear experts have urged the nuclear weapons powers to improve their channels of crisis com-

munications as one of the ways of reducing risks of an unplanned clash escalating into nuclear conflict.

A senior U.S. official said the declaration was the result "of a good and substantive and constructive conversation about how to reduce nuclear threats and eventually eliminate them."

Arms control advocates widely welcomed the declaration but called for it to be backed up by a return to disarmament.

Daryl Kimball, director of the Arms Control Association, tweeted, "Bottom line: each of the P5 are to varying degrees upgrading and modernizing their deadly arsenals, the risk of a catastrophic n-war still too high, key disarmament commitments have not been kept, the nuclear danger is too high."

#### Voices from non-P5 countries

The South Korean government announced on January 4, that it supports

the pledge signed by five nuclear-weapon states at the P5 Summit to avoid nuclear war and arms competition.

It also said that it will make efforts to contribute to global denuclearization. The Foreign Ministry spokesperson said, "The Korean government is expecting the pledge to contribute to global denuclearization based on the treaty on the non-proliferation of nuclear weapons (NPT) and international peace and stability."

In Japan, the world's sole country to have suffered atomic bombings, anti-nuclear campaigners welcomed the statement.

"I feel the long-held wishes of the people in the world, especially the atomic bomb survivors of Hiroshima and Nagasaki and the citizens there, have become a reality," said Nobuto Hirano, a 75-year-old co-representative of a civic group involved in sending high school students to the United Nations to deliver peace messages.

While noting that the motivations behind the statement may vary among countries, Hirano said he would like to take the move "positively" and hopes the world will move toward eliminating nuclear weapons.

Miho Tanaka, a 27-year-old representative of a civic group calling on Japanese parliamentary members to act to abolish nuclear weapons, said the statement is "happy news" following the postponement of the NPT review conference, which has already been repeatedly delayed from its original date in the spring of 2020.

She expressed hope that Japan will play its role as a country aware of the realities of the catastrophic consequences of the use of nuclear weapons.

### Comment

## Electric Vehicle Industry Primed for Boom in 2022

By YU Haoyuan

In the recent past, as electric vehicles (EV) received extensive global publicity, combined with the vast pouring of capital into their research and development, the industry has remained on an upward growth trajectory. This boom in sales is expected to be maintained in 2022, and for China, a big year is forecast for the EV industry, which is already the largest EV market worldwide.

JATO, a British consulting company, said that Chinese car brands in EV markets account for 45 percent of global sales, with China's battery electric vehicles accounting for 58 percent, 31 percent ahead of second-placed Europe. In December last year, PricewaterhouseCoopers released a report indicating that China sold 782,000 EVs in the third quarter of 2021, rising 190 percent compared with the corresponding period in 2020.

According to Ouyang Minggao, academician of Chinese Academy of Sciences and vice chairman of China EV 100 (a think tank), it is predicted that about 3.3 million EVs were sold in China in 2021, and this number will reach five million in 2022, despite the constraints of battery supply, chip supply and production capacity.

Bloomberg predicts China's government will continue to put great efforts into encouraging EV sales. China has announced its goal of achieving carbon neutrality by 2060. However, China's car ownership is lower compared with more developed automobile markets, and the number will grow quickly in the future. This will definitely bring huge challenges for the transportation sector to reduce greenhouse emissions. As a result, the widespread adoption of electric vehicles will be crucial.

China has already announced several policies to promote EV, such as asking taxi companies to use EV taxis to replace all fossil-fueled taxis in many cities and encouraging individual consumers to buy EVs. For example, Beijing's government has announced to increase the probability of new EV license plates from 60 percent to 70 percent, in the case of the same total number as last year.

Although COVID-19 and the shortage of chips might affect the production of China's EVs, experts predicted that China would only be moderately affected by them. Infrastructure and support chains of EVs will continue to be built in 2022.



An EV is charging. (PHOTO: VCG)

## From South to North, Resolving Water Imbalance

From page 1

By the end of 2020, the groundwater level in the plains area of Beijing had risen 2.37 meters higher than that of 2014, increasing for six consecutive years. Miyun Reservoir, the biggest reservoir in Beijing, broke its historical volume record on August 23, 2021, reaching 3.358 billion cubic meters.

The middle route has also provided more than seven billion cubic meters of water to more than 50 rivers in the north, and helped the Yongding River see its 865-km riverway, which was dry in most part, filled with water for the first time since 1996.

#### Added benefits

The project is not only relieving the water scarcity in the north but also bringing more benefits for different regions.

The environment in the Danjiangkou area has been greatly improved thanks to the flow of clean and safe drinking water flowing through central China. Plans are in place for the preven-

tion and control of water pollution in the upstream of Danjiangkou Reservoir.

Since then, the capability of sewage treatment of designated cities and counties has increased to 1.74 million tons per day, and the ability of disposing garbage to 8,950 tons per day.

More than 500 enterprises which generated heavy pollution were shut down. The harsh policies on polluting enterprises have also seen them transform to a greener and more circulating business model.

Ecological industry systems have been primarily established in certain districts, ensuring that development does not increase pollution. The condition of agricultural production has also been greatly improved with adequate water supply.

The South-to-North Water Diversion Project has learned from other water systems, and it offers a Chinese solution to resolve the imbalance of water resources.

### Opinion

## ROK Minister-Counsellor: Beijing Winter Olympics Will Present A Spectacular Feast of Sports

By XUE Yan, QI Liming

With the Beijing 2022 Winter Olympics just around the corner, *Science and Technology Daily* spoke to Kim Jin-gon, Minister-Counselor of the Embassy of the ROK in China and Director of the Korean Cultural Centre, China, to get his views on the global event.

Kim said that upholding the ideas of "Green Olympics" and "High-tech Olympics," Beijing will host a spectacular Winter Olympics. According to Kim, the premier winter sports event can be seen from three perspectives.

Firstly, "Green Olympics" is in tune with global trends. Kim said that sports, culture and environment have been the three pillars of the modern Olympic spirit, and the International Olympic Committee has made it clear that the Olympic games should fully promote

the cause of global sustainable development and environmental protection.

The Beijing 2022 Winter Olympics is committed to the modern Olympic spirit. It upholds the concept of green, sharing, open and non-corrupt.

"In March 2021, I was invited to visit the athletes' village in Yanqing District, Beijing. I was impressed that native trees are kept and protected among the buildings. This is enough to prove that the organizers of Beijing 2022 Winter Olympics paid special attention to details on environmental protection," said Kim.

Secondly, high-tech achievements make the Olympics more exciting. Kim said that China has considerable strength in high-tech, and will surely demonstrate its latest technological achievements to the world through the opening and closing ceremonies, such as the technological innovation of the

stadium system's operation and management.

He also appreciated China's active use of information technology, such as big data in pandemic prevention. Mini APPs such as Health Kit (Jiankang Bao) may seem simple, but they can be very useful in trace tracking of COVID-19.

Although Beijing faces many challenges in hosting the Winter Olympics against the background of COVID-19, Kim said it is also a good opportunity to demonstrate China's pandemic prevention measures to the world. In particular, many delegations may not have been exposed to the application of big data in the epidemic prevention process, so China can share its experience at the event.

Thirdly, Beijing 2022 Winter Olympics is also an important opportunity to promote cultural exchanges. Kim said,

"When watching the closing ceremony of the Pyeongchang Winter Olympics, there was an eight-minute show presented by Beijing. It showed the rich traditional Chinese culture and achievements of development in the new era, performed jointly by Chinese teenagers and robots. This eight-minute performance left a deep impression on the whole world."

Kim suggested that while China is focusing on the spread of traditional culture, it can also invest more in areas of interest to young people and present more modern things. "The Winter Olympics has given China a good opportunity to show the soft power of culture," he said, adding, "I am looking forward to seeing the wonderful performances of both traditional and modern Chinese culture at the opening and closing ceremonies in Beijing."

## Beijing-3 Satellite Shows Powerful Photography Ability

### Hi! Tech

By Staff Reporters

China launched 55 rockets in 2021, leading other countries to become the first in the world. Meanwhile, 97 spacecraft were successfully sent into the uni-

verse. Among them, Beijing-3, a commercial satellite that orbits the Earth at a height of 500 km above the surface, shows a powerful photography ability.

Beijing-3 is considered one of the highest performance Earth observation satellites. It can take photos with a high-quality spatial resolution of 50 cm, which means that every pixel on your screen is equivalent to 50 cm on the

ground, regarded as advanced by international standards. Its performance tests also showed that the satellite was able to take images while its fuselage was twisting at 10 degrees per second. Compared with WorldView-4, the most advanced U.S. observation satellite currently, Beijing-3 has a two to three times faster response time.

As a new-type high-performance optical remote sensing satellite, Beijing-3 can provide panchromatic imagery of a half-meter resolution, and multispectral imagery with two-meter resolution, which means it can distinguish vehicles and other civilian aircraft.

At the same time, Beijing-3 also adopted technologies such as intelligent task planning, intelligent image processing, and intelligent compound control, which enable it to have a strong image

acquisition capability and a unique imaging mode. In addition, the satellite supports active push-scanning along rivers, highways and other tracks. In this way, it may obtain a high-definition image of the whole Yangtze River basin in one single transit. It also supports quick multi-angle imaging to get 3D all-round data of surface features.

Beijing-3 is a commercial explorer satellite mainly used in resource investigation, ecological monitoring, fine urban management, disaster monitoring and other aspects. In the meantime, it provides data support for China's key projects. For example, after the rainstorm in July 2021 in Zhengzhou, Henan province, Beijing-3 paid close attention to rivers in the area, significantly contributing to disaster relief and post-disaster reconstruction.



A Long March-2D rocket carrying Beijing-3 satellite blasts off from the Taiyuan Satellite Launch Center in north China's Shanxi Province. (PHOTO: XINHUA)

# LIFE IN CHINA

## Former French Naval Captain Builds World Class Marina in Sanya

By BI Weizi

Captain Godfrey Zwygart, former director and now consultant of Sanya Serenity Marina, has been living in Sanya, Hainan province for more than ten years. He is now more emotionally attached to China after being the first foreigner to receive a green card in this tropical island coastal city.

**Sanya's call**  
Zwygart once served in the French Navy and holds a captain's and engineer's license, with experience in sailing all kinds of vessels including warships, cargo ships, sailboats and super yachts. After retiring from the military, he took his extensive sailing experience to Taiwan with a focus on overseeing the construction of large sailing yachts in ship-building factories, and also created and managed China's first yacht club.

In 2010, the yachting industry was on the rise in Sanya and new marina berths were urgently needed. That same year, Zwygart was invited to Sanya to take charge of developing the Sanya Serenity Marina project. "It's not that I chose Sanya, but that Sanya chose me," he said.

"It was a green island based on agriculture and fishery," said Zwygart when talking about his first impression of the city, adding that the marina was still a barren beach. However, as a man born for challenge, he was eager to make his mark in the city.

**Highest level accreditation**  
When it comes to building a marina, it is not just about building a good



Mr. Godfrey Zwygart. (COURTESY PHOTO)

berth, but also about improving a series of supporting facilities and training staff. "None of the team members had been in contact with the yacht industry, so the work was difficult at first," said Zwygart. Not only was he in charge of the entire supervision of the marina project, he also worked as a part-time teacher, training staff and teaching them how to operate, overhaul and repair.

A year and a half later, the Sanya Serenity Marina was officially launched and in February 2012, the Volvo Ocean Race was successfully held there, and its reputation grew worldwide.

Zwygart's expectations did not stop there, as he wanted to make Sanya

Serenity Marina the most impressive facility of its kind in China and even in the world. In 2018, the Sanya Serenity Marina received the Platinum Gold Anchor Award, becoming the second marina in the world to receive this award at that time. This award is the highest level of certification, symbolizing that the assessment of the marina's facilities and infrastructure has passed the most rigorous audit assessment on international marina ratings. Zwygart and his team were motivated to contribute even more to the development of China's yachting industry.

**"Native" of Sanya**  
"I've been in Sanya for more than ten years, I'm almost a native. Hainan

food is very good, I like to eat Qingbuliang (sweet soup) and Wenchang Chicken," he said. He is also a big fan of the snack stores on Xinfeng Street, which offer the authentic flavors of Sanya.

Neat, beautiful, and energetic are the three words he uses to describe Sanya, where he has witnessed much development during the past decade. "I'm not only able to pursue my career [here], but also enjoy the comfortable and convenient living environment here, so I am very happy to participate in the construction of this city," he said.

**Chinese Government Friendship Award**

Zwygart is happy to share his experience in yacht and marina management, having authored the first Chinese version of *The Yacht Management Manual* and *How to Build and Operate Chinese Marinas Successfully*, and was awarded the Coconut Island Award by the Hainan Provincial Government in 2014. In September 2019, he received the Chinese Government Friendship Award for his outstanding contributions to China's modernization and development.

Hainan is promoting the construction of a pilot free trade zone and a free trade port with Chinese characteristics, while its ever-open entry policy and improved international talent attraction mechanism are attracting more foreigners to work and live in Hainan. Zwygart said that Hainan's future looks very promising, and he hopes to attract more talented people with yachting experience to his business.

### Letter to the Editor

## A Material Manifestation of Hope

By Mark Levine

After receiving my Ph.D. in sociology in 1976, I left the academic world. From that time until I came to China in 2005, I worked as what has come to be called a "public sociologist". In other words, rather than investing my time and energy into doing academic research, or working to implement US governmental policies, I literally gave my skills and training in an effort to change the conditions of life for low-income workers across the country. I say "literally" because throughout those 29 years I was a full-time volunteer organizer. I had come to understand that given the conditions faced by the poor in the U.S. at that time, the "ivory tower" academic world was too far removed from the problems these workers and the policies of government sociologists only served to exacerbate their problems. For that entire time I worked and lived side-by-side with those whose situation I had learned needed to be changed. Everyday, as I walked along the streets of desperate communities, I talked to those who were suffering, learned of their problems as we jointly discussed and then did what it was that was needed to rectify their situation.

I could fix nothing, but together there was nothing that could not be done. With determination and perseverance, proper leadership and united action, there was nothing that could stand in the way. Having lived in China for the past 16 years there was so much in President Xi Jinping's New Year address that was familiar to me and so much to be applauded.

There is work in poverty alleviation, environmental and ecological protection, the serious effort in the handling of the COVID-19 pandemic. Developments in science and technology are all impressive but given my own experience, there are other things in his speech that caught my attention even more.

President Xi spoke frequently of his many trips around China that gave him a first-hand understanding of problems that brought him to see the critical need for solutions. He referred to his own experience of working in the countryside during his youth and the knowledge that provided him with of the severity of poverty that was faced by much of the population. This was an understanding that strengthened his own drive to eliminate

nate the lack of food or clothing, absence of decent housing, the unavailability of quality education.

He spoke of other journeys where he learned of environmental problems and saw the power of collective effort in overcoming these.

While speaking of the critical role of the Communist Party, President Xi acknowledged the celebration of the first centenary of the founding of the Communist Party of China (CPC) in 2021. But throughout his speech he explained that while the CPC provided leadership and inspiration, it was Chinese people who ultimately did the work to make all that progress happen.

Addressing the need to continue to carry out the principles that laid the foundation for the Party's original founding, President Xi's call was not an empty one merely saying that we can do it. What he offered was much more than that. In fact what can be referred to as "a material manifestation of hope" beginning with what has already been done which can provide the necessary confidence and resources to continue on the path to even greater accomplishments.

This idea was reinforced by President Xi's reference to a conversation between Chairman Mao and Huang Yanpei in Yan'an. And although details of this conversation were not contained in this New Year address, it is important for us to remember the Huang's words from his 1945 book *Return from Yan'an*. "I think the most impressive quality of my friends in the CPC is that they constantly seek improvement and progress. If they bring this strength fully to bear, their further potential will be limitless."

As I said in my song about the 100th anniversary of the Communist Party of China, "The Future's Very Bright Ahead Led by the CPC."

*Dr. Mark Levine is an American sociologist who came to China in 2005. Now, he teaches at the English Department in the School of Foreign Studies in Minzu University of China.*



Mark Levine. (COURTESY PHOTO)

### Traditional Eastern Wisdom

## The Navigation Invention Pointed the Way Forward

By LONG Yun

The compass is one of the great ancient inventions that had a far-reaching impact on the development of civilization.



Compass: one of China's Four Great Inventions. (PHOTO:VCG)

tions worldwide. Sinan was the name given to the first Chinese compass.

**Original compass design**  
Among the ancient Chinese documents, the earliest record of Sinan's invention and creation is a book called *Han Feizi: Youdu*. This book tells the story of the ancient Chinese emperors who created Sinan in order to keep everything within the scope of the rules he made. Some scholars, however, believe that Sinan's political significance outweighs its navigational function.

It wasn't until the Eastern Han Dynasty that a scholar named Wang Chong described Sinan's shape and physical characteristics in his book *Lunheng*.

Sinan is a mineral ore made from iron oxide. The most common design of

the ancient Chinese compass used a lodestone (which always points south) and a bronze plate. The lodestone was fashioned into a spoon shape. The spoon was placed on a flat bronze plate. The lodestone spun around and stopped in a north-to-south orientation, with the handle pointing south, as the bronze plate was moved. The "magnetized" lodestone aligned itself with the magnetic field of the Earth. The bronze plate was also inscribed with constellations and other ancient Chinese symbols.

**The development from Sinan to standard compass**

The transition from compass spoon to standard compass was a long process. It was critical to make the tran-

sition from natural magnetite to artificially magnetized iron. One method, which is still used today, was to rub the needle against a magnet. Shen Kuo, a well-known Song Dynasty scientist, described the technique in his book *The Dream Pool Essays*.

The updated compass ushered in a navigational revolution, making it an epoch-making breakthrough. Its use in navigation began near the end of the Northern Song Dynasty and aided navigational development in the Southern Song and Yuan dynasties.

The compass, which allowed voyagers to draw navigation maps and guide books, was an essential tool in Zheng He's expeditionary voyages in Ming Dynasty.

### Xi'an Expat in Action

Professor Pavel Neuzil, a foreign expert working at Northwestern Polytechnical University (NPU), Xi'an, decided to embrace 2022 in a unique way by volunteering with his wife Xu Ying for the city's epidemic control and prevention work. Currently, the city is dealing with a COVID-19 resurgence.

Despite the fact that volunteer work is difficult, Neuzil and Xu enjoyed the experience. "It was one of the most rewarding experiences we've ever had," they said. Neuzil has been working and living in this city for six years. Despite the language barrier, he wanted to help the community to fight against COVID-19 by participating in the anti-epidemic volunteer service.

Source: Northwestern Polytechnical University



For further information about this news, please scan the QR code.

### Photo News



Professor Pavel Neuzil (Left) volunteering with his wife Xu Ying for the city's epidemic control and prevention work. (PHOTO: Gou Bingchen/NPU)

### Sci-tech Innovation to Make Solid Progress in 2022

From page 1

• Both international and regional sci-tech innovation centers will be established at higher levels, creating a group of cradles for innovation and economic growth.

• Reforms in the science and technology management system are to be carried out. Measures on the evaluation and fund management of projects should be improved. The transformation of government functions will be accelerated in order to provide accurate services for researchers and innovation subjects, so as to generate more original achievements that have an international influence.

• Strategic sci-tech talent will be a

focus, and talent cultivation and introduction will be strengthened. The cultivation of strategic scientists, young sci-tech talent and innovative teams at higher levels will be promoted.

• China plans to expand approaches of sci-tech cooperation, actively participate in global sci-tech governance, and promote major international science programs and projects, as well as ethics governance.

In addition, the conference also proposed to make concrete achievements in uplifting the safety and resilience of industrial chain and supply chain, and increasing people's sense of gain and happiness.