

Science and Technology Daily

VOL.2-NO.31

THURSDAY, FEBRUARY 10, 2022

WEEKLY EDITION

A Winter Spectacle: Beijing 2022 Opens

By LU Zijian

President Xi Jinping on the night of February 4 declared the 24th Olympic Winter Games open at the National Stadium in Beijing, at a dazzling opening ceremony.

Once again, Beijing presented a global audience with spectacular performances and special effects, highlighted by Olympic rings that emerged from a giant "ice cube."

Sports play an important role in uniting and inspiring people, which are especially needed during a time when the world is still reeling from the negative effects of COVID-19. This sentiment is echoed in the updated Olympic motto "Faster, Higher, Stronger - Together" approved by the International Olympic Committee (IOC) last July.

Together, the newly added term in the motto, recognizes the unifying power of sport and the importance of solidarity, according to the IOC.

Despite the current division, conflict and mistrust in the world, "it is possible to be fierce rivals, while at the same time living peacefully and respectfully together," said IOC President Thomas Bach at the opening ceremony.

The ceremony also demonstrated solidarity via a large snowflake, which was formed by uniting all the placards bearing the name of each participating team.

The large snowflake was later revealed to be the cauldron to hold the Olympic flame. For the first time ever, the last torch delivering the flame

was used as the key torch to hold the flame, which put rigorous requirements on the torch from a technical perspective.

Scientists had run numerous tests on the connection reliability and environmental suitability of the torch to ensure long-time combustion and connection with gas, electricity and signal control when it was plugged in to the cauldron.

The flame is also much smaller than previous versions as a manifestation of the idea of low carbon and sustainable development.

The spectacular Olympic rings also featured sci-tech achievements. Visually, they are carved out of the large "ice cube" with 24 laser beams. However, the Olympic rings are LED devices, which are powered by enough batteries that are able to offer a stable power source even at temperatures as low as -20°C.

Continuing with the LED device theme, the surface of the main stage was covered with the largest LED screen (10552m²) ever made.

The huge screen can perfectly display various special effects and add dimension by transforming into polyhedral convex screens.

At the opening ceremony there were many more sci-tech achievements used, without which the spectacle would have been much less exciting.

The Beijing 2022 Olympic Winter Games will last until February 20, and China is ready to offer a splendid experience for all with many more sci-tech achievements.

Chinese Premier Holds Symposium with Foreign Experts in China

Premier Li Keqiang on January 26 held a symposium in Beijing with representatives of foreign experts working in China before the Spring Festival or the Chinese Lunar New Year.

Li extended Lunar New Year greetings to the foreign experts and thanked them for their contributions to China's reform, opening-up, and modernization.

Experts from countries including Britain and South Africa shared their advice and suggestions.

Li said China made significant achievements in social and economic development in the past year despite severe internal and external challenges and risks.

The country has prioritized employment in its macro policy and revitalized market entities through tax and fee cuts, said Li. "We have implemented policies in proper intensity, leaving policy space for this year to address challenges."

In the face of new downward economic pressure, Li stressed that the country would strengthen cross-cyclical adjustments to keep the country's economy running within an appropriate range.

China will strengthen targeted adjustments, take timely and effective measures to cope with challenges, stabilize market expectations, and boost market confidence, he said.

The premier added that China will take bolder measures to alleviate difficulties faced by enterprises, including implementing tax and fee cuts, lowering financing costs of micro, small and medium-sized enterprises, and expanding effective demands.

Stressing that opening-up is a fundamental state policy in China, Li said China would continue pushing forward high-level opening-up and provide more convenience for foreign experts to work and live in China.

Source: XINHUA



A staff member of the Russian Olympic Committee holding and reading the Science and Technology Daily Weekly Edition at Beijing 2022 Main Media Center. (PHOTO: S&T DAILY)

Beijing 2022 Sparks Winter Sports Interest Across China

Edited by TANG Zhexiao

The Beijing 2022 Olympic Winter Games will be the start of a new era for winter sports worldwide, said International Olympic Committee (IOC) President Thomas Bach ahead of the event's opening ceremony.

China has been boosting its snow sports economy since winning the 2015 bid to hold the Winter Olympics in Beijing. As of January 2022, more than 346 million Chinese people had engaged in winter sports, according to the National Bureau of Statistics of China.

As Bach said in the opening ceremony on February 4, China is a winter sports country, and the increased physical activity generated through winter sports is contributing to the health and wellbeing of the Chinese people.

Many people in Beijing have long enjoyed winter skating on rivers and lakes. Nowadays, young Chinese are expanding their aspirations from basketball, football and gymnastics to sports such as ice hockey and skiing.

Various programs have been launched to familiarize young generations with winter sports. By the end of 2021, almost 3,000 schools across the country had integrated winter sports into their curriculum, with theory-based classes and practical sessions.

The development of ski resorts and winter sports facilities has also soared over the last few years. In 2014, there were only 460 ski resorts in China. Currently, there are 803 indoor and outdoor ski resorts across the country,

with 3,500 kilometers ski tracks measuring 100 million square meters.

David Peng, a regular ice skater at Beijing's Houhai Lake, said hosting the Winter Olympics has improved China's winter sports infrastructure and boosted China's international influence.

Although China is a late comer to the winter sports market, it also has advantages and potential. According to Little Red Book, a Chinese social media and e-commerce platform, one of the "Top 10 Life Trends in 2022" is skiing tutorials. The search volumes for this topic have been more than twice that of the course number in 2021.

The Chinese winter sports boom has many economic benefits and is directly impacting local residents. One in five residents in Chongli, a district of Zhangjiakou City which is host to the biathlon, ski jumping, cross-country skiing and snowboard and freestyle during the Games, are employed in the snow sports industry. Official data showed during the last snow season, Chongli received 2.462 million tourists, earning 2.02 billion RMB (about 320 million USD). With help of the winter sports industry, all 12 poverty-stricken counties and districts in Zhangjiakou have been lifted out of poverty as of June 2021, including 939,000 people in 1,970 villages.

With snow sports boom and fulfilling the goal to engage 300 million people in winter sports, Beijing 2022 will also mean a lot for winter sports beyond China, which would change the global landscape of winter sports forever, according to the IOC president.

Sci-tech Highlighted in Beijing 2022

High-tech Winter Olympics

Targeting to be one of the most innovative Games in Olympic history, Beijing 2022 is to use environmentally friendly technology, green energy, cloud broadcasting, 5G, and augmented reality tech. (PHOTO: VCG)

Low-carbon Venue

The National Speed Skating Oval, known as the Ice Ribbon, adopts carbon dioxide trans-critical direct ice-making technology, making carbon emissions close to zero. (PHOTO: XINHUA)

5G Studio in High-speed Train

The world's first high-speed train that incorporates a studio powered by 5G technology has been launched to serve Beijing 2022 to connect different venues and international media. (PHOTO: XINHUA)

Rescuing Helicopter

With an improved medical transport system, injured athletes at Beijing 2022 might see the rescuing helicopter as fast as in four minutes after accidents. (PHOTO: XINHUA)

Catering Service

Using green electricity and biodegradable tableware, Beijing 2022 provides a menu of 678 dishes during the Games to athletes from diverse cultural backgrounds. (PHOTO: VCG)

Medallists' Bouquets

To replace traditional fresh flowers, the bouquets using traditional Shanghai wool-knitting techniques will be presented to award winners at Beijing 2022. (PHOTO: VCG)

Presented by Science and Technology Daily



Chinese athlete Ren Ziwei celebrates after winning the gold medal for men's 1000m short track speed skating at Capital Indoor Stadium in Beijing. (PHOTO: XINHUA)



China's Gu Ailing claims the historic gold for women's freeski big air at Beijing 2022. (PHOTO: XINHUA)

WECHAT ACCOUNT E-PAPER



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-

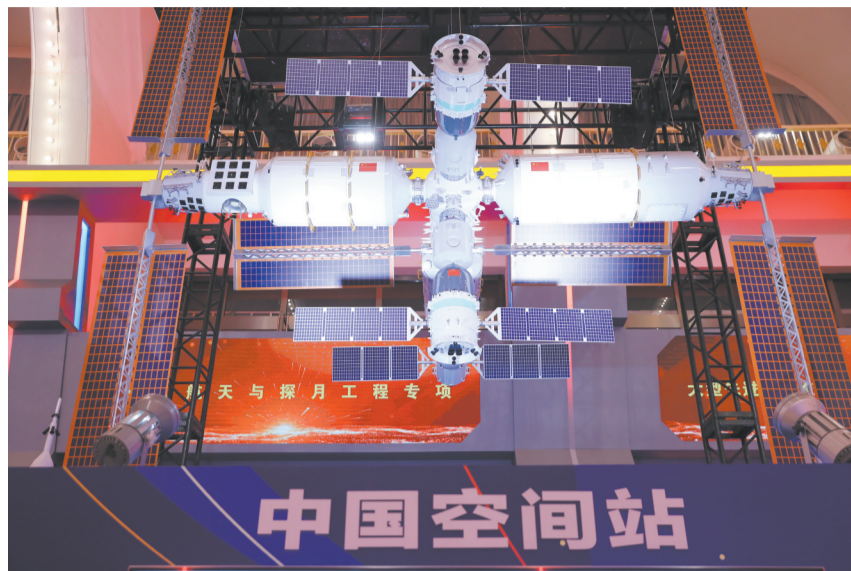
ument. Xu added that the country will be more open and active in carrying out extensive international exchanges and cooperation.

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 lunar



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)

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)

Voice of the World

Spectacular
Tech-driven
Visual Gala
for Olympics

Edited by QI Liming

With the flame lit, Beijing became the first city to host both winter and summer Olympic Games. The opening ceremony driven by technology reflected the "simple, safe and spectacular" ambitions of the International Olympic Committee (IOC), as IOC President Thomas Bach addressed athletes: "Dear fellow Olympians, Your Olympic stage is set."

United Nations (UN) Secretary-General Antonio Guterres attended the opening ceremony. He said, IOC is a close partner of the UN, and the Olympics bring together people with a message of solidarity and peace.

According to *Nature*, Beijing Winter Olympics will be the first to be carbon neutral. The Winter Olympics are also the first to use natural CO₂ as a refrigerant to cool the skating venues, instead of synthetic hydrofluorocarbon refrigerants, saving up to 26,000 tonnes of carbon. Claudio Zilio, who studies refrigerants at the University of Padua, Italy, said that CO₂ is an environmentally friendly option for the purpose.

Beijing's Winter Games are the first to have considered a broad range of emissions from the earliest stages of preparation, said Marie Sallois, a director of sustainable development at IOC. They are also the first to have taken into account indirect sources of emissions,



Torch bearers Dinigeer Yilamujiang (L) and Zhao Jiawen set the torch into the Olympic cauldron during the opening ceremony of the Beijing 2022 Olympic Winter Games at the National Stadium in Beijing, Feb. 4. (PHOTO: XINHUA)

such as air travel, she added. Beijing's approach of embedding sustainability at all stages of the process is "something we will encourage for future games."

According to tech media Protocol, China has deployed cocktail-pouring robots in the Olympic Village, installed futuristic remote-controlled beds for visitors and implemented its new digital currency system, e-CNY, for its first international test.

According to Techradar, China built the world's largest LED screen for the 2022 Winter Olympics Opening Ceremony. The screen was used as the main stage of the opening ceremony and was built by the China Academy of Launch Vehicle Technology (CALT). According to the CALT, the screen offered "a visual

feast even better than 8K resolution."

Bach praised China's role in making "sporting history." "China is now a winter sport country where over 300 million people are engaged in winter sports in over 2,000 resorts and ice rinks," Bach said towards the end of the opening ceremony. "This is an extraordinary achievement and [it] opens a new era for global winter sports."

According to mainstream media platforms, China kicked off the 2022 Winter Olympics in an unprecedented manner. The focus was on a spectacular technology-driven visual show that featured fireworks and a light show before culminating with a block of ice that was "broken" by ice hockey players, giving way to five snow-white Olympic rings.

This grand event provided a stunning visual feast that combined digital technology and beautiful creative designs. It was not only technologically advanced, but dynamic, aesthetically pleasing, and experiential. This was also an opportunity to showcase some of China's newest technology innovations to the world.

According to *South China Morning Post*, Beijing put on a spectacular and stirring show of technology and artistry at the opening of the Winter Olympics. Although it was a scaled-back affair because of COVID-19, the National Stadium was awash with light and symbolism as 3,000 performers enacted the theme of China's quest for world peace and the Games motto of "together for a shared future."

China's Shipbuilding : Sailing to New Orders

Edited by QI Liming

In 2021, the global economy struggled to recover as the pandemic raged worldwide. Now, as an index of economic recovery, the shipbuilding industry is in the spotlight showing encouraging growth despite tough times. China posted a shipbuilding output of 39.7 million (m) Deadweight tonnage (DWT), an increase of 3 percent year-on-year and the newly received shipbuilding order was about 67 m DWT, increasing 131.8 percent.

Leading global shipbuilding by CGT
According to data released by shipbroker Clarksons, China has taken the number-one spot in shipbuilding, overtaking South Korea for annual order volume by compensated gross tons (CGT).

Over the span of the year, China's shipbuilders raked in orders totaling about 22.8 million CGT, almost 50 per-

cent of the global total of 45.7 million CGT. South Korean builders took in orders totaling 17.35 million CGT, or about 38 percent.

China dominated in sales of new container ships, a segment which has taken off thanks to a surge in consumer goods cargo.

Ranking first in 10 types of ships ordered

According to BUILT by CHINA, China's shipbuilding industry led the world in terms of orders for 10 out of 18 mainstream ship types in 2021.

Last year, the world's largest 24,000 twenty-foot equivalent unit (TEU) container ship built by China State Shipbuilding Corporation Ltd. (CSSC) was launched in Shanghai. And right now, the corporation has had orders for nearly 100 large container ships, of which 16 are being built.

In 2021, China's shipbuilding indus-

try contracted bulk carriers of 32.19 m DWT, taking up 76.4 percent of the global total volume, and container ships of 27.38 m DWT, 60.9 percent of the global total.

In addition to these types of ships, China has also played an increasing role in the international market of high-tech and high value-added ships, especially its key breakthrough in the green-energy powered ships, including the duel-fuel powered ships.

Substantial increase in shipbuilders' orders

According to Seatrade Maritime News, at the end of December 2021, Chinese shipbuilders' order book showed 95 m DWT, increasing 34.8 percent year-on-year.

China's shipbuilding output, newly received orders and orders on hand accounted for 47.2 percent, 53.8 percent and 47.6 percent respectively of the

global shipbuilding market share, increasing 4.1 percent, 5 percent and 2.9 percent compared with the numbers for 2020.

Six Chinese shipbuilding companies made the world's top ten list in 2021, further strengthening the nation's competitiveness in the global shipbuilding market.

CSSC ranked as the world's largest in 2021, bagging about 25m DWT shipbuilding orders, 130 billion RMB in total; delivering 206 vessels, totaling 17 m DWT; showing on hand orders of 41 m DWT, accounting for 21.5 percent, 20.2 percent and 20.5 percent of global market share, respectively.

The newly received order volume of CSSC was doubled from the annual target of 2021, hitting a record high since its best performance in 2008. Of these, 75.2 percent of the new orders were mid-to-high ship types.

Stop Pointing Fingers at China's ZTP

Comment

By Staff Reporters

Over the past few months, China has been actively containing COVID-19 based on the country's zero-tolerance policy (ZTP). With the great effort made by the government and the public, the pandemic situation in China is well under control. However, some Western politicians and experts, especially in the U.S., have consistently questioned and criticized the ZTP policy.

On January 25, Ezekiel Emanuel and Michael Osterholm, the former members of a scientific COVID-19 advisory team to Biden Administration, posted an article in *The New York Times*, saying ZTP was unsustainable and even threatening the U.S. and the global supply chain. They suggest China can learn from some European countries to build immunity by spreading the virus.

And here is what is happening in the world today: on February 6, the number of confirmed cases in the Chinese mainland was only 79 (in 31 provinces), with no severe cases increase. The U.S. had over 290,000 thousand new confirmed cases and 2,565 deaths on the same day.

The data gap between the two countries is stark, and it is hard for people to understand why these U.S. experts keep saying China's policy is unsustainable though China has shown repeated victories over the virus for two years. What makes it even more incomprehensible is their views on letting the Chinese get infected in exchange for U.S. supply-chain security. Considering the Biden administration once hired these experts as consultants, how could the U.S. anti-pandemic work be effective!

Emanuel seemed to enjoy his viewpoint and shared the article on Twitter with a comment, "You can't build a wall around COVID; it's why China's zero-COVID policy is unsustainable. We all need China to come to terms with our new normal of endemic COVID. If not, disease & shutdowns there will affect the whole world."

Without a doubt, this article has received little praise, except for the perennial anti-Chinese brigade. Almost all the Twitter comments were critical of Emanuel.

Israeli Bioinformatics specialist Yaniv Erlich said, "This article is really cute. M.D.s from a nation that lost two years of life expectancy, couldn't issue enough tests, deployed the army to help hospitals, had riots and great resignation, give advice to a nation that hasn't

Hi! Tech

Plastic Waste Become Sports Shoes

Edited by QI Liming

Thaely Shoes was initially developed by Ashay Bhavne, an Indian student, to develop a sneaker that only uses components recycled from waste materials.

The startup makes shoes using fabric derived entirely from waste plastic bags. Bhavne named the brand Thaely, from the Hindi word for plastic bags.

It took about two years to develop the fabric using plastic waste and then the prototype shoe. Bhavne presented his product at Amity University Dubai's 2019 Eureka startup pitch competition and walked away with first place.

Since then, Thaely Shoes was able to receive funding and the production of the second prototype was put into action. The second prototype aimed to make a production ready sample, was developed in Dubai.

The plastic waste is recycled to make ThaelyTex fabric that looks and feels like leather. This ThaelyTex fabric is used to make the revolutionary product Thaely Y2k Pro sneakers. Each pair

experienced any of this."

Scott MacEachern, an archaeologist, replied sarcastically to the Twitter comment, "Sure. After all, a policy that has prevented many hundreds of thousands of needless COVID deaths is inconsistent with Western values. Can't have that!... Many of the Western articles about China and COVID over the last two years have been predicated on the assumption that Chinese lives are not as important as Western ones."

The dynamic ZTP approach is the general policy of China's current pandemic prevention and control, and it is the embodiment of the supremacy of the people and the supremacy of life. The practice of the past two years has shown that ZTP fully guarantees the health and safety of the Chinese people and ensures the normal operation of society and the smooth development of the national economy to the greatest extent possible. Many Western scholars can see this clearly, and many Americans who have suffered from COVID-19 are gradually seeing it. *Newsweek* published an article pointing out that once China decides to cancel the ZTP and chooses the U.S. method to deal with the pandemic, the number of newly diagnosed cases in China would exceed 630,000 in a single day, and China's medical system could collapse.

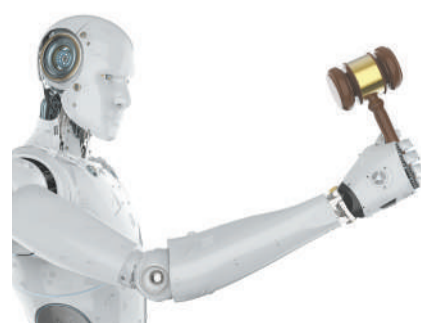
In addition, some foreign media also criticized China's nucleic acid testing for being too strict. Rather than saying that China's testing standards are too high, it is more proper to say that some countries' testing standards are too low. In line with a responsible attitude towards people's life, health and safety, China has every reason to be more vigilant against Omicron, a variant with amazing transmission ability.

As for the comment of China affecting the global commodity supply chain, this is ludicrous. They should stop accusing China immediately, especially when most of the quarantine materials around them are all "Made in China."

The successive emergence of various COVID strains such as Delta and Omicron shows that the pursuit of the so-called "natural immunity" policy promotes the virus's continuous mutation and makes the global pandemic situation more difficult to recover. Some experts recommend their own countries give up fighting against the virus and want other countries to follow suit. We wonder if this is because they have taken a professional wrong turn, or are they continuing to make excuses for their poor performance in preventing the outbreak?

AI Prosecutor Gets Better at Handling Crime

By Staff Reporters



AI prosecutor can pass judgment based on a verbal description of the case. (PHOTO: VCG)

A robot judge may sound like a character from a science fiction novel, but it has in fact become a reality. A research team in China recently developed an Artificial Intelligent prosecutor (AIP) that can judge whether a person is guilty with more than 97 percent accuracy.

The Shanghai Pudong People's Procuratorate tested the AIP, which can only pass judgment that is based on a verbal description of the case. Theoretically, it can reduce human workload and costs, while allowing prosecutors to focus on more complex tasks.

"The AIP system can replace prosecutors in the decision-making process to a certain extent," Shi Yong, the re-

search team leader, wrote in an article.

This is not the first time that AI has been used in law enforcement. As early as 2016, China's procurators began to use AI. Nowadays, many of them still use a kind of AI tool named System 206, which can assess the strength of proof, the conditions for arrest and the danger of suspects to the public.

The AIP can run on a computer. It can make a judgment based on 1,000 features retrieved from human case descriptions for each suspect. Most of these features are too small or not detailed enough, requiring System 206 to evaluate evidence.

It is reported that from 2015 to 2020, the machine has been tested on

more than 17,000 cases, and so far, it has been able to identify and prosecute the eight most common crimes, such as credit card fraud and gambling in Shanghai.

Shi explained that the AIP would soon become more effective through upgrades, and in the future, it will be able to identify less common crimes and bring multiple charges against a single suspect.

However, no matter how good it is, there is always the possibility of error. AIP cannot foresee how the public will react to cases in a changing social environment. "AI may help spot mistakes, but it cannot replace human decision-making," said Shi.



The sewing of Thaely Shoes. (PHOTO: VIDEO SCREENSHOTS)

Cooperation and Sharing Bring Real Benefits

By BI Weizi

Professor Klaus Obermayer, a German scientist, has been engaged in the cross-innovative research of brain science and artificial intelligence for decades. His research results have been published in a large number of high-level academic papers, such as *Nature Neuroscience*, *PLoS Computational Biology* and *Journal of Machine Learning Research*, with a total of more than 12,000 citations.

He is currently a high-ranking professor at the Technical University of Berlin (TUB) and a consultant professor at Northwestern Polytechnical University (NPU) in Xi'an, Shaanxi province.

Obermayer was bestowed with the Chinese Government Friendship Award in 2020 for his major contributions to China's modernization drive, specifically in the fields of machine learning and computational neuroscience.

He told *Science and Technology Daily*, "It is a great pleasure and honor to receive this award. And I'm extremely happy that our collaboration with my colleagues at NPU was not only valued by our peers, but also by the government stakeholders."

He is now leading the Neural Information Processing Group at TUB and managing this discipline at NPU.

"My links to China actually date back many years. As early as 2002, I started to cooperate with Professor Xie Songyun at NPU in the fields of neuroinformatics and image processing, and over the years we have always maintained close cooperation in discipline construction, scientific research, teaching, and the training of personnel, in-



Professor Klaus Obermayer. (COURTESY PHOTO)

cluding the supervision of PhD students. The first time I visited the old campus of NPU, I was struck by its beauty and by its collaborative research environment. I was strongly motivated to continue and deepen our collaboration," said Obermayer.

In 2004, Obermayer assisted Xie in launching the discipline of neural information processing at NPU and the Laboratory of Neuroinformatics was established in a collaborative effort. In the early stages of the lab construction, only very limited funds were available. Obermayer selflessly provided data and technical guidance, which was critical to the successful launch of the laboratory. He then visited NPU many times and helped students promote the development of this newly-born discipline.

Remarkable achievements have been made in the 19 years of cooperation between NPU and TUB. In this time Obermayer has helped to get nearly ten national and provincial projects off the ground, among them projects funded by the National Natural Science Foundation of China, provincial key science and technology projects, and international cooperation projects. Under his guidance and assistance, the strength of neuroinformatics at NPU was rapidly enhanced and the laboratory was exponentially developed.

"In 2017, led by TUB and NPU, we jointly established the 'Shaanxi Joint International Research Center on Integrated Techniques of Brain-Computer Interfaces for Unmanned System' with principal investigators from six internationally

renowned universities, including the University of Kent in the UK, and the Charite Medical School and the Technische Universität Berlin in Germany, laying a solid foundation for research at the interface of brain science and artificial intelligence," said Obermayer.

One of his collaborative achievements with NPU is the technology of brain computer interfaces for controlling robotics. An application of this technology to the control of formations of quadcopters was recently presented at the exhibit of China - Germany Science and Technology Innovation Cooperation Conference held in Berlin, Germany on October 14, 2019.

"This brain-machine interface for intelligent control has overcome several of the problems of long response times, low recognition rates, and inter-individual differences between human operators," said Obermayer. He further explained that this portable system innovatively combines brain-machine interfaces and artificial intelligence to realize robust control in noisy conditions. Since it can be applied in outdoor environments, this technology has significant application prospects for robotics control in many different areas.

Cooperation and sharing for mutual benefit have always been Obermayer's philosophy. "In terms of global challenges, it's important to bring the best people together to solve the problems. But not all of the best people are in the same country, international cooperation is a key," he said.

For the past decades, he has indeed been practicing his own philosophy and promoting international collaboration with committed dedication.

Letter to the Editor

Collaboration Leads to a Way to Greatness

By Syafrizal Maludin

An overview of the development of science and technology in China, shows the great impact the country has had on civilization. The long history of this nation cannot be separated from the development in science and technology that blends with a culture of hard work.

Surprises in China

In April 2013, I received an offer to participate in China's science and technology indicator training program. Imagine arriving in a city like that represents the size of an economy, with high human mobility and sophisticated transportation modes. Being curious of my new surroundings I decided to explore the city and some of its facilities.

Worship facilities are one of the things I did not imagine I would find, so believing there was no mosque I brought my own religious prayer items to pray in the hotel. I was therefore surprised to find mosques I was under the impression that there were few Muslims here.

Not only could I enjoy worshipping while in China, but also the availability of halal food. I found out that the halal food in China is not imported but in fact produced locally.

Strengthening Science and Technology Collaboration with China

The contours and constellations of the world are influenced by politics and defense policies, as well as bioeconomic trends, in which there are those related to global warming and COVID-19 and the development of science and technology.

Unlike the first two, the development of science and technology is a virtue. For example, the political and defense conflict between America and Iran does not reduce joint research activities between researchers from the two countries. Likewise, judging by the network of keywords on Google Scholar or patent searches, it can be seen that the involvement of cross-country researchers is melting in the strengthening of science and technology.

Research collaboration between researchers in Indonesia and China has existed for a long time. The collaboration is not limited to specific institutions or universities. Agencies and institutions also carry out cooperation in the form of technical assistance and expertise under the technical ministries.

My thinking on technological innovation

Economics and Engineering in scientific documentation are rarely sourced from Asia, so in the application of the theory and concept, adjustments need to be made, except for the exact sciences.

We could also find the terminology and standard formulas in the exact sciences. The perspective of the entrepreneur

neural economy and the innovation system/ecosystem has also begun to be studied a lot and some of its concepts apply to developing countries. However, the concept cannot be fully developed in other areas. The literature on political and economic developments in several developed countries does not mean that it can be perfectly applied in Indonesia.

In the study of innovation, many bombastic English terms are used to improve developing countries' economies, such as "Innovate or Die" and so on. When learning about technological innovation, there are two divisions of courses: Economic Innovation and Technology Innovation Management. The two study groups are equally fascinating. However, it is not appropriate, for example, to use the slogan "Innovate or Die" in government institutions. Research activities at government institutions are not directed at making a profit as the primary goal.

Economic development in one country cannot be fully implemented in other countries. As a result, we need to realize that enriching knowledge is essential in developing and applying knowledge in different areas.

The industrial transformation carried out in China is shaped by its culture as root. It has not been achieved smoothly as it should align human resources, funds, and S&T management systems. On the other side, welfare problems faced by developing countries are the main obstacle in transforming the culture. Corruption and violations of financial management and imbalances in accessing production sources must be faced.

With great power comes great responsibility

A metaphor of two countries based on GDP, America is often depicted as the eldest child who often intervenes in the lives of his younger siblings. He checked his school bag, arranged who was allowed to have contact with whom and could even punish his younger brother who was considered naughty. China is considered a hardworking member who can provide almost all needs. So each member of the family was so dependent on China.

So great was his influence that would affect other brothers in the family. Cooperation in Science and Technology is an important part of achieving a balance in its greatness. The magnitude of its influence and capability naturally creates conflict. So, strengthening the collaboration of research and innovation is one reliable aspect.

Dr. Syafrizal Maludin is a researcher in the Directorate for Policy Formulation on Research, Technology and Innovation; National Research and Innovation Agency (NRRIA), Indonesia.

Traditional Eastern Wisdom

Shen Kuo : A Great Ideologist in Ancient China

By Staff Reporters



Shen Kuo. (PHOTO: VCG)

As Joseph Needham notes in his *Science and Civilization in China*, ancient China was well ahead of the West in the development of several fields of knowledge about the physical world.

A notable polymath in ancient China was Shen Kuo (1031-1095), who made contributions in fields as diverse as mathematics, geography, economics, engineering, medicine and other fields.

Shen is primarily known for the explanations of natural phenomena found in his famous 11th-century book, *Dream Pool Essays*, which is regarded as a milestone in the history of Chinese science. The book details the outstanding contributions of working people in science and technology, as well as his own research accomplishments. At the same time, it reflects ancient China's

brilliant achievements in natural science, particularly during the Northern Song Dynasty.

In these pages, he presents his theories on a variety of topics, including the working mechanism of the compass. When the point of a needle is rubbed with the lodestone, then the sharp end always points south, but some needles point to the north.

In another section, Shen argues against the theory that tides are caused by the rising and setting of the sun raised by Lu Zhao and demonstrates that they correlate instead with the cycles of the moon.

Aside from the topics mentioned, Shen was way ahead of his time in many fields. Apart from inventing the concept of true north, he hypothesized that land

was formed by mountain erosion and silt deposition after discovering fossils in a mountain range in northwest China.

In addition, he developed techniques that laid the foundations for spherical trigonometry. He introduced the arithmetic progression of a higher order and explained the rainbow as a phenomenon of atmospheric refraction. He was also one of the first people to record the phenomenon of unidentified flying objects.

Shen wrote this encyclopedic work after retiring from government service, naming it after his private estate near modern Zhenjiang, Jiangsu province. With its global influence, the masterpiece has been translated from Chinese into English, German, French, and Japanese.

Daily life Myth Buster

By Staff Reporters

Rumor: Eating strawberries can cause hemorrhagic fever?

Truth: The main transmission route of hemorrhagic fever is rodent-to-human

Recently, a rumor began circulating that eating strawberries can cause hemorrhagic fever, which has caused some panic. So, are strawberries innocent or the culprit of this disease?

"There is no direct relationship between eating strawberries and having hemorrhagic fever," Wang Yimin, chief physician of the Department of Critical Care Medicine at Tianjin TEDA Hospital, said in an interview with *Science and Technology Daily* that hemorrhagic fever, also known as epidemic hemorrhagic fever, is a natural epidemic disease caused by the Hantaan virus.

China has a high incidence of hemorrhagic fever, with rodents being the main source of infection. Wang said that the blood, saliva, urine and feces of infected rodents contain this contagious virus. "When people are bitten by rodents infected with Hantaan virus or come into contact with objects contaminated with virus-infected rodent excrement, they may become infected. But the virus does not spread from person to person," he said. "In fact, not just strawberries, any food contaminated with virus-bearing rodent excrement can cause a person to develop hemorrhagic fever," said Wang. Finally, Wang said that hemorrhagic fever is a preventable and treatable disease, Hantaan virus is sensitive to ether and chloroform. So in daily life, we can effectively prevent hemorrhagic fever as long as we do a good job of rodent prevention and extermination, and effective cleaning of food.

Rumor: A UFO appeared in Henan province

Truth: Space rock broke into the Earth's atmosphere

Recently, a mysterious white light appeared at night in Henan province. As a result, the rumor that a UFO had appeared in Henan province went viral and dominated the Internet. "I have seen the recorded images and think this is a fire meteor event," Yan Weiguo, executive vice president of the Tianjin Astronomical Society, told *Science and Technology Daily*, adding that fire meteors are common astronomical phenomena. They are large space rock fragments traveling at high speed into the Earth's atmosphere, which are characterized by a relatively strong light and sometimes explosive sound. The rock fragments burn up as they rub against the atmosphere, with smaller fragments burning up and larger ones falling to the ground as meteorites.

Photo News



Foreign experts gather to celebrate Spring Festival and Winter Olympics. (PHOTO: S&T DAILY)