



Science and Technology Daily

VOL.2-NO.38

THURSDAY, MARCH 31, 2022

WEEKLY EDITION

International Cooperation

BRICS Countries Go Big on Vaccine R&D

By Staff Reporters

An online ceremony, hosted by China's Ministry of Science and Technology, was held to launch the BRICS Vaccine Research and Development (R&D) Center on March 22, marking another solid step forward in strengthening cooperation in public health among BRICS countries.

During the ceremony, Chinese Minister of Science and Technology Wang Zhigang said that China will work with other BRICS countries to use the center's launch as an opportunity to promote exchanges and cooperation on vaccine R&D and testing, construction of plants and mutual recognition of standards among BRICS countries.

As the chair of BRICS this year, China is willing to work with all sides to

deepen BRICS partnerships, centering on the theme of "Forming a high-quality partnership to jointly create a new era of global development," and deliver hope and confidence for global economic recovery, said Wang.

The BRICS Vaccine R&D Center will bridge universities, institutes, health authorities and the industry to promote innovation on vaccine R&D, so that BRICS countries could perform better in future epidemic prevention and control, said Wang.

At the ceremony, BRICS countries jointly proposed an initiative to ensure the accessibility and affordability of vaccines in developing countries through their equitable distribution as global public goods, while also aiming to improve BRICS countries' capability to control infectious diseases and respond to public health events.



The piece of jade in the shape of Chinese dragon (left) dates back to the Neolithic era. Dating from Western Zhou Dynasty (1046 - 771 BC), the He Zun is a ritual wine vessel of bronze, known as the artifact with the earliest written Chinese characters meaning China. Both are displayed at an exhibition held at the Palace Museum in Beijing. (PHOTO: VCG)

New PCR Detection Kit to Accelerate Mass Screening

By Staff Reporters

A new PCR (polymerase chain reaction) detection kit for nucleic acid from the novel coronavirus was authorized to enter Chinese market on March 16, reducing the detection time from almost two hours to 30 minutes. This could greatly improve the efficiency of mass screening, especially in cases of mass infection breakout.

Apart from the drastic reduction in detection time, the new kit's function means the pressure of PCR equipment shortage for mass screening could be relieved.

"The elevated test speed boosts the test capability and decreases the reliance on the quantity of equipment, which met the need for mass screening in Shanghai recently," said Song Zhigang, professor at Shanghai Public Health Clinical Center. [See page 2](#)

China-funded Power Plant Swells Bangladesh Energy Needs

By TANG Zhexiao

With the inauguration of the China-funded 1.32 GW ultra-supercritical coal-fired power plant at Payra, Bangladesh has achieved its target of full electricity coverage in the country.

More than 100 officials of the Bangladesh government attended the inauguration ceremony on March 22. Bangladeshi Prime Minister Sheikh Hasina thanked the Chinese Embassy in Bangladesh for its support and assistance, saying that the China-Bangladesh joint venture project was a big achievement, and the electricity will be carried to every corner of the country to accelerate rural development.

Chinese Ambassador Li Jiming, said China and Bangladesh have been jointly building the plant since October 2016, based on the principle of equality and cooperation, and its Unit-1 began operation in 2020. The plant will boost industrial development in Bangladesh, while also making contributions to environmental protection and the well-being of the local people.

Located in the south Bangladesh's Patuakhali district and supported by

China's core technology and equipment, the plant is one of key projects of the Belt and Road Initiative.

As the first and largest power plant using ultra-supercritical technology, the plant is co-developed, co-invested and co-constructed by the China National Machinery Import and Export Co. and Bangladesh's North - West Power Generation Co. Ltd, with a total investment of about 2.2 billion USD. It is also Bangladesh's first PPP (public - private - partnership) project funded by China.

Officials said the plant will provide Bangladesh with about 8.58 billion kWh of electricity every year once fully operational, which will play an important role in improving the country's power structure and supply.

Compared with a conventional coal-fired power plant, an ultra-supercritical power plant requires less coal to achieve higher thermal efficiency and lower emissions, including carbon dioxide.

With this project, Bangladesh has become the 13th country in the world and seventh in South Asia to use the environmentally - friendly, ultra-supercritical technology in producing power.



The 1.32 GW ultra-supercritical coal-fired power plant in Patuakhali, Bangladesh. (PHOTO: XINHUA)

Editor's Pick

BeiDou: Homegrown System, Navigation for the World

By TANG Zhexiao

China's BeiDou Navigation Satellite System (BDS) has entered a new phase of sustained stable services and rapid development, according to China Satellite Navigation Office (CSNO). On March 21, the country's first Beidou positioning system for subways began its construction in Beijing. It is expected to be completed by the end of this year.

Independently developed and operated by China, BDS is the country's largest space-based system and one of four global navigation networks, along with the United States' GPS, Russia's GLONASS and the European Union's Galileo. It provides all-time, all-weather and high - accuracy positioning, navigation and timing services to global users.

Since its inception, BDS has been used in national significant infrastructures. Official data shows the sales volume of domestic Beidou compatible chips and modules has exceeded 150 million by the end of 2020, with the do-

mestic output value of the BDS industry chain reaching 403.3 billion RMB.

BDS's construction background

The idea to develop the BDS was conceived in the 1980s. Experts and scholars proposed the idea of using two geosynchronous orbit satellites to measure ground and air targets. After much research, the concept of the dual-satellite navigational system gradually formed.

In 1994, a research team was built to initiate the first phase of the BeiDou Navigation System (BDS-1). Ten years later, the BDS - 1 was finally completed, making China the third country to have an independent satellite navigation system after the U.S. and Russia.

BDS-2 achieved the best coverage effect with the least number of satellites, realizing hybrid constellation regional satellite navigation for the first time in the world.

On July 31, 2020, China formally commissioned the BDS, launching the third generation of BDS-3 system to provide global coverage for timing and navigation.

Currently, 45 BDS satellites are operational in orbit, while 15 BDS-2 satellites and 30 BDS-3 satellites jointly provide services to global users.

BDS-based positioning brings benefits

Achieving large-scale civilian promotion and forming a strong Beidou industrial chain is essential for the sustainable development of the Beidou system.

In recent years, the system has been used in many industries such as transportation, disaster relief, agriculture and other infrastructure. Particularly in the fight against COVID-19, BDS-based precise positioning has facilitated the supply and circulation of COVID-19 protection and prevention materials.

For now, there are more than eight million road operating vehicles, 40,000 postal and express delivery vehicles, 80,000 buses in 36 major cities, 3,200 inland navigation facilities, and 2,900 marine navigation facilities using the Beidou system.

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Recalculating China's Land Carbon Sink Area

By Staff Reporters

A group of Chinese scientists have recalculated the size of China's land carbon sink with the result recently published in *Nature*, noting that it had been previously overestimated in research also published in *Nature* in 2020.

Adopting the Copernicus Atmosphere Monitoring Service (CAMS), scientists found that the estimated average land carbon sink in China between 2010 and 2016 was 920 million tons of CO₂ per year, after they had amended the lateral carbon flux.

However, the result could be 2.57 billion tons of CO₂ per year if the CO₂ concentration data from the Shangri-La Atmosphere Watch Station, in Yunnan

province, had been included in the inversion calculation.

To figure out the difference, the scientists conducted analysis and simulation of the station's observation footprint via a high-resolution atmospheric transmittance model.

The result showed that the CO₂ concentration in spring and autumn in the area of the station was evidently underestimated, because previous research used the CO₂ concentration data from the station as the average CO₂ concentration for the coarse-resolution atmospheric transmittance model grid where the station is located. This caused the overestimation of land carbon sink in southwest China by the coarse-resolution inversion model.

Scientists also updated the estimation of China's land carbon sink via the bottom - up approach for the past 10 years, based on the forest inventory data and other inventory data during the same period. The result demonstrated that carbon storage of the land ecosystem went up 280 million tons of carbon per year, equaling the emission of 1.03 billion tons of CO₂, which basically matches the inversion estimation of carbon sink via the top-down approach.

In response to this recalculation, the authors of the previous research noted that China's land ecosystem owns a large carbon sink despite the fact that there is certain systematic bias between different chemical transmittance models.

WEEKLY REVIEW

Tianzhou-2 Cargo Craft Starts the Return Journey

Tianzhou-2 left the core module of China's Tiangong space station after completing all of its scheduled tasks at 3:59 pm (BT) on March 27, according to the China Manned Space Agency. The spacecraft will enter the Earth's atmosphere at an appropriate time under ground control.

Hualong One Reactor Realizes Full Operation

Located in the city of Fuqing in east China's Fujian province, the No. 6 unit, the country's second nuclear power unit using Hualong One, has met requirements for commercial operation, according to the China National Nuclear Corporation. This also marks the full operation of Hualong One reactor demonstration project.

Most Precise Large Samples of Stellar Ages Gained via LAMOST and Gaia Data

Astronomers obtained the most accurate information regarding the large samples of stellar ages based on the observation data by the Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) in China and the European Space Agency's Gaia satellite, and drew the images in terms of how the Milky Way took shape and evolved in its infant and juvenile stages.

Rapid Nucleic Acid Test Developed to Detect COVID-19 Variants

Scientists from Guangdong Provincial People's Hospital and South China University of Technology developed an RT-LAMP method to detect the novel coronavirus and Delta variants, which takes only about an hour and appears to be 100 percent accurate in the detection.

WECHAT ACCOUNT

E-PAPER



Embedding Ethics into Sci-tech R&D

By LI Linxu

Given that sci-tech permeates into more and more of our daily lives, ethics governance in scientific research and technological development has become increasingly important.

As Albert Einstein said, "Science is a powerful instrument. How it is used, whether it is a blessing or a curse to mankind, depends on mankind and not on the instrument."

China has always attached great importance to ethics governance in sci-tech, and is committed to developing sci-tech for the greater good.

To strengthen the governance over ethics in sci-tech, a new guideline has recently been released by Chinese authorities.

It is the country's first comprehensive guideline on ethics governance in sci-tech, said Xiang Libin, vice-minister of science and technology, adding that it has filled in the gaps and will improve the public's ethics awareness.

The guideline is framed by five ethics principles, such as serving the well-being of humanity, respecting people's right to life, adhering to fairness and justice, controlling risks in an appropriate way, and maintaining openness and transparency.

Ethics compliance should be emphasized throughout the process of scientific research and technological devel-



China is leading the way on ethics governance in key areas such as the life sciences, medicine and artificial intelligence. Photo shows the 2021 World Artificial Intelligence Conference held in Shanghai. (PHOTO: VCG)

opment, stressed the guideline. Meanwhile, ethics governance should be based on laws and regulations, and should suit the conditions of the country.

No agency, organization or individual should conduct scientific activities that damage social, public, biological and ecological security, nor should they undermine the safety and well-being of people's lives, health and dignity.

With regard to international collaborative research projects, they should comply with regulation requirements of

all concerned countries, and pass their own ethics reviews respectively.

For those with high ethical risks, the ethics review results should be double-checked by relevant Chinese authorities, according to the guideline.

Opening-up and international cooperation is also highlighted in the guideline.

Ethics governance in sci-tech has international dimensions, hence the global research community must abide by some basic norms, said Xiang, adding that the country is very open and proac-

tive in international cooperation on ethics governance.

China has actively taken part in drafting the *Ethics and Governance of Artificial Intelligence for Health: WHO Guidance* and played an important role in drafting the *UNESCO Recommendation on the Ethics of Artificial Intelligence*.

In view of the country's rapid development in sci-tech, with some frontier research entering uncharted territories, international cooperation is more needed now than ever, said Xiang.

Policy Watch

Enterprise Tech Innovation Drives China's Development

By CHEN Chunyou

Enterprises, whether state-owned or private, have played an increasingly prominent role in leading China's sci-tech innovation.

In February this year, Sinovac Biotech said it would invest 10 billion RMB in supporting basic research, R&D and industrialization of biomedicine in the next five years.

According to Wang Zhigang, minister of science and technology, currently in China, 76 percent of national total social R&D investment comes from enterprises. And in 2021, more than 860 key national R&D projects were approved nationally, among which about 680 projects were led, or participated in, by enterprises.

In the revised *Law on Progress of Science and Technology*, more preferential policies are introduced to the development of enterprises. Article 41 stipulates that enterprises' R&D expenses in developing new technologies, new products and new processes can enjoy an additional deduction before tax. And in article 43, small and medium-sized technological enterprises are included on the list for getting favorable tax concessions.

In order to improve the sense of engagement of enterprises in national innovation, article 39 stipulates that China would support the enterprises in taking the lead in making breakthroughs in national core technologies, and encourage them to fully play the role as agents in making decisions to advance technological innovation, increasing R&D investment, organizing the R&D activities and promoting commercialization of sci-tech achievements.

The country is to cultivate influential and highly-competitive leading sci-tech enterprises, and allow them to be the engine driving innovation, says article 39.

Article 42 stipulates that China will perfect the mechanism for innovation, and support qualified sci-tech enterpris-

es in advancing their development in the capital market. In order to let the enterprises develop freely, article 42 specifies that the country would improve the financing system for the sci-tech enterprises to list on the stock market, enrich this channel for financing, and make full use of the financing function of the capital market in serving technological innovation.

The law also emphasizes the responsibility of state-owned enterprises (SOEs). The SOEs account for a large proportion in the national economy. If all SOEs make their contributions to the key sci-tech areas, then the national competitiveness will be greatly enhanced.

Article 46 stipulates that the SOEs should establish and improve the R&D investment system, distribution system and evaluation system, which are conducive to technological innovation, and improve the incentive and restraint mechanism.

For the sake of stimulating the innovation vitality of SOEs, the law also sets clear requirements for the corporate executives. Article 46 stipulates that the chief executives should be responsible for the technological progress of the enterprise, noting that the enterprise's innovation investment, innovation capacity building and innovation results should be taken into account when assessing the performance of the corporate executives. This will undoubtedly ensure the enterprise's technological progress.

This March, the Bureau of Sci-Tech Innovation and Social Responsibility was founded by the State-owned Asset Supervision and Administration Commission (SASAC) of the State Council, which is also an effort to accelerate the innovation capacity of central SOEs.

Hao Peng, director of the SASAC, said that the bureau will strengthen the role of enterprises as innovation agents, and work for the optimization of an ecological environment for sci-tech innovation, so as to stimulate the innovation potential of central SOEs.

Endangered Yangtze Species Smiling after Green Measure Success

By ZHONG Jianli and JIN Feng

The Yangtze finless porpoise, known as the "smiling angel" in China, is a species of toothed whale endemic to the Yangtze River. It is also one of the world's most rare freshwater cetacean species.

In the past years, due to illegal fishing, pollution, and vessel traffic, the number of Yangtze finless porpoises declined rapidly. In 2017, after a 52-day Yangtze finless porpoise ecological investigation, the Ministry of Agriculture and Rural Affairs announced that the number of Yangtze finless porpoises was estimated to be only 1,012, of which about 445 were in the main stream of the river.

To save the species from extinction, the Chinese government adopted a se-

ries of measures. Many of the recent efforts include the following:

In January 2021, a 10-year fishing ban was implemented in key waters of the Yangtze River.

In February 2021, China elevated the Yangtze finless porpoise to national first-level protected species, the highest level in the List of National Key Protected Wildlife.

On March 1, 2021, the country's first river protection law, the *Yangtze River Protection Law*, came into effect.

A year later, the ecological environment of the Yangtze River has undergone great changes, and more finless porpoises have been captured.

"The underwater noise in the near-shore area of the Yangtze River has been reduced, because disorderly riverside

ports have been renovated or closed down, and some places have even been restored to more hospitable environments. Finless porpoises can currently use these nearshore waters to inhabit," said Wang Kexiong, a researcher at the Institute of Hydrobiology, Chinese Academy of Sciences, whose research team has often carried out scientific research on the Yangtze River's ecology.

Wang added that now finless porpoises can follow fish over a wider area. Where there are fish, the finless porpoises can now prey freely.

Establishing in-situ nature reserves is another effort being made by China to protect endangered species.

In recent years, the country has set up eight in-situ nature reserves, three ex-situ nature reserves and one semi-natu-

ral ex-situ site along the Yangtze River, helping the habitat of the Yangtze finless porpoise improve immeasurably.

To further protect the species, Wang noted that it is necessary to invest more technology and resources to monitor the underwater living environment and activities of the species.

"The current monitoring system mainly relies on imaging equipment, which is usually used to monitor human activities on the water, but cannot directly monitor underwater activities of finless porpoises," said Wang, adding that although some nature reserves have carried out real-time underwater acoustic monitoring and early warning of finless porpoises, the number of monitoring points still needs to be increased.

Protecting Underwater Cultural Heritage

By ZHONG Jianli

Salvage work on the largest and most well-preserved wooden shipwreck discovered by China's underwater ar-



Some porcelains discovered in the Yangtze River Estuary No.2 ancient ship. (PHOTO: XINHUA)

chaeologists, the Yangtze River Estuary No. 2 ancient ship, officially began in early March.

The vessel was a trade ship during the Tongzhi period of the Qing Dynasty (1862-1875). At present, it is resting underwater in the Hengsha Shoal, northeast Shanghai.

Archaeological surveys show that the ship is about 38.5 meters long and 7.8 meters wide at the center, and carries exquisite cultural relics, including porcelains.

To salvage it, the world's most advanced equipment and technology will be used.

Relying on China's high-end manufacturing capability, a huge arch-shaped box will be used to wrap the whole ship,

which will then be hoisted up.

The total weight of the box, with the ship inside, will be nearly 10,000 tons, which includes sand and sea water.

The innovative solution will merge advanced technologies such as tunnel shield and hydraulic pressure hoisting, which have never been used in cultural relics conservation and archaeological fields.

The Yangtze River Estuary No.2 is another milestone in China's underwater archaeology, after the Nanhai No.1 shipwreck was found in 1987 and salvaged in 2007.

This is testament to the country's constant efforts to discover and protect cultural relics, including those lying underwater.

In October 2021, the Yangtze River Estuary No.2 ancient ship was listed as a major underwater archaeological project by China's 14th Five-Year Plan for Cultural Heritage Protection and Sci-Tech Innovation.

On April 1, the country's revised *Regulation on the Administration of the Protection of Underwater Cultural Heritage* will come into effect, which will provide a more definitive guarantee for protecting underwater cultural relics.

The salvage and relocation work of the Yangtze River Estuary No.2 is expected to be completed by the end of the year, according to a spokesperson at the Shanghai Municipal Administration of Cultural Heritage.



A flock of egrets flies over the Sanya River, presenting a sense of liveliness to the tranquil scene. (PHOTO: VCG)

Hainan, a Carbon Trading Model for Green Development

By CHEN Chunyou

Approval has been given to establish the Hainan International Carbon Emission Trading Center (Hainan Carbon Center) in Sanya, Hainan province, which is expected to be put into operation in the latter half of 2022.

The Hainan Carbon Center is an important part of China's national green development strategy. Based on a market-oriented ecological compensation mechanism, it aims to push ahead with low-carbon transition through carbon finance, a term referred to as the financing for purchasing greenhouse-gas-emission quotas to offset emissions.

Hainan has a sound ecological environment and rich natural resources, especially blue carbon resources. The construction of the center is therefore an important pilot operation for this financial initiative opening to the world.

The center will promote Hainan's blue carbon methodology to become an internationally recognized standard, and incorporate into the global ocean governance system through the market trading of blue carbon products, according to a preparatory meeting on the construction of the center, held in Haikou, Hainan's capital city, on March 18.

In addition, the center will provide a strong capital market support platform for various carbon financial products. The fund pooled from the carbon financial market, will also provide powerful financial support for the transformation of enterprises.

The center is expected to serve the national green and low-carbon development strategy, because it will not only promote the energy structure adjustment, but also promote the double reduction of total carbon emissions and energy consumption increments.

From page 1

According to Song, currently each PCR equipment could only complete around about 1,600 test samples, even if it runs 24 hours a day. With the new kit, this figure will be greatly increased.

Apart from accelerating the detection process, the new test kit also maintains a high level of sensitivity, with the limit of detection (LOD) reaching

New PCR Detection Kit to Accelerate Mass Screening

200 copies/ml, whereas the average level of LOD in the industry is 375 copies/ml. The lower the LOD, the more sensitive the test kit is. This also means that the test kit with lower LOD could de-

tect samples with lower virus concentration, reducing the risk of missed detection.

Covering ORF1ab and N genes of the novel coronavirus, the test kit is val-

id for 12 months and can be used 10 times via freeze-thaw cycles, with stable experiment results.

The new test kit was developed by a local company in Shanghai. "Previously, many innovative moves in medical tests came from big foreign enterprises, so it is commendable for a domestic company to have developed such a product," said Song.

DZCP: The Right Choice to Contain COVID-19

Voice of the World

By Staff Reporters

The highly contagious Omicron variant of COVID-19 is still sweeping across most parts of the world, but some countries like the U.S., UK, and Japan have already announced the lifting of restrictions against COVID-19.

Unlike those countries that have eased restrictions, China has continued its various measures to adopt a "dynamic zero-clearing policy (DZCP)," on fighting against the pandemic. China will continue to stick with the policy of scientific accuracy and dynamic zero clearing, and curb the spread of the pandemic as soon as possible, President Xi Jinping stressed in a meeting in mid-March.

DZCP puts people first
After Omicron BA.2 subvariant was detected in China, the number of confirmed cases increased quickly. Some Western observers started to criticize the DZCP once again, putting much emphasis on the damage it could do to the economy. They predicted that the world economy could be seriously affected if lockdown continued.

"The aggressive DZCP will have a prolonged impact on global supply chains and [it] might overshadow the economic growth prospects for China," said GlobalData, a leading data and analytics company.



In a community of Inner Mongolia Autonomous Region, volunteers are preparing to deliver supplies to quarantined residents. (PHOTO: XINHUA)

However, based on the Chinese perspective, people's survival will always take priority when compared to economic benefits. The basic principle of Chinese leaders governing the country during the pandemic is based on "putting people and life at the forefront."

"China's COVID lockdowns have affected domestic consumption more than manufacturing or global supply chains, but according to my friends in China, the Chinese government has put public health over economic growth. And that is actually being beneficial," Andy Rothman of the Matthews Asia Fund told CNBC.

Should China maintain DZCP?

The current pandemic wave is characterized by a large number and high proportion of asymptomatic infections, in which many infected people do not develop any symptoms. This makes it even more difficult to identify the risk and size of the outbreak.

When Omicron BA.2 subvariant was detected, the number of confirmed cases in China increased quickly, despite

being still very low compared with countries elsewhere in the world.

So, does this mean that China should give up its DZCP? From China's perspective, the answer is clearly no. Let's see what is happening in those countries that have lifted their restrictions.

According to UK Coronavirus Dashboard on March 25, BA.2 COVID-19 patients now account for 85 percent of new infections, increasing 20 percent week by week. More severely, about a 17 percent increase was recorded in the number of people who died within 28 days of testing positive for COVID-19.

NBC News reported that infectious disease experts remain firm in their prediction that the BA.2 transmission is estimated to be 30 percent higher in the U.S. Although the subvariant may not cause severe illness or overwhelm hospital resources like earlier variants, the nature of further illness it may cause is still uncertain.

Ongoing improvement of COVID strategy

With restrictions continuing, China

will continue to adopt methods such as developing COVID drugs and fast nucleic acid testing to make prevention and control efforts more effective.

About furthering policy improvement, worldwide experts like Jerome H. Kim, director-general of the International Vaccine Institute, told *Barron's*, "Lockdowns, mass testing, and social distancing have been scientifically proven to work."

Kim also cautioned that China should not relax policies too much. "If China begins to loosen restrictions now, it will face a surge in infections. The questions are: loosen what? Are the vulnerable protected? And are they prepared for the impact on the health care system?" he told *Barron's*.

Zhang Wenhong, a renowned Chinese infectious disease expert believes that sustaining normal life is as essential as implementing the DZCP. He wrote on Weibo, "We need to take advantage of the precious opportunity brought by DZCP to prepare a more complete, intelligent and sustainable COVID strategy."

Sci-tech Guidelines Prove China's Commitment to a Safer World

Opinion

By Musundali Bhuiyan

While the value of modern science and technology is indisputable, the abuse of this essential part of human development is unfortunately on the rise across the world. People often fall prey to cybercrimes, ranging from financial fraud, human trafficking and child pornography, to intellectual property, stolen identities, and privacy violation. Various media have reported that during the ongoing devastating pandemic, cybercrimes have witnessed a rise of more than 600 percent.

The more we use science and tech-

nology, the more our security and financial health becomes vulnerable. The abuses of science and technology have gained so much traction, that investment guru Warren Buffett describes cybercrimes as the number one problem facing humanity, poses real risks.

Cybersecurity ventures have predicted that global damage incurred as a result of cybercrime would cost up to 10.5 trillion USD annually by 2025. The Center for Strategic and International Studies (CSIS), in partnership with McAfee, concludes that nearly one percent of global GDP, close to 600 billion USD, is lost to cybercrime annually.

As a global leader in science and technology, China constantly demonstrates its commitment to ensuring a safer Internet for the world. In delivering on its commitment, China has recently released a set of guidelines to strengthen the governance of ethics in science and technology, given the rapid progress of the country's sci-tech innovation and the growing challenges facing ethics in this field.

The guidelines have reflected China's humanity first policy, as the document clarified the ethical principles in science and technology, saying that scientific activities should serve the well-being of humanity, respect people's right to live, adhere to

fairness and justice, control risks in an appropriate way, and maintain openness and transparency.

Experts in the field believe that China has come up with such guidelines to get to the core of immoral practices, by declaring that ethics compliance should be emphasized throughout the process of scientific research and technological development.

The guidelines have outlined the silver lining for children and youth by recommending that authorities should encourage colleges and universities, scientific research institutions, medical institutions, social groups, and enterprises to improve the monitoring and early warning mechanism for ethical risks, and follow-up development in emerging sci-tech fields.

It is believed by observers that the guidelines will rein in the immoral uses of science and technology, because China is a country that has established the rule of law. Experts are also optimistic that the guidelines have clarified that the governance of science and technology should be based on laws and regulations, and should suit the conditions of the country and be free from external influence.

The guidelines have also brought good news to many developing countries by emphasizing further opening up

and cooperation with the world. As a Bangladeshi journalist, I know that the incumbent government of my country has long been trying to realize its dream of Digital Bangladesh, for which there is no alternative to modern science and technologies.

Meanwhile, the current world order is more focused on good governance. According to the United Nations, good governance is measured by the eight factors of participation, rule of law, transparency, responsiveness, consensus oriented, equity, and inclusiveness. Most of these factors are interlinked with the uses of science and technology. More participation, transparency, responsiveness, and inclusiveness is possible by converting government services to digital. The guidelines themselves have also underscored the adherence to fairness and justice, and maintain openness and transparency.

Many nations like Bangladesh can benefit from, and forge ahead with, bilateral and multilateral cooperation with China in ethics education in science and technology, the institutionalization of ethical training programs, and the popularization of ethical codes among their respective people.

Musundali Bhuiyan is a Bangladeshi journalist now based in Beijing.

Global Observation

Biomilitary Activities: Why is the U.S. Silent?

By QI Liming

Recently, U.S. bio-military cooperation projects in Ukraine have triggered strong concern from the international community. Russian Nuclear, Chemical and Biological Protection Troops commander Igor Kirillov, is quoted in the Russian News Agency Tass saying that Ukrainian Defense Ministry laboratories in Kiev, Odessa, Lvov and Kharkov received 32 million USD funding from the U.S.

Many countries have called on the U.S. to take a responsible position and fully clarify its biological military activities in Ukraine to the world. In order to safeguard the common security of humankind, the U.S. should stop its exclusive blocking of the establishment on the verification mechanism of the *Biological Weapons Convention (BWC)*.

U.S. introspection needed

According to the documents submitted by the U.S. to the Conference of States Parties to the BWC at the end of 2021, it has 26 laboratories and other cooperative facilities in Ukraine.

According to the *Daily Mail*, the U.S. Department of Defense (DoD) said in a fact sheet on March 11 that since 2005, it has spent 200 million USD in Ukraine, supporting 46 Ukrainian laboratories, health facilities and diagnostic sites.

Victoria Nuland, U.S. under Secretary of State for Political Affairs, confirmed during the senate hearing on March 8, that Ukraine has "biological research facilities," when asked if Ukraine has bioweapons. She also said the U.S. is working with Ukraine to prevent Russia from getting "those research materials."

The Director of National Intelligence, Avril Haines, told the Senate Intelligence Committee that Ukraine "operated a little over a dozen" biolabs for bio-defense and public health response. The U.S. has, at least in the past, "provided assistance" to the labs "in the context of biosafety, which is something we have done with a variety of different countries," she added.

However, the U.S. declared that it does not operate laboratories in Ukraine, but occasionally sent "helpers" to Ukraine so as to ensure the safety of the laboratories. Yet according to the agreement signed in 2005 between the U.S. and Ukraine, representatives from DoD have the right to participate in all relevant activities conducted by Ukraine facilities, and all dangerous viruses in Ukraine must be stored in these laboratories and should be provided to the U.S. as required. In addition, Ukraine was not authorized to disclose what the U.S. labeled as "sensitive information."

More truth to be unveiled

In nearly 30 years, the number of

biosafety level 4 laboratories on U.S. soil increased by 750 percent, accompanied by an increasing risk of virus leakage. Because of protests from within, the U.S. chose to establish laboratories beyond its borders. In past decades, the U.S. has built a number of biological laboratories in Ukraine, South Korea, Kazakhstan and Georgia.

In the name of "cooperation to reduce biosecurity risks" and "strengthening global public health," the U.S. has carried out biological cooperation projects in more than 30 countries and controls hundreds of biological laboratories.

Sheradil Baktygulov, a Kyrgyz independent political analyst based in Bishkek said that, "The formal explanations of the U.S. authorities on the activities of more than 300 U.S. biolabs around the world do not match the real situation on the ground. The truth is much darker, as has been shown by many independent investigations since 2018."

"There have been numerous mysterious outbreaks of human illnesses and losses of livestock in Georgia, Ukraine and Russian provinces bordering these countries since 2007. Moreover, the U.S. is keeping its bioweapons in violation of international treaties," he said.

Voices from the international community

Korkut Ulucan, a Turkish specialist in medical biology and genetics, said such laboratories must be accessible to international scientific committees, and their activities need to be audited by multiple independent organizations.

"To prevent a leak, these laboratories should be gradually evacuated with the utmost care, under high-level security conditions and the supervision of a committee of scientists, and they must be inactivated," said Ulucan, also a lecturer at the Uskudar University.

A commentary in *Turkish newspaper, Cumhuriyet* said the information exposed by Russia left no place for the chicanery of American misdeeds. The obtained information confirmed that the biological laboratories set up by the U.S. were trying to develop biological weapons. However, these dangerous messages to the world were predictably ignored by the Western media.

Indian newspaper, *The Daily Telegraph* believed that the international community's security concerns over the Ukrainian biological laboratory cannot be ignored. The U.S. claims that pathogens in laboratories are not part of biological weapons. However, unlike nuclear tests, the materials used in biological weapons tests are indistinguishable from normal scientific materials and therefore much easier to hide. In view of the growing threat of biological weapons, early measures must be taken to address it, said *The Daily Telegraph*.

Ancient Art Meets Cyberpunk

Hi! Tech

By QI Liming

In the space dimension of technological innovation, it would be an amazing experience to meander through the famous painting—*A Thousand Li of Rivers and Mountains*.

With the lingering sound of ancient rhyme, the poetic dance drama *Only This Green*, is based on this painting.

Using a unique combination of

technology and art, the performance uses lasers, robotics, multimedia imagery, and even Unmanned Aerial Vehicles, presenting rich and diversified art forms.

Technology is a tool to realize the wildest imagination and even create new spatial dimensions. How art leads science and technology drives art, is answered in the presentation of *Only This Green*.

Elegant and beautiful Chinese aesthetics create a dream spanning thousands of years, activating the traditional

and cultural genes in the hearts of the audience. A floral kingdom of classical style bursts into bloom with modern technologies, such as an innovative stage design.

Armed with modern technologies, the original elegance of *Only This Green* takes on a cyberpunk flavor. Using a multi-layer turntable as a base and the mechanical frame of a circular arc in the air, the crew built an "inner bladder" on the basis of the stage with the picture frame, creating a magnificent new choreography effect. The top of the stage is designed to rotate three times while the ground stage is able to rotate four times. In addition, the stage may move up, down, left and right as immersing in the painting.



Scientists look at cultures in petri dishes under an inverted microscope in the lab. (PHOTO: VCG)



Only This Green performed at 2022 Spring Festival Gala. (PHOTO: SCREENSHOT FROM CCTV)

LIFE IN CHINA

Appreciating a Different Culture Without Filters

By LONG Yun

Yves Mouillet moved to Beijing 15 years ago to pursue a childhood dream of learning about Chinese culture. "It was a journey that altered the course of my life," he told *S&T Daily* recently.

Mouillet now lives and works in China, progressing from a young French student to a prominent French anchor at China Global Television Network (CGTN) and a cross-cultural Internet celebrity. In 2021, the Chinese government presented him with the Friendship Award. As the youngest recipient of the award that year, his outstanding contribution to the cultural exchanges between China and France was highly recognized by his Chinese audience.

Language is an indispensable bridge of communication

When Mouillet was seven years old, a Chinese friend of his mother's spent a few days with his family. He still retains vivid memories of this Chinese lady's elegance, kindness, and oriental temperament. In 2007, Mouillet traveled to China for the first time and quickly fell in love with the country.

In 2009, seeking an adventurous life, he decided to settle down in Beijing and began to study Chinese systematically at the University of International Business and Economics. He has always believed that mastering a language is the first step toward genuinely comprehending a culture. His Chinese language ability, acquired over a decade in China, is close to that of a native speaker. According to Mouillet, the language barrier will impede foreigners from integrating into China's culture.

Mouillet began his career as a news editor at the former CCTV French Channel (now CGTN French Department) in 2011. "Journalism is not just a job for me. It is a passion, a mission,



Mr. Yves Mouillet. (COURTESY PHOTO)

and a responsibility to serve the audience constantly," he said.

In 2012, he was tasked with developing a Chinese language teaching program for non-native speakers. He co-founded and hosted the "Learn Chinese" program with his Chinese colleagues, integrating his Chinese and French cultural backgrounds. Mouillet believed that this program would enable a broader audience of Chinese culture lovers to appreciate the Chinese language and culture's unique charm, while also getting to understand the wave of China's development in the new era.

A witness to China's development
Mouillet has also reported extensively on significant issues, such as China's poverty alleviation campaign, demonstrating the Chinese economy's resilience and the continuous improvement of people's livelihoods. He noted that the context of China's development is essential.

He considers himself fortunate to witness China's rapid development and be a participant in the country's increasing international influence. "China is a powerful country. Nevertheless, China is

not a threat," he emphasized, adding, "To be honest, Beijing is the world's center. It is a city where we can observe history unfolding and development happening. I am honored to be a part of all of these changes."

In terms of technology advancement and people's livelihood improvement, Mouillet said, "I admire Chinese people's capacity to adapt to everything they like. They are open to embracing changes and progress, such as the E-payment system." Apart from the technical progress, he is also impressed by China's ecological achievement.

An objective cross-cultural communicator

After more than a decade of extensive contact with Chinese society, Mouillet gained a better understanding of the differences between Chinese and Western cultures and the critical nature of objective and comprehensive cross-cultural communication. He prefers to position himself as a cultural communicator between East and West, rather than a news anchor.

He highlighted that telling China's story to the rest of the world is just being

honest and transparent. "I will try my best to explain, maybe not all the details, but the central part to help people outside China understand the country."

He is fully aware of the increasing criticism and mounting pressure that come with China's expanding global influence. "One of the most challenging parts for me was accepting Western countries' criticism," he said. However, he gradually accepted that people always have their stereotypes, and in turn, this strongly motivates him to be an objective and active storyteller.

As for the misunderstanding and myths of China fabricated by some Western media, Mouillet believes that they have seriously distorted China's international image, which may even lead to a disastrous miscalculation, and ultimately a lose-lose outcome.

Mouillet proposed that China increase its use of soft cultural products, such as documentaries and cartoons to dispel the Western view of mystery, misinterpretation, and distortion. Westerners could then appreciate and understand China while acknowledging the difficulties behind its development, he said.

China-Japan Unite on Low-carbon Human Habitat

By TANG Zhexiao

Co-organized by the Ministry of Science and Technology of China (MOST), the Japan Science and Technology Agency (JST), and China's Southeast University, the China-Japan High-level Experts Symposium on Low-carbon Human Habitat was held online on March 25.

Themed as "East Asian Wisdom and Development Path of Low-Carbon Habitat," the event set up three sub-forums, namely, the design and innovation of Asian human habitat in the process of carbon neutrality, the scientific exploration and technical application of green and smart buildings, and the wisdom and inheritance of East Asian traditional buildings.

Scientists and representatives from universities, enterprises and research institutes made keynote speeches, and held round-table discussions on relevant topics in the field of low-carbon buildings.

Li Meng, vice minister of MOST, administrator of the State Administration of Foreign Experts Affairs, said, "The cooperation and exchanges between China and Japan in the field of science and technology have developed

rapidly and expanded in scale over the years, and to develop a low-carbon economy has become the consensus of the two sides."

It is hoped that the experts, scholars and industrial leaders who attended the meeting will enhance mutual understanding and work together to play a positive role in promoting low-carbon building of Asia and even the world, said Li.

Okimura Kazuki, honorary president of JST, said that scientific and technological exchanges are indispensable to both China and Japan, and cooperation between the two sides will become more important to Japan in the future.

Huang Ru, president of Southeast University, said the forward looking discussions on East Asia's low carbon habitat in the cultural base of East Asia will not only inherit the long-standing cultural traditions of the two countries, but also further expand new frontiers in the field of science and technology in order to meet the urgent needs of current development.

The event also released a proposal of stepping into a sustainable low-carbon human habitat from a common cultural base.

Traditional Eastern Wisdom

Dujiangyan: A Marvel of Ancient Hydraulic Engineering

By BI Weizi

Dujiangyan is a renowned ancient flood control and irrigation system in Sichuan province, southwest China. It was first built around 256 B.C. as a large-scale water conservancy project by Li Bing, a hydraulic engineer who served the state of Qin as a governor of Shu County.

This project has been in operation for more than 2,000 years, irrigating more than 30 counties and cities with a total area of nearly 10 million mu (one mu is about 666.7 square meters), giving rise to the folklore that the Chengdu Plain was "a Land of Heaven." It is also the oldest operating grand water conservancy project, featuring diversion instead of damming, in the world.

The Chengdu Plain was once a place of severe floods and droughts in ancient times, which were brought on by Minjiang River, the longest tributary of the Yangtze River, on which the Dujiangyan project was developed. The Minjiang River flows from its source through the steep mountains, and once it reaches the Chengdu Plain, the water slows down abruptly, blocking the river course with so much sediment and rocks that the nearby areas are prone to floods.

In order to solve the problem of floods and droughts, the Dujiangyan project was initiated. The overall plan

of Dujiangyan was to divide the water flow of the Minjiang into two, with one side being redirected into the dry Chengdu Plain to irrigate fields. The main project included three components, the Yuzui, Feishayan and Baopingkou.

Yuzui, a key part of the structure, is an artificial levee that divides the water into an inner and an outer flow. The inner flow is deep and narrow, while the outer flow is relatively shallow and wide to protect local people from being plagued by floods or droughts. This is done by controlling the amount of water that the inner flow carries.

Feishayan is a 200-metre wide opening connecting the inner and outer flows, allowing the natural whirlpool flow of water to drain excess water from the inner to the outer flow to prevent flooding.

Baopingkou, an important part of the system, is a channel cut through the mountains. The channel distributes water to the agricultural fields of the Chengdu Plain, while its narrow entrance, from which it derives its name, acts as a check gate, creating a whirlpool flow that carries excess water over sand and rocks to ensure against flooding.

Dujiangyan encapsulates ancient Chinese wisdom, and is a symbol of harmony achieved between human and nature.



A bird's-eye view of Dujiangyan. (PHOTO: VCG)

Service Info

Qingtuan, sweet green rice balls made from glutinous rice colored by green plant juice, is a traditional snack during the Qingming Festival. (PHOTO: VCG)



Qingming Festival

By BI Weizi

The Qingming Festival, also known as Tomb Sweeping Day, is one of the most ancient festivals of the Chinese people. It is not only a solemn occasion of tomb sweeping and commemorating one's ancestors, but also a joyful festival for people to get close to nature and enjoy the joy of spring. It falls on the first day of the fifth solar term of the Chinese lunar calendar, around April 5.

The festival promotes filial piety and kinship, awakening the common family memory, but also fosters the cohesion and identity of family members and even the nation. In addition, it serves to integrate natural festivals and humanistic customs into one, which is the unity of heaven, earth, and human, fully reflecting the Chinese ancestors' pursuit of the harmonious unity of "heaven, earth, and human" and the idea of following the laws of nature in accordance with heaven and earth.

Sichuan, Chongqing to Mutually Recognize Work Permits for Foreigners

By LI Ruoyan & CHEN Ke

According to the policy interpretation meeting of the Science & Technology Department of Sichuan Province on March 22, the *Implementation Plan for Mutual Recognition of Work Permits for Foreign High-Level Talents in Sichuan and Chongqing* was jointly formulated by the Sichuan provincial and Chongqing Municipal authorities recently.

If a foreigner is identified as a foreign high-level talent (Category A) by the relevant Sichuan or Chongqing department, the individual who is going to transfer to work in another city within the Chengdu-Chongqing economic circle, only needs to complete the "Information Form for Mutual Recognition of Work Permits for Foreign High-Level Talents" and is exempt from submitting documents such as proof of work qualifications.

The mutual recognition of foreign high-level talents in Sichuan and

Chongqing is applicable to all foreigners (category A), who apply for re-employment within the scope of Sichuan and Chongqing, primarily including foreigners selected for China's talent introduction plan and meeting internationally recognized professional achievement recognition standards.

Additionally, Sichuan and Chongqing have implemented a unified system of mutual recognition for foreign high-level talent work permits, and the science and technology management departments ought to examine and approve the work permits following the principle of policy optimization. And "foreign high-level talents" can be granted a "Foreigner Work Permit" with a maximum validity of five years.

Furthermore, the pilot mutual recognition of work permits for foreigners (Category B) in Sichuan-Chongqing Gaozhou New Area is on the schedule, so as to further expand the scope of human resources sharing.

BeiDou: Homegrown System, Navigation for the World

From page 1

Based on the BDS, the digital logistics system helped reduce the rate of trucks driving without cargo by about five percent, reducing more than 10 million tons of carbon emissions.

In terms of communication, the BDS ground-based augmentation function has also been introduced into smartphones to achieve high-precision positioning at one-meter level.

From regional to global

Applying the principle of that "developed by China, dedicated to the

world, and aimed at being top-class," China is willing to share the benefits of BDS application and development with all other countries.

According to the third China-Arab States BDS Cooperation Forum held in 2021, China and the Arab states will expand their cooperation in using the China-developed BDS. The two sides will also carry out joint BDS/GNSS tests and evaluations, and promote the application of BDS in international search and rescue, among other initiatives.

ComNav Technology Ltd, a key sup-

plier of high-precision modules and receivers for the BDS, has been providing global navigation satellite system technology to Africa for projects in land mapping, continuously operating reference station construction, precision agriculture and more. For now, continuously operating reference stations using ComNav's BeiDou receivers have been built in 11 sub-Saharan African countries, including Kenya and Uganda. Mahama Ouedraogo, the African Union Commission's director of human resources, science and technology, said that Beidou will be-

come a significant tool in Africa's development. He expressed the AU's anticipation to broader collaboration with China in giving access to satellite navigation to more users on the continent to inject new momentum into local economies.

As planned, the BDS project will further enhance the system stability and reliability and conduct new-tech experiments and verifications. A more ubiquitous, integrated and intelligent, comprehensive national positioning, navigation and timing system is scheduled to be established by 2035, according to CSNO.