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WEEKLY EDITION

## Toward a High-level China-Africa Community with a Shared Future

President Xi Jinping announced that China would provide an additional one billion doses of COVID-19 vaccines to Africa and pledged to jointly implement nine programs on China-Africa future cooperation in a speech via video link at the opening ceremony of the Eighth Ministerial Conference of the Forum on China-Africa Cooperation (FOCAC) on November 30.

In the speech, Xi made four proposals regarding building a China-Africa community with a shared future in the new era, namely fighting COVID-19 with solidarity, deepening practical cooperation, promoting green development, and upholding equity and justice.

Xi also said that China will work closely with African countries to implement nine programs under the first three-year plan of the *China-Africa Cooperation Vision 2035*, which was jointly prepared by the two sides before the conference.

In order to help the African Union achieve its goal of vaccinating 60 percent of the African population by 2022,

Xi announced that China will provide another one billion doses of vaccines to Africa, including 600 million doses as donation and 400 million doses to be provided through such means as joint production by Chinese companies and relevant African countries. In addition, China will undertake 10 medical and health projects for African countries, and send 1,500 medical personnel and public health experts to Africa.

Meanwhile, China will undertake 10 poverty reduction and agricultural projects for Africa, and send 500 agricultural experts to Africa. China will set up a number of China-Africa joint centers for modern agrotechnology exchange, demonstration and training in China, encourage Chinese institutions and companies to build in Africa demonstration villages for China-Africa cooperation on agricultural development and poverty reduction, and support the Alliance of Chinese Companies in Africa for Corporate Social Responsibilities in launching the initiative of "100 Companies in 1,000 Villages," noted Xi. *See page 3*

## Green Olympics

The Beijing 2022 Winter Olympics (Beijing 2022), scheduled to kick off next February, is set to make history as it will become the first ever Olympic Games fully powered by green energy. We would like to bring our audiences how "Green" Beijing 2022 is from Today.

## First Olympic Games Fully Powered by Green Energy

Edited By TANG Zhexiao

To honor the promise of hosting a green games, all 26 venues of Beijing 2022 are 100 percent powered by renewable energy, with the ice-making technology adopted producing zero emissions.

In 2019, the Beijing Organizing Committee for the Olympic Games (BOCOG) issued a Carbon Management Plan, proposing 18 carbon emission reduction measures that guide its endeavor to achieve carbon neutrality.

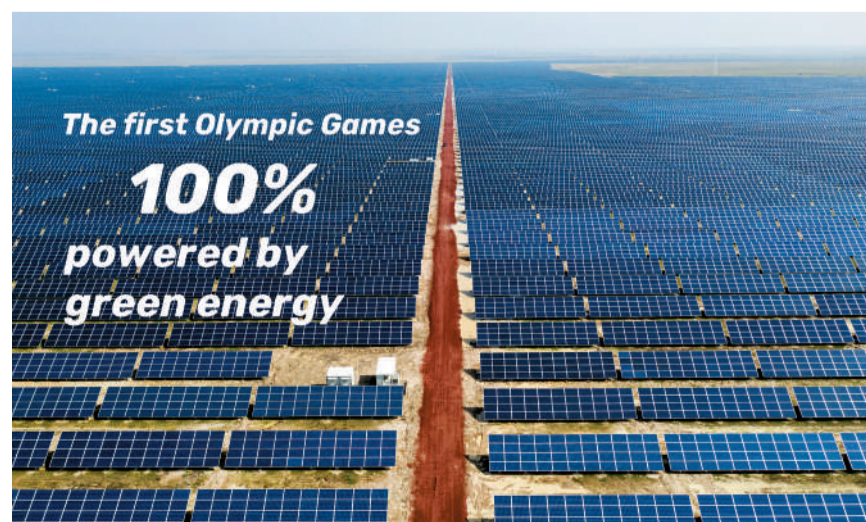
At Zhangjiakou, the co-hosting city in Hebei Province for Beijing 2022, three renewable energy projects are underway including wind power, photovoltaic power and solar thermal power projects.

In Zhangjiakou's clean energy demonstration zone, the Zhangbei flexible direct-current power grid demonstrates

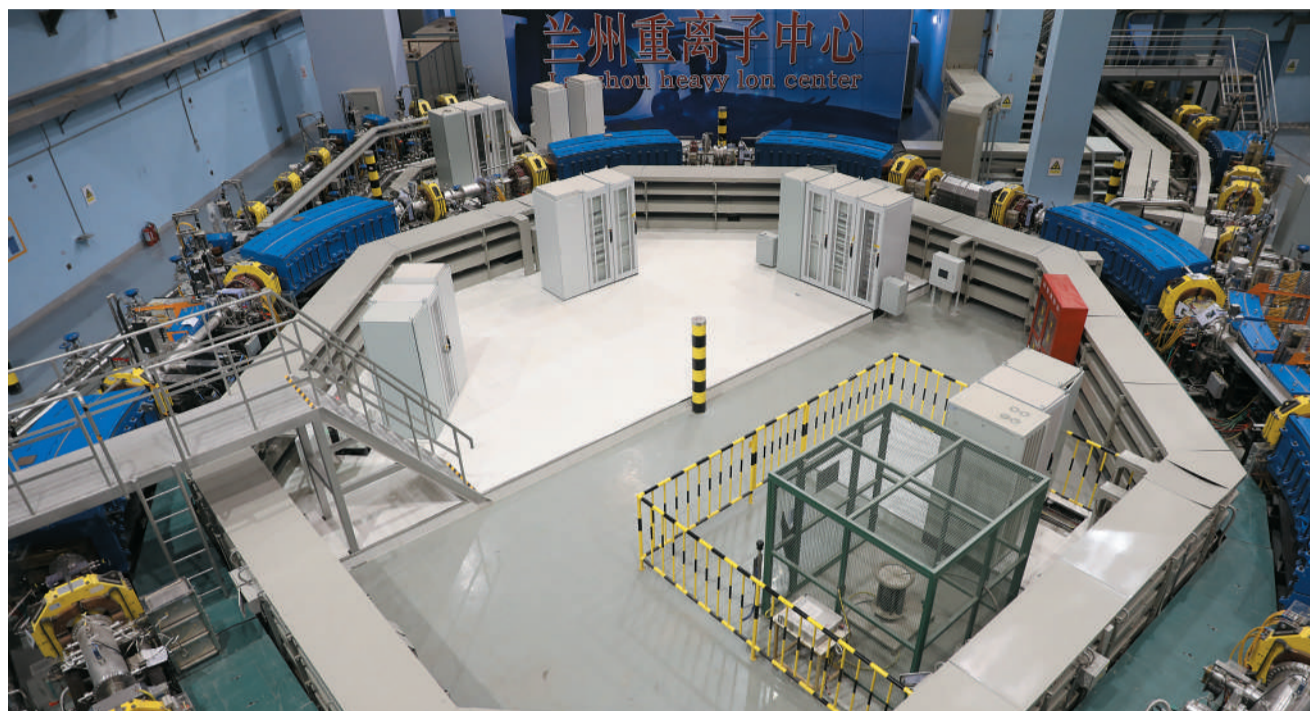
how clean energy can be used to ensure a clean and efficient grid for a low-carbon Olympics. It is capable of transmitting about 14 billion kWh of power to Beijing annually and effectively meet all clean energy-based power demands of each venue.

In addition, a total of 10 venues in Beijing, including Yanqing, have established energy management and control centers to monitor the use of electricity, gas, water, and heat in real time to achieve energy consumption control.

By the end of the Beijing 2022 Paralympic Winter Games, the venues are expected to consume about 400 million kWh of green power, which will reduce standard coal combustion by 128 thousand metric tons, and reduce carbon dioxide emissions by 320 thousand tons, according to Liu Yumin, director of Planning and Construction Department of BOCOG.



Photovoltaic Power Station in Zhangjiakou. (Graphic Design: TANG Zhexiao; PHOTO: VCG)



The heavy ion accelerator at the Lanzhou Heavy Ion Hospital which is expected to start operation at the end of this year. (PHOTO: Science and Technology Daily)

## Editor's Pick

## Heavy Ion Beams: Relief for Cancer Patients

By LU Zijian

By August this year, more than 370 patients in China had received treatment via the country's first heavy ion tumor therapy facility located in Wuwei, Gansu province, which started operation in April 2020. The treatment has shown good results.

The therapy facility was independently developed by the Institute of Modern Physics, the Chinese Academy of Sciences (CAS), making China the fourth country to have the capability of independently developing a heavy ion treatment system and clinical practice.

### How heavy ions work

Heavy ion refers to any particle that is heavier than helium with one or more units of electric charge. Due to their unique physical and biological characteristics, heavy ion beams are considered ideal for radiotherapy.

Radiation treatment, as a common approach for battling tumors, has a history of more than 100 years. However, traditional radiation treatment uses beams such as x-rays and gamma rays, which can not distinguish normal cells from cancer cells. The beams would kill both, bringing inevitable and sometimes

severe side effects to the patients.

Heavy ion beams, on the other hand, will not harm normal cells when they enter the human body. They simply bypass normal cells and specifically target cancer cells. By adjusting the energy and direction of heavy ions, the beams can hit the target at a millimeter level, which can minimize the damage to the surrounding tissue and those around the tumor.

The beams generated by the facility in Wuwei can reach as deep as 27 centimeters within the human body, facilitating the treatment of tumors at different depths, according to Cai Xiaohong, division leader of technology transfer at the Institute of Modern Physics, CAS.

"Treatment using heavy ion beams brings slight side effects, but good curative effects to the patients within a short period of treatment time. It is especially suitable for the treatment of solid tumors that are not fit for surgery, not sensitive to normal beams or relapsing after normal beam treatment," said Xiao Guoqing, researcher at Institute of Modern Physics, CAS.

Clinical trials show that heavy ion beam radiotherapy can effectively control tumors located in the head, neck, chest, stomach and pelvic cavity.

### World class accelerator

The core of the therapy facility in Wuwei is a heavy ion accelerator for medical use, which is built based on the Heavy Ion Research Facility in Lanzhou (HIRFL) at the Institute of Modern Physics, CAS.

The accelerator matches those found internationally in terms of performance index and clinical feedback, said Xiao. The hospital can also spend less as the cost of the domestic accelerator is up to one-third of similar models found internationally.

It took nearly 30 years for the achievements of basic research on heavy ions to be transferred to practical applications like the accelerator for medical use. It was not until 1993 that scientists turned to cancer treatment with heavy ions.

The Institute of Modern Physics constructed a 1.5-m cyclotron during the first Five-Year Plan, before developing China's first large heavy ion research facility HIRFL in 1988, and the cooling storage ring of HIRFL during the 9th Five-Year Plan.

All these achievements led to the birth of the therapy facility that benefits cancer patients.

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## Sino-Pakistani Hydropower Project Nears Completion

By Staff Reporters

This year marks the 70th anniversary of the bilateral ties between China and Pakistan. The Karot Hydropower Project, with investment from the China Three Gorges Corporation under the Belt and Road Initiative (BRI), has closed the gates of its diversion tunnels and officially started to impound water on November 20.

Starting to impound water refers to the accumulation of water in its reservoir for future use, which lays a solid foundation for putting all units into operation by the first half of 2022. This will contribute to the development of

the China-Pakistan Economic Corridor (CPEC) and give strong impetus to regional prosperity.

Located on the Jhelum River in Pakistan's eastern province of Punjab, Karot Hydropower Station, with a total investment of 1.74 billion USD, is the first major hydropower project under the CPEC and the BRI, and it was included in the joint statement between the Chinese and Pakistani governments.

In the process of project construction during the past six years, China Three Gorges Corporation has been upholding the values of sustainable development and paying attention to the protection of ecological environment and

biodiversity.

With an installed capacity of 720 megawatts, the Karot Hydropower Project will generate 3.2 billion kWh of clean energy each year upon completion. Reducing electricity costs for consumers, it will meet the demands of 5 million local people and effectively alleviate the power shortage in Pakistan.

Once all the units are put into operation, they are expected to save 1.4 million tons of standard coal and reduce 3.5 million tons of carbon emissions every year. It will boost Pakistan's energy structure upgrade and economic and social development, as well as help achieve the global goal of carbon neutrality.

## Xi, Putin Congratulate Closing of China-Russia Year of Sci-tech Innovation

Chinese President Xi Jinping and Russian President Vladimir Putin sent congratulatory letters to the closing ceremony of the China-Russia Year of Scientific and Technological Innovation on Nov. 26.

Xi recalled that when the event opened in August 2020, he and President Putin respectively sent letters to express their congratulations and high expectations.

For more than a year, Xi said, China and Russia have joined their hands, overcome the adverse impact of the COVID-19 pandemic, and carried out in a creative fashion more than 1,000 cooperation and exchange activities related to scientific and technological innovation.

Xi also noted that the two countries have actively facilitated the achievement of fruitful cooperation in such fields as pandemic prevention and control, aerospace and aviation, nuclear energy, and digital economy, while highlighting the successful launch of the China-Russia science and technology innovation fund and important cooperation progress in major strategic projects.

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## WEEKLY REVIEW

### Sci-tech Projects Openly Selected for Cargo Craft

China Manned Space Agency recently released an announcement to openly select projects of sci-tech experiments and applications to board the country's Tianzhou cargo spacecraft from public with deadline of Jan. 15, 2022.

### White Paper of China-Africa Co-op in New Era Released

China's State Council Information Office on Nov. 26 released a white paper titled *China and Africa in the New Era: A Partnership of Equals*, documenting the successes of China-Africa cooperation in the new era and offering a perspective on future cooperation between the two sides.

### Shanghai Data Exchange Begins Trading

The Shanghai Data Exchange was established on Nov. 24 and began trading with a total of 20 data products covering eight categories, such as finance, transportation and communication.

### WHO Names New COVID Variant Omicron

The new variant of COVID identified first in South Africa has been named Omicron by the World Health Organization on Nov. 26 on the advice of WHO's Technical Advisory Group on Virus Evolution.

S&T DAILY WECHAT ACCOUNT (EN)





## World Media Should Be Communicators of People-to-People Bonds

Edited by Staff Reporters

President Xi Jinping sent a congratulatory letter to the fourth World Media Summit (WMS), which was held in Beijing on November 22.

In his letter, Xi expected world media to better shoulder social responsibilities, build up consensus, and promote

the development of a community with a shared future for humanity.

Participants from foreign media said the letter has given a significant guidance for world media to deepen exchange and cooperation.

Xi's letter resonated well with presidium members and other speakers, said Narasimhan Ram, director of The

Hindu Publishing Group.

Avtandil Otinashvili, chief editor of Georgian Newsday Information Agency, said that President Xi's letter clarifies the common concerns of global media and injects vitality into the world's media to shoulder their responsibilities and strengthen exchanges and cooperation under the new situation.

Múcio Aguiar, president of Brazil's Pernambuco Press Association, agreed with Xi's underlining of being communicators of people-to-people bonds and promoters of humanities exchanges, and contribute to championing the shared values of humanity and promoting the development of a community with a shared future for mankind.

Julio Villagran, director of channel TVX of El Salvador, believed that it was very important that Xi's letter focused on the nature of the mission of today's world media.

Serik Korzhumbayev, editor-in-chief of Delovoy Kazakhstan newspaper, said that since the first WMS in 2009, the platform has witnessed a con-

tinuous strengthening of media cooperation.

Kochetkov, first deputy editor-in-chief of the Rossiya Segodnya news agency (Russia Today), believed that the media plays an important role in shaping public opinion. It can promote dialogue on the basis of tolerance and mutual respect, and has a significant and far-reaching impact on relations between people and nations.

Savious Kwinika, editor-in-chief of the South Africa-headquartered CAJ News Africa, said that in this era, media can use social media platforms to enhance communication with the public, adding that the role of media is to provide information objectively, fairly and accurately.

Organized by Xinhua News Agency, the fourth WMS was attended both online and offline by nearly 400 people representing more than 260 media and institutions from nearly 100 countries and regions.

Source: XINHUA



The fourth World Media Summit opens in Beijing, capital of China, Nov. 22, 2021. (PHOTO: XINHUA)

### Column



A glimpse of Xianlin University Town in Nanjing, Jiangsu province. (PHOTO: VCG)

## Jiangsu: China's Sci-tech Powerhouse by Recruiting Talents Globally

By WANG Qin

Blessed with fertile farmland and abundant lakes and rivers, China's eastern Jiangsu province has been known as the "land of fish and rice" since ancient times. It boasts not only impressive natural beauty, but also a surging innovation momentum and undaunted pioneering spirit.

Despite covering just one percent of China's territory, Jiangsu is home to six percent of the country's population and produces 10 percent of the national GDP. In 2020, Jiangsu achieved a GDP of 1.5 trillion USD, reached an import and export volume of 645 billion USD, and had a foreign direct investment of 28.38 billion USD, all leading in the country. Jiangsu is called the "world's factory," with its manufacturing industry accounting for around one eighth of the national total and three percent of the global total.

As a leading province in science, technology and education, in 2020, Jiangsu invested more than 300 billion RMB in R&D, which was 12 percent of the national total, accounting for 2.93 percent of the province's GDP. There are more than 36 patents per 10,000 people in Jiangsu, the highest figure among all provinces in China. The province has 167 colleges and universities — ranking first in the country — and more than two million college and university students on campus. It is also home to 858 independent R&D institutions, and more than 900,000 scientists and engineers. Ranking among the top for regional innovation capacity for many years, Jiangsu has become one of the most dynamic, productive and innovative provinces.

**Attracting talent from around the world**

Jiangsu aims to attract talent from around the world and improve innovation through opening-up. We have jointly established an inter-governmental cooperation mechanism on industrial R&D with nine countries and regions, including Israel, the UK, Finland, Norway and Singapore. Up to now, more than 170 projects have been jointly supported. We have maintained extensive cooperation and exchanges with more than 70 countries and regions, and built the China-Israel Changzhou Innovation Park, the first of its kind between the two countries. In total, the province has issued more than 100,000 work permits to foreigners.

**Providing research and innovation platforms**

Jiangsu has made great efforts to build the Purple Mountain Laboratories,

Gusu Laboratory and Taihu Laboratory to attract talented foreign personnel. We have founded the Jiangsu Industrial Technology Research Institute (JITRI) based on a new and effective mechanism, and recruited around 200 project managers and more than 10,000 researchers from all over the world. JITRI has undertaken the Secretariat of the World Association of Industrial and Technological Research Organization, cooperated with the World Wildlife Fund in building the Global Green Technology Center, and collected nearly 600 technology solutions globally by demand-driven method.

**Building a better eco-system for innovation**

From 2008 to 2020, Jiangsu had successfully hosted "China Jiangsu Conference for International Technology Transfer and Commercialization" seven times, attracting more than 2,000 representatives of overseas innovation institutions from more than 40 countries and achieving over 700 cooperation intentions. Demonstration zones for intellectual property rights (IPR) protection were piloted in the province, establishing seven high-level national IPR protection centers. An annual talent recruitment program was launched, which has attracted more than 1,700 experts to Jiangsu. In total, 327 foreign experts have been awarded the Jiangsu Friendship Award. Nanjing, Suzhou and Wuxi have been on the list of the "Most Attractive Chinese Cities for Foreigners."

During the 14th Five-Year Plan period, we are speeding up the development of Jiangsu into a sci-tech powerhouse. We will launch an action plan to bring talent from all over the world, and create more opportunities for talent development. We will further expand international collaboration by integrating into the global innovation network, strengthening international exchanges and cooperating in the areas of technology, talent and platform, which will also improve our research and innovation capability through high-level opening-up. In addition, the province seeks to further improve the innovation environment, tighten regulations on IPR protection, and provide foreign talent with high-quality services to start businesses and realize their potential.

We sincerely welcome experts from around the world to pursue their careers in Jiangsu, and work together to achieve mutually beneficial cooperation.

**WANG Qin is Director-General of Department of Science and Technology of Jiangsu Province.**



China has been boosting green development by promoting clean energy in recent years. Electricity workers patrolling amid a photovoltaic and wind power generation project installed above the fishery waters in Baoying County of Yangzhou, Jiangsu Province. (PHOTO: XINHUA)

## Promoting Industrial Upgrades with 5G Technology

By WANG Xiaoxia

The recent 2021 China 5G + Industrial Internet Conference held wide ranging discussions on the wider application, innovation and key attributes of 5G + industrial Internet, to lay a solid foundation for the development of the digital economy and the smart upgrade of traditional industrial sectors with 5G technology.

The national level conference, joint-

ly hosted by the Ministry of Industry and Information Technology (MIIT) and the People's Government of Hubei Province, ran from November 19 to 21 in central China's Wuhan.

Vice Premier Liu He made remarks in a written address to the conference, that the authorities should make good use of the country's advantages in 5G network and its rich application scenarios, to improve weak links in the industrial Internet and explore disruptive ways

to tackle the issues facing the industrial sector.

He also called on financial institutions to step up support for innovation among companies and explore the use of digital technology for credit enhancement to ease the financing difficulties of small and medium-sized enterprises.

During the conference, MIIT released the country's second batch of key industries and application scenarios,

ranging from logistics monitoring to production traceability, for promoting the 5G+ industrial Internet sector.

Institutions and enterprises have also released important research results, covering multiple themes, including integration of the industrial Internet and steel industry, the industrial Internet and intelligent manufacturing industry development, the digital transformation of biomedical enterprises and 5G + smart healthcare.

## Building Data Trading Platforms to Develop 5G + Industrial Internet

By ZHONG Jianli

China will accelerate the development of common standards for industrial data exchange, explore the building of data trading platforms, and improve the levels of data management and use, said Xiao Yaqing, minister of Industry and Information Technology at the China 5G + Industrial Internet Conference held in central China's Wuhan on November 20.

Xiao stressed the importance of strengthening technological innovation in enterprises to improve the use of industrial data resources, and explore new paths for the integrated development of 5G and industrial Internet.

The Ministry of Industry and Information Technology (MIIT) will focus on the supply of generic industrial technologies, maximize enterprises being inno-

vative, and achieve rapid R&D and industrialization in such fields as industrial modules, sensors and key software, said Xiao.

Enabling smart upgrading of various industries is the core role of 5G + industrial Internet development.

According to Han Xia, chief engineer of MIIT, the three major functional systems of industrial Internet — network, platform and security — have begun to take shape in China. More than 1.29 million 5G base stations have been established in the country. Breakthroughs have also been made in tackling technological difficulties of large-scale transmission and high-precision positioning.

More than 1,800 5G + industrial Internet projects and more than 100 influential industrial Internet platforms are under construction in China, according

to the statistics released by MIIT.

While the foundation for 5G + industrial Internet to enable the development of different industries is becoming increasingly stable, it is necessary to guide enterprises in investing more to ensure the security of 5G + industrial Internet applications, establish a classified and layered management system for industrial data and information, and strengthen the governance of industrial network data security.

The application scenarios for 5G + industrial Internet are also expanding. A host of typical scenarios, including production unit simulation, precise dynamic operation, production efficiency control, process compliance verification, and global logistics monitoring, have been applied in 22 key industries, such as mining, electric power, steel, ports,

and textiles.

Han Jun, general manager of China Three Gorges Corporation, said at the event that the company has applied 5G + industrial Internet to build two world-class giant hydropower projects in Wudongde and Baihetan.

By applying modern information technologies including 5G, the company created an intelligent dam construction platform where involving parties can collaborate with each other. And all core building processes such as pouring, temperature control and grouting are arranged intelligently.

The success of the Wudongde and Baihetan dams shows China has stepped into a new era of intelligent project management, which provides the world a Chinese solution for intelligent construction of major projects, said Han.

## Digital Literacy and Skills Improvement on Fast Track

By LI Linxu

Digital technology has become an integral part of daily life and to meet the requirements of the new age, China is stepping up efforts to improve its people's digital literacy and skills.

By 2025, the digital adaptability, competence and creativity of the general

public will be significantly improved, and their digital literacy and skills are expected to be on par with that of developed countries, according to the goals of a new outline released by the Central Cyberspace Affairs Commission.

The document, titled the *Action Outline for Upgrading Digital Literacy and Skills of the General Public*, details

the country's main objectives and major actions towards building a digital society.

Although China is a big country in terms of the number of netizens, it still has a long way to go to become a cyber powerhouse. In the field of digital literacy and skills, it currently lags behind the leading developed countries.

Improving the digital literacy and skills of the general public is an inevitable course marching towards a cyber powerhouse, said an official from the Cyber Administration of China in a media response, adding that it is also an effective way to convert the demographic quantity dividend into demographic quality dividend.

Focusing on public demand, four application scenarios are highlighted in the outline, including digital life, digital work, digital study and digital innovation.

Family, community, travel and shopping are the high frequency application

scenarios for digital technologies and services. Smart home, smart community, smart travel and e-commerce are gaining momentum.

To raise the level of high-quality digital life, it is of great importance to improve the usability, accessibility and compatibility of digital devices, and to boost the general public's willingness and ability to use digital resources and tools, says the outline.

In the field of digital work, industrial workers, farmers, new occupation population and public servants are key groups. The outline puts forward a series of measures to improve their ability to learn and use digital tools.

Digital learning should be a life long course, emphasizes the outline, calling for establishing a whole-life digital learning system.

Enterprises will play a leading role in developing digital talents. At the same time, a data driven R&D paradigm will be explored.



The fourth Digital China Summit was held in Fuzhou, Fujian, this April. (PHOTO: VCG)



# A New Chapter for the Asia-Pacific Region

## Voice of the World

Edited by QI Liming

ASEAN countries officially announced the establishment of a China-ASEAN Comprehensive Strategic Partnership in a joint statement on November 22, after the ASEAN-China Special Summit to Commemorate the 30th Anniversary of ASEAN-China Dialogue Relations. Media reports from member states on the blueprint for ASEAN moving forward were upbeat about the road ahead.

### Vietnam: strategic partnership most important summit outcome

According to *The Star*, the Comprehensive Strategic Partnership that ASEAN and China established recently is a testament of the achievements from mutual cooperation, respect and understanding by the two sides over the last 30 years, said Prime Minister Pham Minh Chinh.

Pham said that ASEAN and China should continue enhancing strategic trust, promoting comprehensive cooperation, and multiplying achievements towards higher goals and greater benefits for bilateral relations.

Meanwhile, Deputy Foreign Minister and head of the ASEAN Senior Officials Meeting (SOM), Vietnamese Nguyen Quoc Dung, said from the very beginning his country backed China's proposal to hold a special summit to celebrate the 30th anniversary of ASEAN-China dialogue relations and subsequently participated in the



"Hainan-ASEAN (Singapore)" of COSCO Shipping. (PHOTO: VCG)

preparation and negotiations to achieve the Joint Statement of the summit.

"During the summit, PM Chinh underlined the core factors of cooperation, which among others, includes jointly maintaining peace, stability, and cooperation for development in an environment still full of uncertainties besides upholding attainments and further strengthening ties to effectively cope with emerging global challenges," he said as reported by the Vietnam News Agency.

According to Nguyen, the most important outcome of the summit was the establishment of the ASEAN-China Comprehensive Strategic Partnership.

### Thailand: blueprint leaves no one behind

According to *Bangkok Post*, ASEAN

has granted China Comprehensive Strategic Partnership status. The bloc has overtaken the European Union (EU) as China's biggest trade partner, with ASEAN-China trade amounting for 732 billion USD (24 trillion baht).

China's top five trade partners are

ASEAN, the EU, the U.S., Japan and South Korea. Prime Minister Prayut Chan-o-cha hopes to seek ways to build a secure, prosperous and sustainably inclusive future with ASEAN through a people-centric approach that, "Leaves no one behind."

### Cambodia: multiple opportunities in blue economic partnership

*Khmer Times* reported that the establishment of the China-ASEAN partnership on blue economy is one of the important goals set in the China-ASEAN Strategic Partnership Vision 2030.

It is timely to launch cooperation on the blue economy, because this meets the development needs of countries and the region after COVID-19. It is conducive to enhancing the vitality and resilience of sustainable development and promoting economic recovery and improvement of people's livelihoods.

China and ASEAN are facing multiple opportunities in developing the blue economic partnership. The concept of sustainable ocean development has had a wide-ranging impact on regional countries.

Deepening cooperation in regional ocean governance has become a consensus among regional countries. Lots of achievements have been made in maritime economic cooperation between China and ASEAN countries. In this

light, the foundation for the establishment of a blue economic partnership between the two parties has become increasingly solid.

According to *The Manila Times*, three decades on, the relationship between China and the ASEAN countries has become the "most dynamic model of cooperation" in the region and the world, said Cambodian officials and scholars.

### Philippines: boding well for regional peace and security

As *Manila Bulletin* reported, regional stability is vital. The mutual interest of all concerned nations should receive close attention.

The ASEAN-China summit comes at a time when many countries are already transitioning into more benign scenarios that soften the harsh impact of the COVID-19 pandemic. It is hoped that economic recovery could be accelerated and enable the ASEAN peoples to resume their march toward greater prosperity.

Last year, ASEAN became China's top trading partner. Singapore Prime Minister Lee Hsien Loong observed that this achievement has "become possible by both ASEAN and China actively contributing to and investing in an ASEAN-led regional architecture that is rules-based, open, inclusive and promotes free trade."

## China, EU Could Cooperate More in AI

### Opinion

By Staff Reporters

Many artificial intelligence (AI) experts have predicted that machines using AI could outperform humans at every task in 45 years. While there is no doubt that AI will lead future development, related security concerns are also on the rise worldwide. However, with a standard set of regulations, these fears may be allayed and lead to better cooperation.

The European Parliament passed a resolution in October calling for stronger security measures in AI, that includes law enforcement. China also agreed with UNESCO's AI guidelines to stop AI from wreaking havoc on societies and help protect user rights. An article published by the World Economic Forum (WEF) believes that China and Europe could cooperate in the future with similar AI ethics.

The article, *Can China and Europe find common ground on AI ethics?* was written by Pascale Fung, director of the Centre for Artificial Intelligence Research (CAiRE), and Hubert Etienne, Ph.D candidate in AI ethics at Ecole Nor-

male Supérieure. Authors compared the ethical principles endorsed by the Chinese National New Generation Artificial Intelligence Governance Professional Committee (CNGAIGPC) and those promoted by the European High-level Expert Group on AI (HLEGAI). They believe China and the EU have similar AI ethical principles in many aspects, both focusing on fairness, robustness, privacy, safety and transparency. Although the methods they prescribed revealed clear cultural differences (See table on the right), "The presence of major commonalities between them points to a more promising and collaborative future in the implementation of these standards," said the article.

At present, people believe that if the ethical risks can be eliminated, AI has huge potential to solve future human challenges, such as climate change and pandemics. Leaders from both China and the EU have already expressed their hopes for cooperation in the field of AI.

The two economies may promote AI collaboration when they share two common guidelines on ethics, according to Fung and Etienne.

The first is the "shared tradition of Enlightenment and the Science Revolution, in which all members of the AI re-

search community are trained today." They consider that the concept of science and technology development will definitely bring economic growth.

The second is their commitment to the UN Sustainable Development Goals. Both guidelines refer to some of these goals, including poverty reduction and inequality, gender equality, health and well-being, environmental sustainability, peace and justice, and economic growth, including social and individual development and rights.

If China and the EU adopt guide-

lines on an ethical approach to AI jointly, they may both ultimately benefit. Their regulations could provide different levels of operational detail and complementary perspectives for a comprehensive AI framework, the article concluded.

"Despite the seemingly different ... approaches on AI ethics from China and the EU, the presence of major commonalities between them points to a more promising and collaborative future in the implementation of these standards," explained Fung and Etienne on Twitter.

CNNGAIGPC's Ethical Principles	HLEGAI's Key Requirements
1. Harmony and friendship.	1. Societal and environmental well-being
2. Fairness and justice.	2. Diversity, non-discrimination and fairness
3. Tolerance and sharing.	3. Human agency and oversight
4. Respect privacy.	4. Privacy and data governance
5. Safe and controllable.	5. Technical Robustness and safety
6. Share responsibilities.	6. Transparency
7. Open collaboration.	7. Accountability
8. Agile governance.	

The ethical principles endorsed by CNNGAIGPC and those promoted by HLEGAI. (TABLE: WEF)

## Xi, Putin Congratulate Closing of China-Russia Year of Sci-tech Innovation

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It has been proved that there is a great potential, as well as a broad prospect, for the China-Russia cooperation in scientific and technological innovation, he said.

Xi stressed that China and Russia, which are each other's largest neighbors, have jointly been playing an increasingly important role in the current international political and economic arena.

Xi called on the two sides to up-

hold the concept of enduring friendship and win-win cooperation, and push forward cooperation in various fields in a practical manner.

Xi also urged the two sides to promote bilateral relations to a higher level, higher quality and higher standards, and to inject new impetus into the forging of a new type of international relations, and the building of a community with a shared future for mankind.

In Putin's congratulatory letter, he said with joint efforts from both sides,

the Russia-China Year of Scientific and Technological Innovation has been a success, which has fully demonstrated the significance of undertaking bilateral scientific and technological cooperation under the framework of the comprehensive strategic partnership of coordination for a new era.

Over the past two years, Russian and Chinese scientific researchers have overcome the impact of the pandemic and carried out more than 1,000 scientific research activities, he said.

Principal results from the cooperation, he underlined, includes China's participation in the construction of the Nuclotron-based Ion Collider facility (NICA), a large-scale scientific facility, and the establishment of the Russian-China Mathematical Center by both sides.

Putin said he believes the two sides will continue to uphold the notion of enduring friendship and win-win cooperation, and continue to inject strong impetus into the promotion of all-round cooperation between Russia and China.

Source: XINHUA

## Hi! Tech

### First Industrial Application of Crude Oil Steam-Cracking Technology Passed in China

Edited by QI Liming

Sinopec has successfully tested a technology that can convert crude oil directly into ethylene, propylene and other chemical products ("crude-to-chemicals") and achieved the first industrial application of this technology called crude oil steam-cracking technology (COSCT) in Tianjin, China this November.

COSCT is one of the "crude-to-chemicals" solutions which skips the traditional crude oil refining process, which would be like making bread directly with wheat and eliminating the flour grinding

process. This approach will greatly shorten the production process, lower production costs and significantly reduce energy consumption and carbon emissions.

At present, ExxonMobil and Sinopec are the only two companies to successfully achieve industrial application of COSCT worldwide. It's estimated that for every one million tons of crude oil processed by this technology, nearly 500,000 tons of chemical products can be produced, 400,000 tons of which are high-value products such as ethylene, propylene, light aromatics and hydrogen. This technology presents huge economic value and potential.

Ethylene is a hydrocarbon gas considered one of the key benchmarks to measure the status of a country's petrochemical industry. With the improving of people's living standards, the global demand for chemical products is also growing, so demand for ethylene and propylene has also increased accordingly.

Sinopec is preparing to build an industrial demonstration plant for the direct production of chemicals from crude oil in the Xinjiang Uygur Autonomous Region. It is preparing to carry out the development and engineering design of packaged technology for the production of ethylene by steam-cracking one million tons of crude oil.

country's regional medical centers.

Much smaller facilities will be developed to benefit more patients and reduce the cost of treatment, said Xiao. Scientists will also upgrade the facilities by adopting technologies like artificial intelligence and 5G.

Personnel specialized in heavy ion treatment, such as frontline doctors and medical physicists, will also be trained, so as to provide more patients with the benefit of heavy ion therapy.



China's First Industrial Application of COSCT. (PHOTO: S&T Daily)

## Heavy Ion Beams: Relief for Cancer Patients

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### More therapy facilities under construction

Ma Zhen, chairman of the board of CAS Ion Medical Technology Co., Ltd., said that there are four heavy ion therapy facilities now being constructed and more cooperative agreements signed. Population and geographic factors will be taken into account regarding the construction of such facilities. Their accessibility improves if they are built in the

## Toward a High-level China-Africa Community with a Shared Future

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Moreover, China will undertake 10 digital economy projects for Africa, set up centers for China-Africa cooperation on satellite remote-sensing application,

and support the development of China-Africa joint laboratories, partner institutes, and scientific and technological innovation cooperation bases, said Xi.

A green development program is

mentioned as well. China will undertake 10 green development, environmental protection and climate action projects for Africa, support the development of the "Great Green Wall", and build cen-

ters of demonstration on low-carbon development and climate change adaptation in Africa.

The other programs are in terms of trade, investment, capacity building, cultural and people-to-people exchange, and peace and security.

Source: XINHUA



## Sharing Benefits of Astaxanthin Research

By Bi Weizi

Kunming Area of China (Yunnan) Pilot Free Trade Zone is a national demonstration base for small and micro enterprises in Yunnan Province. It is here that Japanese expert Toru Numasawa and his research team extracted Astaxanthin from *Haematococcus Pluvialis*, filling the gap in Yunnan's biomedical industry.

Astaxanthin is an antioxidant that has the effect of decreasing aging and enhancing cell regeneration. Its ability to eliminate free radicals is 6,000 times more ef-



Mr. Toru Numasawa. (COURTESY PHOTO)

fective than vitamin C. How to let more people know about such a good thing, and also bring it to those who need it? With this idea in mind, Toru Numasawa joined the army of Astaxanthin research and development.

### Taking root in Yunnan

In 2004, Numasawa and his research team developed a technology for the commercial extraction of natural Astaxanthin from *Haematococcus Pluvialis*. But back then, Astaxanthin was not well known throughout China or even the world. Most of the Astaxanthin was extracted from the eyes of shrimps, which was not only costly, but also limited in quantity. So, Numasawa's company started to try to grow the *Haematococcus Pluvialis*.

"While searching for a culture base for *Haematococcus Pluvialis*, Yunnan was found [to be] suitable with long annual sunshine duration, good water quality and average annual temperature," he said. This was the start of his 17-year research career in China.

### Sharing research discovery

From the culture of a raw source, to conducting a large number of Astaxanthin extraction experiments, Numasawa's numerous failures, eventually led to the development of China's first fully enclosed light-bio tubular reactor in 2008.

Meanwhile, a novel airtight microalga culture system was also developed not only to realize the high efficiency propagation of *Haematococcus Pluvialis* and the high concentration accumulation of Astaxanthin, but also avoid the mixing of impurities in the culture process.

Having achieved such great breakthroughs in the Astaxanthin business, Numasawa did something that surprised everyone. Instead of applying for a patent on

the invention, he decided to contribute it so that more companies could reap the benefits of his research achievement. It is under his guidance that Yunnan's Astaxanthin industry thrives. In recent years, the number of Astaxanthin-related enterprises in Yunnan has increased quickly and the variety of products has been enriched. Yunnan has now become the main supply market for Astaxanthin worldwide.

### Love for Yunnan

In addition to devoting himself to his research work, Numasawa has also come to enjoy Yunnan life. When he is not working, his favorite thing is tasting various cuisines and enjoying the beautiful scenery. At the same time, he also likes to shop online and marvels at the great development of China's economy and society over the years.

In 2021, he was awarded the Chinese Government Friendship Award for his outstanding contributions to China's modernization. Numasawa could not hide his excitement when talking about this honor. "The Chinese Government Friendship Award is the greatest recognition of my scientific work over the years. This honor is very important to me and will inspire me and my team to go on and contribute more to scientific research," he told *Science and Technology Daily*.

Talking about the future, he said that he will continue to carry out research and development on Astaxanthin products in Yunnan, bring health and beauty to more people and promote the innovative development of this industry. He always upholds the philosophy, "Doing research is more about sharing than hiding. Only by sharing the technology with more can we really make a greater contribution to the society!"

## Letter to the Editor

### China, A Role Model to Be Followed in the World

By Rasha Khalil

Compass is one of the greatest inventions of all times, so is the rise of modern China with its profound impact on the civilization worldwide. China shows the direction toward peace, sustainable development and compassion.

Development relies on the availability of resources, the evolution of institutions, and a positive mindset. These are the factors that helped China top the list of development and major scientific achievements in the 21st century. The Chinese government has successfully been able to utilize the available resources and achieve sustainable economic development through creating an open and balanced legal and administrative system that derives its foundations from a deep-rooted nurturing culture and a long-standing social system.

The remarkable progress and incredible achievement of China can be attributed to the enormous effort that have been made to enhance and encourage innovation at individual and institutional levels.

This approach has led to significant progress in numerous sectors. For instance, the focus in the education system has significantly shifted to fostering quality improvement and creating an integrated and advanced educational system that meets the needs of the nation for the coming decades.

In addition, sustainable infrastructure has been intensively developed not only to deliver basic services but also to stimulate economic growth and improve the quality of life and competitiveness of all regions. The energy production, transportation and communication networks have experienced a rapid and considerable growth.

Moreover, Chinese innovations in manufacturing and high technology paved the way for what will become future basic needs of humanity, and new breakthroughs in advanced technologies such as artificial intelligence, biotechnology, green energy, robotics, as well as high speed and high functional efficiency mobile communications.

It should be emphasized that all the efforts and policies aimed at encouraging researchers and scientists to be more courageous have induced creativity and innovation, which have helped China to emerge as a world leader in the field of academic publishing and scientific research. That resulted in a dramatic increase in the number of patents and commercial applications at national and worldwide level.

The Chinese government has astonishing achievements in various areas that inspire the world. Nevertheless, its phenomenal accomplishment is that in human development.

While China is launching its most

ambitious human space mission and sending the first astronauts to its self-developed space station, it keeps cherishing and nurturing its citizens even in the most remote rural areas. The Chinese government is fully committed to eradicating poverty in all forms everywhere on the entire Chinese soil.

The government is addressing causes of poverty and providing basic needs for all to ensure that productive resources including education and training are accessible to the poor. In every rural area, there is a development project that provides a wide array of opportunities, services, and technical assistance.

These unremitting efforts to permanently lift people out of poverty are not limited to China, and they go beyond the borders to help people all over the world. It is one of the most noble strategies, as it is concerned not only with the economic development of the country, but also with the well-being and progress of all communities and individuals.

China has always been proactive in helping all those impacted by a natural disaster, wars and pandemic. The best example of this is the unprecedented help and support provided by China to every nation affected by COVID-19.

Indeed, China has become unique phenomenon and a role model to be followed in the world. Governments and countries should benefit and learn from the Chinese pioneering experience.

China, the nation which introduced the most significant four inventions of all the time to the world civilization i.e., papermaking, printing, gunpowder and the compass, is the same nation that introduced to humanity the manned submarine "Jiaolong", the Hong Kong-Zhuhai-Macao Bridge, the "Tianwen-1" Mars probe, and is the same nation who links the world through the Belt and Road Initiative to build a new world based on peace, sharing and caring.

(Rasha Khalil is a professor of Law and Management at Sichuan International Studies University.)



Professor Rasha Khalil. (COURTESY PHOTO)

## Traditional Eastern Wisdom

### Fuxi: From Fishing to Exploring of the Universe

By BI Weizi



A cartoon picture of Fuxi. (PHOTO: VCG)

Fuxi is one of the original ancestors of humankind, as well as China's first hero and one of the most powerful gods, according to Chu Silk Manuscript, which is the earliest and most complete myth before the Pre-Qin Period.

Fuxi is credited with creating a number of innovations that benefited humankind, such as Eight Trigrams or Bagua (cosmology symbols), the writing system, fishing and domestication of animals, and played an immeasurable role in the progress and development of Chinese civilization.

According to Ban Gu, a famous historian in the Han Dynasty, it was Fuxi who laid down the law of humankind from no moral or social order.

### The Invention of Fishing

Fuxi is considered to genuinely

have cared about the people, and ready to help whenever they encountered hardships.

In ancient times, the earth was a place with lush vegetation and a wide variety of animals everywhere. At that time, humans had no other way to feed themselves than by hunting. Fuxi noticed that when the hunting went well, people could eat for several days. However, when they caught nothing, they had to starve indefinitely. After seeing people suffer from hunger, he went to a nearby stream, put his hand in and caught a few fish. He then showed humans how to catch fish by hand.

### The Domestication of Livestock

In addition to being the first fisherman, Fuxi also taught people to domesti-

cate livestock. He reasoned that having animals available for milk, meat and labor was much more practical than wasting time and energy hunting. Fuxi is also said to be responsible for the invention of writing, smelting metals and preserving meat.

### Creating Eight Trigrams

Perhaps Fuxi's greatest religious contribution to Chinese society was the creation of the Bagua or Eight Trigrams. The symbols in the Eight Trigrams contain the great mysteries of the universe, which consists of three broken or unbroken lines and are intended to represent the eight fundamental principles of reality. Eight Trigrams are the foundation of Tai ji and Feng Shui practices. Fuxi was said to draw Bagua after seeing a turtle coming out of a river.

## Sino-German Entrepreneurs Exchange Innovation in Shenzhen

By SUN Guowang

The German Division Final of the 5th China (Shenzhen) Innovation & Entrepreneurship International Competition was held in Shenzhen on November 10.

This competition covered seven industries, including new-generation electronic information, digitalization and fashion, high-end equipment manufacturing, green and low-carbon energy, new materials, biomedicine and health, and the marine economy. This year, 121 projects were entered in the competition from around the globe. The first prize went to an innovative indoor heating project.

The competition has received positive responses from international innovators, and its global influence is growing. Since first being held in 2016, the competition has attracted 6,182 projects from 89 countries, of which 350 projects have been brought to Shenzhen to join the final competition, and 45 projects have been put into practice in the city.

In a speech given at the opening

ceremony, Rainer Seider, head of International Cooperation at Berlin Senate's Department for Economics, Energy and Public Enterprises, invited enterprises and startups from Shenzhen to Berlin to attend the AsiaBerlin Summit, a platform built up by the Berlin Senate to enhance startup ecosystems' exchanges from Germany and Asia. He also proposed that Berlin enterprises visit China to explore business opportunities at the earliest possible time.

Li Chenhao, second secretary at the

Chinese Embassy in Germany, said that Shenzhen and Berlin are the most innovative and entrepreneurial cities in the world. The industries of the two cities are highly complementary and there is large space for cooperation. This event will become a high-quality platform for cooperation and exchanges for young sci-tech entrepreneurs and investors of the two countries.

Source: Science and Technology Section of the Chinese Embassy in Germany

## Photo News

### Expats in Guangxi Hail China's Development

On November 19, about 20 foreign experts from eight countries including Thailand, the UK and the U.S. visited an exhibition featuring the Communist Party of China (CPC)'s 100-year history. The activity aimed to deepen expats' understanding in the history of the CPC and China's stories, the organizer said.

Source: Department of Science and Technology of Guangxi Zhuang Autonomous Region



## Int'l Cooperation in Pediatrics Can Drive Research

An international conference on pediatrics held by Hebei Children's Hospital on November 13 brought together many well-known pediatric hematological tumor experts and scholars from China, and other countries like Canada and the U.S. Views were shared on treatment methods and experience of how to improve the survival rate of children suffering from malignant hematological tumor diseases.

Guo Yuming, deputy director of the Science and Technology Department of Hebei Province, also director of Hebei Provincial Bureau of Foreign Experts Affairs, stressed that Hebei Children's Hospital (HBCH) had been actively involved in cooperation with world-class medical research institutes.

Duan Guochen, the director of HBCH, spoke about the achievements made at the institution as well as its proposed development plan, while professor Ronald Grant, principal investigator

of the pediatric oncology research center at the Hospital for Sick Children (SickKids) of Canada, summarized a variety of methods focusing on pediatric recurrent neuroblastoma, seen as an upfront therapy project. CAR-T cell immunotherapy and vaccination-based therapy may be forthcoming, which shed light on improving prognosis, reducing recurrence and mortality.

Michael Pulsipher, from the Transplantation and Cellular Therapy section of Los Angeles Children's Hospital, shared a report showing the latest research results supported by substantial scientific data and multi-center joint studies. He said the challenges faced by CAR-T cell therapy in predicting the recurrence of acute lymphoblastic leukemia, shows a meaningful direction for further exploration of cellular immunotherapy in the future.

Source: Hebei Children's Hospital