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BRST Strengthens Sci-tech Ties Among BRI Partners

By BI Weizi

Chinese President Xi Jinping sent a congratulatory letter to the first Belt and Road Conference on Science and Technology Exchange (BRST) that opened in Chongqing city in southwest China on November 6. He noted that the third Belt and Road Forum for International Cooperation was successfully held, ushering in a new stage of high-quality development for the Belt and Road Initiative (BRI), of which sci-tech cooperation is an important part.

Themed "Together for Innovation, Development for All," the two-day conference focused on intergovernmental cooperation in science and technology, people-to-people exchanges in science and technology, industrial innovation and development and paradigm shift in scientific research. Future medicine, open science and big data were also on the agenda. It was attended by 800 participants from around 80 countries and international organizations.

Jakab István, deputy speaker of the Hungarian National Assembly, said Hungary was the first EU country to join the BRI and has been an unwavering supporter of its mission. "Besides trade, joint research between the two sides is also booming, covering areas as diverse as automobiles and batteries, water treatment and thermal energy technology, smart agriculture and green industry," he said.

Mongolia's minister of education and science, Enkh-Amgalan Luvsantseren said Mongolia recognizes the importance of regional cooperation, and joint efforts from various parties are needed to address the complex global problems.

The minister proposed strengthening the Mongolia-China partnership to promote common development and progress.

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The Matrix 1 manned electric vertical take-off and landing vehicle developed by a Chinese company makes its debut at the sixth China International Import Expo held in Shanghai from November 5 to 10, 2023. (PHOTO: XINHUA)

Editor's Pick

Quantum Tech: China's Scientific Pride

By LIANG Yilian

Chinese physicist Xue Qikun was awarded the 2024 Oliver E. Buckley Prize by the American Physical Society on October 24. This marks the first time a Chinese scientist has won the top prize in condensed matter physics since the award was founded in 1953.

Xue received the award for his research on topological insulators and innovative breakthroughs in experimentally discovering the quantum anomalous Hall effect (QAHE) in a magnetic topological insulator.

This significant achievement and a series of breakthroughs Chinese scientists made in recent years in the quantum field, show that the country's quantum technology ranks among the best in the world.

Catching up, qubit by qubit

Quantum computing is based on the

principles of quantum mechanics and qubits. In September 2019, Google launched a 53 qubit computer called Sycamore, which took only 200 seconds to calculate a mathematical algorithm. At that time the world's fastest supercomputer Summit took two days to do the same task, and the U.S. took the lead in achieving "quantum supremacy."

A year later, China successfully developed the 76-photon quantum computing prototype "Jiuzhang," which solved the mathematical algorithm Gaussian Boson sampling in just 200 seconds, compared to 600 million years for the world's fastest supercomputer at the time. This made China the second country in the world to achieve "quantum supremacy."

Now, Jiuzhang 3.0 is able to solve a Gaussian Boson sampling problem ten quadrillion times faster than Frontier, the

world's current most powerful supercomputer.

"If you look at the West — the U.S., Europe — there haven't been a lot of people talking about repeating [Google's 2019] experiment," John Martinis, a former Google researcher who led the team to build Sycamore, told Scientific American, adding "I admire, in China, that they want to do this seriously."

"In the three major fields of quantum, we are among the top in all aspects. China's quantum computing ability used to be relatively backward, but now it has caught up," Guo Guangcan, academician of the Chinese Academy of Sciences (CAS) told Xinhua.

Quantum tech leader

From "Jiuzhang" to "Jiuzhang 3.0," and from "Zuchongzhi" to "Zuchongzhi 2," China's quantum technology is gaining momentum.

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Bond of Sino-Canada Medical Cooperation

By ZONG Shihan

Eighty-five years ago, Norman Bethune, a Canadian doctor, built a bridge of friendship between China and Canada through his selfless spirit. Today, the Bethune Medical Development Association of Canada (BMDAC) continues to carry this spirit and deepen medical cooperation between the two countries.

Honoring Bethune's spirit

Canadian cardiac surgeon Dr. Lee Errett told *Science and Technology Daily*, "My Chinese colleagues in Canada said that they need help because China is developing rapidly and needs some guidance. I've been interested in this sort of work for a long time, so I came."

On his first arrival in China in 1999, Errett found that China needed to do a

lot of work in medical infrastructure construction and education development. "If we were more organized, we could take larger groups, not just cardiac surgery, and could solve more medical problems," said Errett. Hence, a more organized group, the BMDAC, was established in Canada in 2011.

Since its establishment, the BMDAC has organized 19 trips to China for free medical consultations, providing treatment in excess of 1000 patients, completing more than 500 surgeries, and holding no less than 600 academic lectures.

At the same time, the association also arranged for over 140 Chinese doctors to go to Canada for short-term studies. Even during the COVID-19 pandemic, the association still managed to organize 26 online medical lectures.

In addition, the BMDAC organized a campaign to donate urgently needed medical supplies such as ECMO (extracorporeal membrane oxygenation) and masks to the Wuhan medical team. During the severe pandemic situation in Canada, it also received various stocks of medical supplies from China, which were promptly distributed to hospitals, clinics and nursing homes across Canada.

Errett believes that BMDAC's medical journeys in China and exchanging epidemic prevention supplies, have truly followed the spirit of Bethune.

Promoting medical exchanges

With the support of the Ministry of Science and Technology and the Ministry of Human Resources and Social Security, the BMDAC resumed its operation in China after a three-year pause. See page 3

CIIE: A Public Good for Whole World

By LI Linxu

Under the theme of "New Era, Shared Future," the 6th China International Import Expo (CIIE) kicked off in Shanghai on November 5.

In his letter to the 6th CIIE, Chinese President Xi Jinping said that the annual expo has leveraged the strengths of China's enormous market, fulfilled its platform function for international procurement, investment promotion, people-to-people exchanges and open cooperation, and made positive contributions to creating a new development pattern and promoting world economic development.

For the first time since COVID-19, all CIIE events are once again being held physically. A total of 289 Fortune 500 companies and industry leaders are taking part in this year's expo.

"The CIIE sends a clear signal to the world, that is, China's open door will continue to widen," Jean-Christophe Pointeau, president of Pfizer China, told *Science and Technology Daily (S&T Daily)*, adding that Pfizer has witnessed the rapid development of the Chinese market, and no multinational company is willing to give up the opportunities in the Chinese market.

Thanks to the CIIE, more and more foreign companies can tap the vast Chinese market made available by China's high-level opening up.

"The CIIE is a unique platform for Zeiss to engage with all stakeholders including customers, researchers, and policy-makers," Zhang Yuxin, vice president of Zeiss Greater China, told *S&T Daily*, adding that Zeiss has been in the Chinese market for decades, and is committed to growing with China.

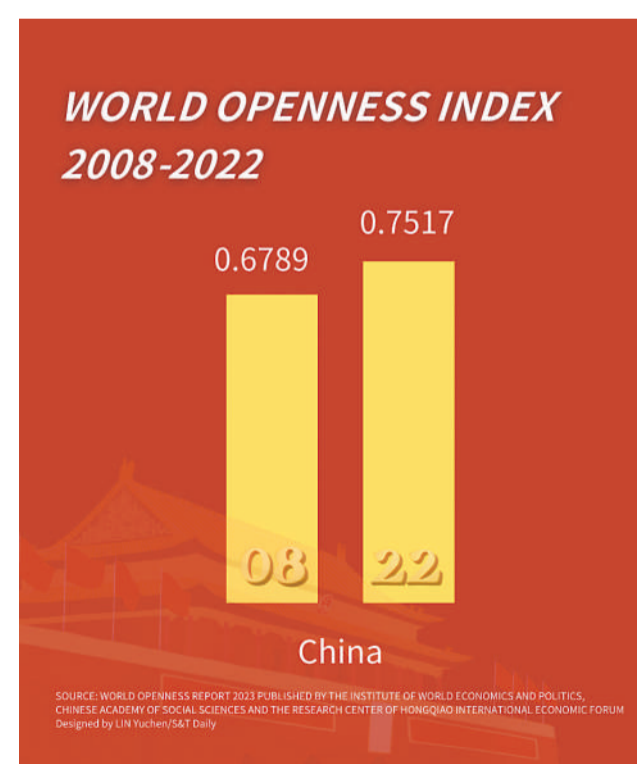
"Over the past six years, the CIIE has evolved into a key platform for enhancing global trade and a driver of win-win cooperation opportunities," said Jakob Stausholm, Rio Tinto's chief executive. He told *S&T Daily* that Rio Tinto is actively utilizing this platform to drive high-level and professional dialogues, and explore new opportunities.

"The CIIE is not only a platform to showcase our cutting-edge technologies, but also to build bridges with companies in China," Lorenzo Simonelli, chairman and CEO of Baker Hughes, told *S&T Daily*.

"The CIIE has helped us increase our visibility in China and strengthen our cooperative relations with partners," Dauter Oliveira, Vale's Asian development director, said to *S&T Daily*, adding that China's opening up also helps accelerate the spread of technology and knowledge, enhancing the innovation and competitiveness of multinational companies.

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New Graphic



WECHAT ACCOUNT



E-PAPER



China's Int'l Development Cooperation Drive

Policy

By ZHONG Jianli

During the past decade, China has played an important role in leading international development cooperation, offering foreign aid, and being involved in global governance, according to Luo Zhaohui, chairman of the China International Development Cooperation Agency (CIDCA) during a recent press briefing in Beijing.

Luo said China has arranged over 2,000 aid projects in more than 120 Belt and Road Initiative (BRI) partner countries, and established over 80 economic and trade cooperation zones, stimulating investment of nearly a trillion US dollars. In addition, it has provided training for more than 100,000 professionals in various fields, helping up to 40 million people escape the poverty line.

The agency has aligned itself with the development plans and strategies of BRI partner countries, according to Deng Boqing, vice chairman of the CIDCA, allowing it to provide extensive technical consulting services focused on infrastructure interconnectivity, trade facilitation, and technological standardization, as well as implementing a number of projects for local people's welfare.

China has helped multiple countries in Africa construct medical infrastructure and laboratories, providing medical equipment and expertise. China's assistance has extended to combating malar-



Lin Dongmei (middle), deputy director of China National Engineering Research Center of Juncao Technology at Fujian Agriculture and Forestry University, explains how to use Juncao (fungus grass) to cultivate Ganoderma amboinense to African students. (PHOTO: XINHUA)

ia, schistosomiasis, and polio. Notably, the Africa Center for Disease Control and Prevention, built with assistance from China, stands as the continent's largest public healthcare institution.

Regarding China's support for countries in Latin America, the Caribbean, and the South Pacific, Tang Wenhong, also vice chairman of the CIDCA, said China has carried out close to a hundred aid projects in the areas including material supplies and technological assistance. China's assistance has been particularly

valued in helping these countries recover and rebuild after hurricanes, tsunamis, and other natural disasters.

The CIDCA has also made dedicated efforts to implement the Global Development Initiative (GDI), which was proposed by President Xi Jinping in 2021. The initiative has garnered support from over 100 countries, international organizations such as the United Nations and others. Projects and funding programs under the GDI have been operating efficiently, with over 200

small-scale but helpful projects successfully implemented.

Looking forward, Luo said the agency will continue its assistance efforts in areas such as global poverty reduction, climate change, food security, the digital economy, and interconnectivity.

Additionally, China will place more importance on exploring multilateral and triangular cooperation mechanisms, aiming to advance the transformation and upgrading of international development cooperation.

Case Study

Camel Replaced by Modern Transport — Xinjiang Leverages Its Advantages to Boost Silk Road Cooperation

By CHEN Chunyou

In ancient times, Xinjiang Uygur autonomous region in northwest China was a hub of the flourishing trade between the East and West and its camel caravans carried an assortment of goods to distant parts of the world. Today, the camels have been replaced by modern transport infrastructure.

Xinjiang has 17 first-class ports, making it a key gateway to Central Asia, West Asia and Europe along the Silk Road Economic Belt, the overland arm of the Belt and Road Initiative.

A growing circle of trade friends

So far this year, nearly 2,400 tons of export goods have been transported through the Urumqi international airport, an increase of 45 percent over the same period in 2019, Wang Xu, general manager of the Xinjiang branch of China Southern Airlines Logistics Co., Ltd. told *Science and Technology Daily*.

Export items such as clothes, electronic accessories and e-commerce products from Guangzhou, Beijing and Hangzhou are all transferred through the Urumqi international airport, according to Wang. Besides export items, red wine, cherries and other products imported from Central and West Asian countries enter the Chinese market through Xinjiang.

The Xinjiang Pilot Free Trade Zone (FTZ), the first one in China's northwestern border region, began operation on November 1 to inject new vitality into Xinjiang's development. The pilot FTZ will facilitate trade and strengthen cooperation with neighboring countries.

Wang said his company will grasp the opportunities brought by this blueprint and deepen cooperation with industrial chain partners from Central Asian countries in flights and logistics. It will optimize product transportation services, such as temperature-controlled transport and express transport, and expand the channels for exporting electronic products.

This will enlarge the company's trade circle of friends and deliver more high-quality service to its customers

from BRI partners.

GAC Motor Co., Ltd. headquartered in south China's Guangdong province has also decided to expand its export market in Central Asia. "The establishment of the pilot FTZ is good news for Xinjiang's car exports," said Luo Haitian, general manager of the company's Xinjiang branch, adding that to produce more electric and intelligent vehicles, GAC Motor has accelerated the R&D of new energy vehicle technologies.

Cotton cooperation

Xinjiang has a time-honored tradition of cotton production. To promote cooperation with BRI partners, local enterprises are leveraging their technological advantages to help neighboring countries increase their cotton production.

A case in point is Zhongtai (Group) Co., Ltd., which has built an agro-textile industrial park in Tajikistan's Khatlon under a cooperative agreement with the country. The business scope ranges from cotton planting and leather processing to spinning, weaving, printing and dyeing, and clothes.

Located in the valley of the Vakhsh River, Khatlon has one of the richest lands in Tajikistan and the main cotton-growing area in the country.

But in the past, due to a lack of repair and maintenance of water conservation facilities, the cotton yield was less than 100 kg per mu (one mu equals 0.067 hectare).

Abandoned wasteland used to abound in Khatlon. Zhongtai invested in improving the wasteland and upgrading the water conservation facilities. It established drip irrigation system in the cotton fields, carried out agricultural film processing and mechanized cotton planting.

"The industrial park not only promotes the improvement of Khatlon's cotton planting technology and the exchange of Xinjiang's management experience, but also contributes to the industrialization of the cotton industry, creating more employment opportunities for local people and enhancing their income," Liang Bin, deputy general manager of the group, said.



A view of the drip irrigation system at the agro-textile industrial park in Tajikistan's Khatlon province. (Photo provided by Zhongtai Group to S&T Daily)

Basic Science in China Gains More Social Fund

By Staff Reporters

A total of 46 scientists from 13 Chinese cities have been chosen by the New Cornerstone Investigator program for its second round of funding, one of the largest social funds for basic research led by a group of scientists and Tencent Holdings, on October 30.

In 2022, Tencent announced that it will invest 10 billion RMB in 10 years to

support a group of outstanding scientists to concentrate on basic research and achieve original innovation "from 0 to 1". The program sets up two major fields: "mathematics and physical sciences", and "biological and biomedical sciences", and encourages interdisciplinary research.

The "New Cornerstone Researcher" funding category is divided into two categories: the experimental category of 25

million RMB per person for 5 years, and the theoretical category of 15 million RMB per person for 5 years. In January 2023, 58 distinguished scientists will become the first New Cornerstone Fellows.

China's private enterprises are expected to play a bigger role in driving the basic research of original innovations to help the country gain more scientific breakthroughs and a global foothold amid rising technological competi-

tion, said industry experts and company executives on October 30.

"In the next 10 to 20 years, China is moving from quantity to quality in its tech development. The 'New Cornerstone Researchers' program focuses on original innovation and aims to make the most of private funding's flexibility, supplementing government support for fundamental research," said Chen Juhong, vice president of Tencent.

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"The Belt and Road Initiative was launched by China, but it belongs to the world," said Mustafa B. Shehu, president of World Federation of Engineering Organizations. The world has become a different place because of the BRI, he added.

Shehu said that under the BRI, a large number of railways, ports, airports and other landmark cooperation projects have been built and commissioned around the world, including in his country Nigeria.

Scientific and technological innovation is an important driving force for high-quality development of the BRI. Since its launch, China has worked with all parties to implement the Belt and Road Science, Technology and Innovation Cooperation Action Plan, accelerate the construction of the Silk Road of Innovation, and achieve a series of tangible results.

According to the conference, China has signed intergovernmental agreements on science and technology cooperation with more than 80 countries, es-

tablished more than 50 Belt and Road joint laboratories in the fields of health, transportation, materials and energy, and built more than 20 agricultural technology demonstration centers and 70 overseas industrial parks.

People-to-people exchanges, such as scientific researcher exchanges, youth scientific exchanges, and innovation and entrepreneurship competitions, are also in full swing. Nearly 10,000 young scientists from BRI partner countries have come to China for short-term scientific research and exchanges,

and more than 16,500 technical and managerial personnel have received professional training.

Yin Hejun, China's minister of science and technology, launched the International Science and Technology Cooperation Initiative, advocating "openness, fairness, justice and non-discrimination" in international science and technology cooperation.

Bonginkosi Emmanuel Nzimande, South Africa's minister of higher education, science and innovation, said the initiative will contribute to global security and global development governance, and help realize the Global Civilization Initiative's vision of building a more harmonious, win-win, interconnected and co-prosperous world.

Year Plan" and the "Government Work Report." However, this year, the Ministry of Education has officially included quantum information science in undergraduate education, to speed up the training of experts in the quantum field. This will assist more and more young researchers to join the quantum field and contribute to the industry.

Quantum computing is a tough subject, and the current research is still at the early stages of quantum technology, which is still full of challenges in obtaining a breakthrough in basic physics. "The global race for quantum computing is essentially more like a marathon, with a long road ahead," Professor Guo Guoping from University of Science and Technology of China told *People's Daily*.

Quantum Tech: China's Scientific Pride

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The rapid development of China's quantum research benefits from government support. Pan Jianwei, an academician at CAS, attributed the surge in quantum research to China's institutional advantage of "uniting resources on big things."

Pan took the China-developed quantum satellite Micius as an example. Every component of the satellite has come from the effort of various scientific research institutes such as the Shanghai Institute of Technical Physics, CAS, Innovation Acad-

emy of Microsatellites of CAS, and National Astronomical Observatories, CAS.

"Different organizations have provided us with the basic components we need, giving us a solid engineering foundation for our innovative ideas. Some of my colleagues abroad have had similar scientific ideas, but no country has fully supported them like our country," said Pan.

"These achievements have benefited from the continuous growth of the national scientific and technological strength and the long-term profound ac-

cumulation of basic scientific research since China's reform and opening up. Therefore, the honor belongs not only to each researcher of the team, but also to the country," Xue Qikun told media on October 25.

Challenges ahead

Although China is a leading country in quantum technology, it is still facing challenges, such as a lack of more talent in this field.

In 2021, the word "quantum information" first appeared in the "14th Five-

CIIE: A Public Good for Whole World

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"We have already reached many agreements with our partners at this year's expo," said Xu Yang, president of Danfoss China, adding that China is Danfoss's key growth market and China's green transition connotes huge opportunity for the future development of Dan-

foss. "CIIE is a window for us, through which we can see our future development and investment trend," Hao Jinyu, managing director of SGS China, told *S&T Daily*, adding that SGS's Zhoushan labs are born out of the meeting at the expo.

INSIGHTS

AI Global Summit: China's Presence Broadly Hailed

Voice of the World

Edited by TANG Zhexiong

How to deal with the risks from rapidly-developing artificial intelligence (AI) has become a priority worldwide since ChatGPT, an AI-powered language model that can create human-like texts was released to the public last year.

AI Safety Summit 2023, the global meeting convened by the UK in Bletchley on November 1-2, brought together politicians, AI company representatives and experts to discuss the global future of AI and work toward a shared understanding of its risks.

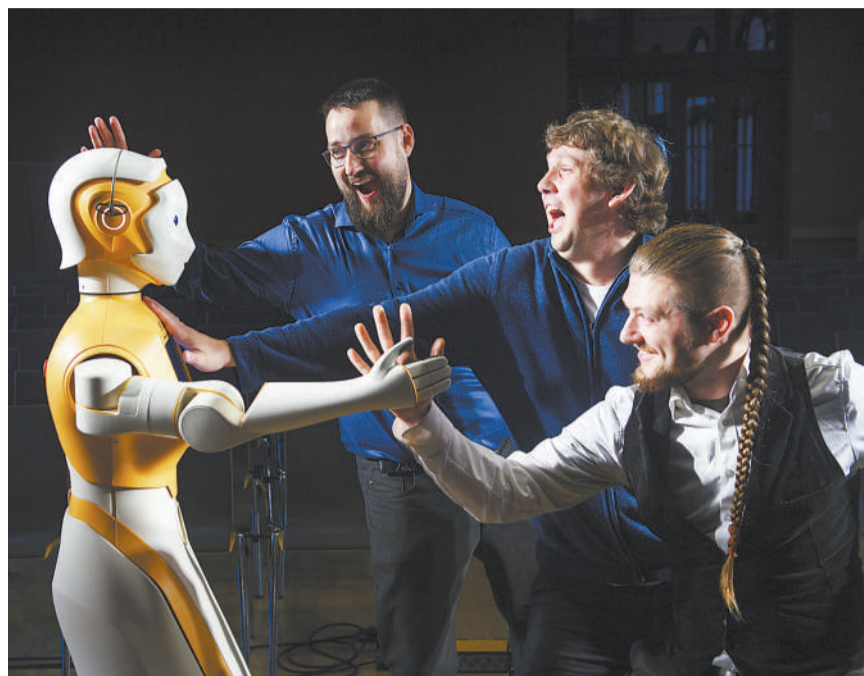
Sifted, a media site on European start-ups, said the summit was "broadly hailed as a diplomatic success because it managed to bring together senior Chinese and U.S. officials around the same table, and was bolstered by the participation of the European Commission president Ursula von der Leyen and even tech entrepreneur Elon Musk."

Global AI statement inked

At the summit, 28 participating countries and the European Union signed the Bletchley Declaration, acknowledging that AI "should be designed, developed, deployed and used in a manner that is safe, in such a way as to be human-centric, trustworthy and responsible" and agreeing to work together to ensure that.

According to the UK government, the declaration aims to identify AI safety risks of shared concern, and build risk-based policies across concerned countries to ensure safety in light of such risks respectively.

The declaration noted that particular safety risks arise at the "frontier" of AI — the highly capable general-purpose AI models, including foundation models, that could perform a wide variety



Matthias Busch (L), Ingo Siegert (C) and Dominykas Strazdas from the Institute of Information and Communication Technology, Department of Mobile Dialog Systems at Germany's Otto von Guericke University, shake hands with the humanoid robot "Ari" on October 26, 2023. (PHOTO: VCG)

of tasks - as well as relevant specific narrow AI that could exhibit capabilities that cause harm, matching or exceeding the capabilities of today's most advanced models.

UK science minister Michelle Donelan said the declaration is "a landmark achievement" and laid the foundations for discussions of the summit.

However, experts think the declaration is not comprehensive enough. Paul Teather, CEO of AI-enabled research firm AMPLYFI, told Euronews Next that bringing major powers together to endorse ethical principles can be viewed as a success, but the undertaking to produce concrete policies and accountability mechanisms must follow swiftly.

Countries moving at their own pace

Participants in Bletchley reported their progress in AI governance and su-

pervision.

UK officials have made it clear that they do not think regulation is needed, or even possible at this stage given how fast the industry is moving, *The Guardian* reported.

French economy and finance minister Bruno Le Maire emphasized that Europe must innovate before regulating.

The French government fought hard for open source, software which allows users to develop, modify and distribute the model. "We shouldn't discard open source upfront," said Jean Noël Barrot, France's junior minister in charge of digital issues, *Sifted* reported. "What we've seen in previous generations of technologies is that open source has been very useful both for transparency and democratic governance of these technologies."

The U.S. will launch an AI safety in-

stitute to evaluate known and emerging risks of the so-called frontier of AI models, U.S. Secretary of Commerce Gina Raimondo said on November 1.

China ready to enhance AI safety with all sides

The Chinese delegation at the summit emphasized the need for international cooperation on AI safety and governance issues, urging increased representation of developing countries in global AI governance.

According to Wu Zhaohui, China's vice minister of science and technology, China was willing to "enhance dialogue and communication in AI safety with all sides."

American media CNBC reported Donelan as saying that it is a "massive" gesture that Chinese government officials chose to attend the U.K. AI summit.

Elon Musk, CEO of Tesla and SpaceX, hailed UK Prime Minister Rishi Sunak's "essential" decision to invite China, said Politico Europe. "Having them here is essential," Musk reportedly said, "If they're not participants, it's pointless."

"There's no safety without China," according to *Sifted*. "China was a key participant at the summit, given its role in developing AI. Its involvement in the summit was described as constructive."

European Commission vice president for values and transparency Vera Jourová, who visited Beijing in September to hold talks on AI and international data flows, said: "I think it was important that they were here, also that they heard our determination to work together, and honestly, for the really big global catastrophic risks, we need to have China on board."

China launched the Global Artificial Intelligence Governance Initiative on October 18, presenting a constructive approach to addressing universal concerns over AI development and governance.

Comment

BRI's Shot in the Arm for Multilateralism

By LONG Chen

After ten fruitful years of the Belt and Road Initiative (BRI), Chinese President Xi Jinping unveiled eight major steps China will take to support the joint pursuit of high-quality Belt and Road cooperation. This demonstrates BRI cooperation begins to develop in quality and depth.

At a time when anti-globalization, unilateralism, protectionism, and the encouragement of "decoupling" among countries are on the rise, China has become a central pillar of multilateralism by supporting geo-economic strategies instead of geopolitical strategies, while sharing opportunities and fruits of development with the international community.

Adherence to multilateral cooperation has become the "ballast stone" for stable and long-term implementation of BRI

In spite of the threat posed by the pandemic, the BRI cooperation has shown strong resilience and vitality. The BRI participants have jointly focused on global public health cooperation and made great efforts to build a Health Silk Road, further enriching the connotation of high-quality BRI cooperation.

According to data from *The Belt and Road Initiative: A Key Pillar of the Global Community of Shared Future*, by the end of August 2023, more than 80 countries and international organizations have participated in the Initiative on Promoting Unimpeded Trade Cooperation. China has signed 21 free trade agreements with 28 countries and regions, and bilateral investment treaties with 135 countries and regions. The BRI cooperation continues to fly in the face of negative pushback and those who advocate the "China threat" theory.

BRI has drawn a new blueprint for the development of globalization

Under the "Core-periphery" division of labor system of neoliberal economic globalization, the political worries caused by economic problems have provided a breeding ground for anti-globalization trends such as trade protectionism. The imbalance of interest distribution and the intensification of domestic contradictions have pulled the once-globalization advocates gradually back to an anti-globalization stance.

However, different from the resource allocation model in neoliberal economic globalization, the resource allocation under the BRI is implemented in a win-win way by promoting the rapid development of exporting countries.



Students from BRI partner countries experience traditional Chinese medicine at a hospital in Qingdao, east China's Shandong province. (PHOTO: XINHUA)

In addition, globalization under the outdated world order has caused developing countries to be invisible. However, with China's BRI, countries that had been "forced to be invisible" have re-emerged on the international stage through close coordination and cooperation with each other, making globalization real.

Eight major steps will guard the development of globalization

Among the eight major steps President Xi announced, the first is to continue to support building a multidimensional BRI connectivity network. The main artery of economic globalization will be further opened up by establishing pilot zones for Silk Road e-commerce cooperation to conform to the development trend of the new era, and taking the lead in completely removing all restrictions on foreign investment access in the manufacturing sector to break trade barriers.

On the issue of coordinated development, China promotes both signature projects and "small yet smart" livelihood programs. It implements the principle of "teaching people to fish on their own" rather than "draining the pond to fish." China's proposal to carry out 1,000 small livelihood assistance projects is an important manifestation of its commitment to pursuing common progress and development with the world's people.

In the face of global governance challenges, China attaches importance to the strength of all humankind and all countries. At the recent Belt and Road Forum for International Cooperation, China proposed to continue to deepen cooperation in areas such as green infrastructure, green energy and green transportation.

Such a move intends to build and improve the cross-border green industrial chain, step up support for BRI International Green Development Coalition, better implement the principle of green investment, and drive BRI green value chain upgrades.

On the occasion of the 10th anniversary of the BRI, China's proposal to further deepen BRI cooperation reflects not only its confidence in the common progress and development of humankind, but also delivers a strong blow against so-called unilateralism and protectionism.

LONG Chen is an assistant research fellow at Chongyang Institute for Financial Studies, Renmin University of China.

China's Higher Education Is Rising

Opinion

By QI Liming

The development and success of education plays a big part in a country's comprehensive national strength. Additionally, education, especially higher education, serves as an important support mechanism for a leading country to achieve more self-reliance and strength in science and technology.

This year saw Chinese universities leapfrog their way up the international rankings. Even though the selection criteria and ranking data do not provide detailed information on the overall strength of universities listed, the rankings do at least provide some insights.

Global research and knowledge shifting from West to East

China is on the verge of a historic breakthrough into the world's top 10 universities, according to the latest Times Higher Education (THE) World University Rankings released in September, with its highest placed entry now at 12.

As THE World University Rankings reported, Tsinghua University moved up from 16th to 12th, closely followed by Peking University moving from 17th to 14th.

In the latest versions of the other lists, the QS World University Rankings and the Academic Ranking of World Universities, these Chinese entries climbed to 17th and 22nd respectively.

Forbes magazine said this represents a remarkable rise for a country that six years ago had just two representatives in the top 100 and a highest rank of 27.

While the U.S. overall picture is of continuing long-term decline, it is the long-anticipated rise of China's universities that represents the big story of this year's rankings, well and truly marking their arrival on the world stage.

One of the reasons for the U.S. poor showing is falling levels of research funding relative to other countries, according to THE. In contrast, in China, South Korea, Canada and Australia, universities' average proportion of research income has increased since 2019.

"There's no doubt this new data

provides further, hard evidence that the balance of power in the global research and knowledge economy continues to shift from the West to the East, with potentially profound implications for the world," said Phil Baty, THE's chief global affairs officer.

Overall strength of Chinese universities being continuously improved

China had just four universities in the top 200 in THE's first rankings in 2004, but 20 years later it has 13, with six in the top 60 and two on the brink of breaking into the top 10.

And based on current progress, the Chinese mainland would be home to a world top 10 university in the near future said Baty. This would break the stranglehold of U.S. and U.K. universities on the rankings.

"[The] Chinese mainland is a remarkable case study of exceptional, consistent improvement. It now has world-class universities to rival any in the world," added Baty.

According to the University World News website, the Chinese mainland continues its overall rise in the rankings this year, with an average overall score that has improved from 35.9 three years

ago to 41.8, driven by improvements in research reputation and research publication citations.

"[The] Chinese mainland's rise and rise up the global rankings in recent years seems to have no limits," said Baty, adding that it has already overtaken the U.S. in terms of the sheer volume and quality of academic research it produces.

According to the *Nature* Index released in June 2023, in the first half of this year, some universities that are little known outside China are rapidly surpassing their more established counterparts in the West in high-quality scientific research. The index was based on scientific research output between February 1, 2022 and January 31, 2023, using "simple, transparent and current metrics that demonstrate high quality research and collaboration."

Seven of the top 10 university contributors were from China in the updated list, maintained by the academic journal *Nature*, that tracks contributions to research articles published in 82 of the world's most influential natural science journals, according to the index.

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From October 10 to November 11, nine expert teams are visiting 27 hospitals in 12 provinces or municipalities across China to engage in medical exchanges. Chinese and Canadian medical experts learn from each other, injecting new vitality into cooperation between the two countries in the medical field.

Most of the BMDAC members are well-known experts from universities such as University of Toronto and McGill University, and among them are

some Chinese doctors living in Canada.

Gao Song, an ultrasound specialist living in Canada, participated in the free medical consultations this year. She said she was honored to join the association and return to China to contribute to China's medical needs.

Gao said that during the communi-

cation process, there are valuable lessons to be learned from Canadian doctors' in-depth interpretation of data, comprehensive assessment of patient surgical risks, and more standardized treatment, while the innovative research and technical experience of Chinese doctors have also provided new ideas for Ca-

nadian doctors.

After conducting clinical activities together with Canadian experts, Zhang Youhong, an ultrasound expert in Meizhou People's Hospital, said that Canadian doctors left a deep impression on her in terms of retaining and reusing ultrasound image data, as well as profes-

sional division of labor in operations. Chinese doctors' proficiency in esophageal ultrasound operations was also appreciated by Canadian doctors.

Dr. Ying Tung Sia, director of cardiovascular research and chief of cardiology at Trois-Rivieres Center Hospital of University of Montreal, appreciated the

diligence, dedication and enthusiasm of Chinese doctors in their pursuit of learning new technologies. He said he is very willing to be part of the training.

Meanwhile, Errett, who has witnessed the improvement of China's medical technology over the past 24 years, said, "It's a dramatic change. It was incredible to see the development of first class medical centers doing very difficult surgeries. And the Chinese have accomplished those in 20 years, which took other countries 50 years. So it's quite remarkable."

Bond of Sino-Canada Medical Cooperation

Inclusiveness Makes Science Flourish

Dialogue

By LONG Yun

"I think [international sci-tech cooperation] is fundamental because we are in one single society in the world," French scientist Piotr Breitkopf told *Science and Technology Daily*, adding that by pushing science forward collectively, it allows humanity to reap the collective benefits, rather than fragmenting progress into isolated efforts.

Breitkopf currently serves as a researcher at the French National Center for Scientific Research and a visiting professor at Northwestern Polytechnical University (NPU) in China. Breitkopf's collaboration with research teams at NPU dates back 20 years. In this time, he has been deeply engaged in closer people-to-people exchanges and sci-tech cooperation between China and France.

In 2023, he was honored with the Three Qin Friendship Award, the highest honor presented by Shaanxi province to foreign experts for their outstanding contributions to promoting international cooperation. "Breitkopf's receipt of this award is well-deserved. In his professional field, he has consistently worked to promote Sino-French sci-tech exchanges.

Moreover, in terms of his connection with China, he is an experienced 'China hand.' "Every time when he returns [home] from China, he eagerly shares the country's developments and progress with his friends around the world," said Meng Liang, an associate professor at the School of Mechanical



Professor Piotr Breitkopf. (PHOTO: ZHANG Wei/Beijing Review)

Engineering at NPU and once one of Breitkopf's students.

Problem solver

Breitkopf is a prominent figure in the field of computational mechanics. His research efforts span various industries, directly impacting people's lives and contributing to sustainable development. The broad context of his work is improving living conditions by enhancing energy efficiency, transportation and environment. According to Breitkopf, air pollution affects millions of people worldwide, leading to health issues and environmental degradation. "Without health, things will become meaningless," he said.

Elaborating on the real-life influence of his research, he cites the example of electric vehicles. He specializes in computational mechanics, centering on model reduction and lightweight structural design. For instance, he can reduce the weight of structures in new energy vehicles by optimizing the design of these vehicles, which ultimately makes

them lighter and more energy-efficient.

Setting good examples

As an educator, Breitkopf highlights China's commitment to fostering education and the remarkable development of tertiary education over the years. From his perspective, the new campuses are not just existing but thriving. Although some challenges may arise along with rapid development, he believes that sharing experiences and expertise can be valuable and "a developing society is always interesting."

Breitkopf is always generous in sharing his experience and knowledge. Through his work, he has established platforms that promote educational and research exchanges, notably with Chinese students. He encourages students to take on more complex technical work in the lab with the guidance of teachers.

According to Breitkopf, Chinese students show a strong drive for learning and continuously strive to expand their knowledge. He also stresses that finding

a healthy balance between work and leisure is essential for their personal well-being and overall success.

Breitkopf's commitment and attitude in the classroom have been well received by his Chinese students. Meng praised Breitkopf for his openness and kindness, saying, "He sets a great example for me as an educator, shaping my ideal vision of a teacher-student relationship."

As Meng described, Breitkopf would brew the students a cup of coffee and engage in some general life chat almost every day. This "ritual" made the subsequent research work more efficient and enjoyable, said Meng.

Support for further sci-tech cooperation

Breitkopf has been instrumental in setting up cooperative platforms and international research centers that further collaboration.

As he emphasizes, cooperation at a personal level is beneficial, but having an organized framework may allow multiple parties to come together effectively. For instance, international conferences and seminars can play an important role in gathering professionals from diverse backgrounds and places.

Looking ahead at the future of Sino-French scientific cooperation, Breitkopf remains optimistic. He acknowledged that he could not predict the future, but he drew inspiration from the longstanding tradition of collaboration between the two countries. He hopes that this tradition will endure, ushering in the potential for new breakthroughs and discoveries.

This article is also contributed by NPU.

was captivated by the sheer passion and joy they put into their performance. He felt a strong connection with the man playing the banjo, who seemed to embody the passion and vitality he had lost. "I found a brother in China." He has since grown to feel a sense of belonging in engaging with the culture and its people.

The story of Vitomira, Somic's wife, is about "giving." Two years ago, one of her students with limited English proficiency made their interaction mainly dependent on phone messages or translation tools. Gradually, Vitomira's passion for the arts ignited the student's interest in theater and English learning and led her to excel in her exams. The students even successfully applied for international learning opportunities due to Loncar's help. "Those experiences enrich my life and inject new passion into my life," she said.



The ancient city wall of Xi'an. (PHOTO: XINHUA)

Xi'an, an Ever-evolving City

By LONG Yun

Xi'an stands as a crucial cradle of the rich Chinese civilization, which today drives its vibrant appeal. In a recent activity held to experience the charm of this time-honored city, foreign experts were invited to discover the historical delights and cultural passions that embody Xi'an. Some of them shared their own experiences and impressions with *Science and Technology Daily*.

When history meets modernization

Canadian scientist Abdul Ghani Razaqpur is in Xi'an for the third time. "Xi'an is the combination of history with modernization that makes this city unique in some ways," said Razaqpur, noting that the miracle of the Terracotta Warriors reminds him of Chinese people's determination to complete large or important projects in spite of difficulties.

His comments were echoed by other foreign experts. "While deeply rooted in history, Xi'an is also a modern and rapidly developing city. It has seen significant economic growth and urbanization in recent decades, with a booming technology and education sector," said Rasha Khalid, a Syrian scholar from Sichuan International Studies University.

Flora Gaetani, an Italian professor from Xi'an Jiaotong University, came to the city one year ago. She is impressed by the historical aspects, particularly

the intricate patterns and textures found in its ancient architecture. At the same time, Gaetani said that the modern and efficient ways of transportation system in Xi'an makes it a favorable place for her to live and work in.

A city undergoing all-round changes

Dirk Werner Hartmann, a German language expert working at Xi'an FanYi University, considers himself a Xi'an local despite his foreign origin and underscored the city's evolving nature.

In 1988, Hartmann, then a German exchange student, took a grueling 23-hour hard-seated train journey from Wuhan to Xi'an to celebrate the Spring Festival with his Chinese classmates. He has been living permanently in Xi'an for 12 years and witnessed the city's rapid development in many fields. "The wide availability of high-speed trains has transformed our lives, significantly improving our efficiency. This change has brought tangible benefits to people," said Hartmann, adding that these positive changes have also impacted Chinese people.

As a language teacher, Hartmann attaches great importance to the internationalization of Xi'an. The city has made efforts to incorporate English into its infrastructure, with proper English transla-

tions on road signs. These initiatives reflect Xi'an's commitment to promoting openness.

Xi'an is home

Xi'an is a city of inspiration with many hidden gems. Croatian couple Ivica Somic and Vitomira Loncar now work as professors at Xi'an Eurasia University and for both of them Xi'an is home.

Somic shared a touching story from his arrival in China in 2015. During that time, he was struggling to find his creative passion.

One day, while visiting a beautiful museum of traditional architecture, he stumbled upon a tiny outdoor theater. In this setting, he witnessed a group of locals playing traditional music, and he

Expats Activities

'Xi'an Magnet' Effect on Globalization of Science

By LONG Yun

Xi'an in Shaanxi province, northwest China, once the capital of ancient China, has long been a hub of East-West cultural exchange and mutual learning. A symposium of foreign experts held in the city on November 3 explored ways to promote international sci-tech cooperation and increase openness.

Lou Wenxiao, deputy director of Xi'an Municipal Science and Technology Bureau, spoke about how Xi'an has become a magnet for foreign professionals. "The relevant departments of Xi'an have been tirelessly working to create an attractive and accommodating environment that allows overseas talent to unleash their potential with comprehensive service, enhancing what we like to call the 'Xi'an magnet' for overseas talents," Lou said.

Adrien Oger Peulvast, a French railway signal expert, said he has witnessed Xi'an's transformation over the years: "Its development is relentless in terms of its infrastructure, which has been well-implemented. Also, its development lies in its internationalization and the infusion of numerous international elements."

Peulvast's assessment of Xi'an's contribution to international technology cooperation was echoed by the other experts. "Science is international. There is no good science going on without international cooperation because this is not a local event but something where a lot of people work together," said German scientist Helmut Kettenmann, chair professor at the faculty of life and health sciences, Shenzhen Institute of Advanced Technology in south China. "It is crucial for people from different countries to engage in dialogue, and provide feedback," Kettenmann added.

The experts also recognized China's development as one of the significant global powers. Canadian scientist Abdul

Ghani Razaqpur who teaches at Nankai University in Tianjin city neighboring Beijing, pointed out the need for countries with different levels of development to explore common ground for collaboration.

China, he noted, has shown a commitment to address climate change through policies and investments in new energy sources and battery technology. China's commitment to carbon reduction and advanced technologies positions it as a crucial partner in achieving global climate goals, making the dual targets of carbon peaking and carbon neutrality achievable.

Rasha Khalil, a Syrian scholar with the Sichuan International Studies University, told *Science and Technology Daily* that China's role in global affairs, symbolized by initiatives like the Belt and Road, has transformed the world and enriched the international community.

"I've witnessed the passion and dedication that China brings to the global stage, fostering economic, diplomatic and scientific unity," Khalil said.

Leonid Chornogor, a Ukrainian scientist with Qingdao University in north China, lauded the development of cutting-edge research and the integration of advanced fundamental research with applied technologies in China. These elements, he said, have laid the groundwork for China to become a global center of sci-tech innovation in the future.

As an important innovation hub in western China, Xi'an has intensified its endeavors to promote global scientific and technological exchanges. According to Lou, it has established 154 international sci-tech cooperative bases and set up six overseas sci-tech working stations in countries like Singapore and Germany.

Xi'an will become a fertile ground for international cooperation and exchanges because it possesses vast resources and potential, Peulvast added.

Dulunche: Applying the Leverage Principle

Traditional Eastern Wisdom

By BI Weizi

The Chinese wheelbarrow was called *Dulunche* in the *Dream Pool Essays* written by Shenkuo in the Northern Song Dynasty (960-1127). The earliest image of wheelbarrows can be found in the stone carvings of the Wuliang Temple in the Eastern Han Dynasty, dating back more than 2,000 years. The wheelbarrow is a human-powered, single-wheeled cart used to carry all kinds of loads, from harvested crops to mine waste, and pottery to construction materials. Wheelbarrows could also be used to transport the sick, wounded, or elderly.

The structure of a wheelbarrow consists of a wheel in the center of the body, a wooden frame plate on top, and two rear shafts mounted on the frame plate. The common feature of wheelbarrows is the single wheel, but the shape

and structure of the vehicle plates are different. One type of frame plate is flat and can carry things or people; the other type has a stand in the middle of the frame plate, and both sides of the stand are used to carry things or people. Between the two axles is a rope that rests on the person's shoulders to help both hands hold the axles. By using the wheel as a fulcrum, the load's point of resistance is closer to the fulcrum, which improves its own operating efficiency and can prevent the human body from directly bearing heavy pressure. When pushing a wheelbarrow, it becomes relatively easy for people to carry a load.

The wheelbarrow, which has been used by Chinese for over 2000 years, is a demonstration of the ancient Chinese mastery and application of the principle of leverage, sharing the load between the wheelbarrow and the person. Instead of carrying heavy loads on one's back or burdening a pack animal with them, a person could place them in a tub or basket that has a wheel and long handles attached for pushing or pulling.



A villager pushes a wheelbarrow in Zhujiayu village, Shandong province. (PHOTO: VCG)

Exemption of Academic Qualification Verification

Service Info

By BI Weizi

Foreign nationals may be asked to have their degrees verified, while applying for a China work permit or other purposes related to China. If the degree is issued by a university outside China, an applicant may be required to get the degree verified by the Chinese Service Center for Scholarly Exchange (CSCSE)

under the Ministry of Education, which is probably an easier and cost-efficient way to verify the degree.

CSCSE is a national institution that provides a variety of services related to international education. One of its services is to verify degrees issued by international universities. For more details, please visit <https://zwfw.cscse.edu.cn/>.

Based on the desirability and eligibility of the expatriates, determined by a comprehensive evaluation system, work permits in China can be classified into three types - Type A, Type B and

Type C.

Type A work permit applies to highly qualified talents. In practice, the most common Type A work permit applicants are those whose salary is more than six times the social average salary of the city. They are not limited by education degree or working experience and do not have to go through the process of degree verification in China.

Type B work permit is the most common type, which applies to professional people in line with labor

market demand. Those whose salary is four times higher than the average of local employees can also be exempted from academic qualification verification upon initial application. Subsequent renewals must be supported by evidence of relevant salary commitments.

Specifically in Shanghai, according to the "Shanghai Foreign Talent Position in Urgent Need Catalogue (Trial)", some professionals with certain majors can be exempted from the academic qualification verification.