科技日報

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International Cooperation

China-South Africa Relations Flourishing 25 Years on

By WANG Xiaoxia

Chinese President Xi Jinping held phone talks with his South African counterpart, Cyril Ramaphosa on June 9, pledging to upgrade bilateral relations, build a high-level China-South Africa community with a shared future, jointly practice genuine multilateralism, safeguard the common interests of developing countries, and make the international order more just and equitable.

This year marks the 25th anniversary of the establishment of diplomatic relations between China and South Africa. Over the past 25 years, the two countries have deepened their wide-ranging bilateral relations, yielding fruitful results in high-level interactions, economic cooperation, as well as people-to-people exchanges.

The bilateral relationship has been elevated to a Comprehensive Strategic Partnership and underpinned by a new 10-Year Strategic Programmes of Cooperation (2020-2029). Beyond bilateral relations, as two important developing countries in the world, China and South Africa adhere to multilateralism and share broad consensus.

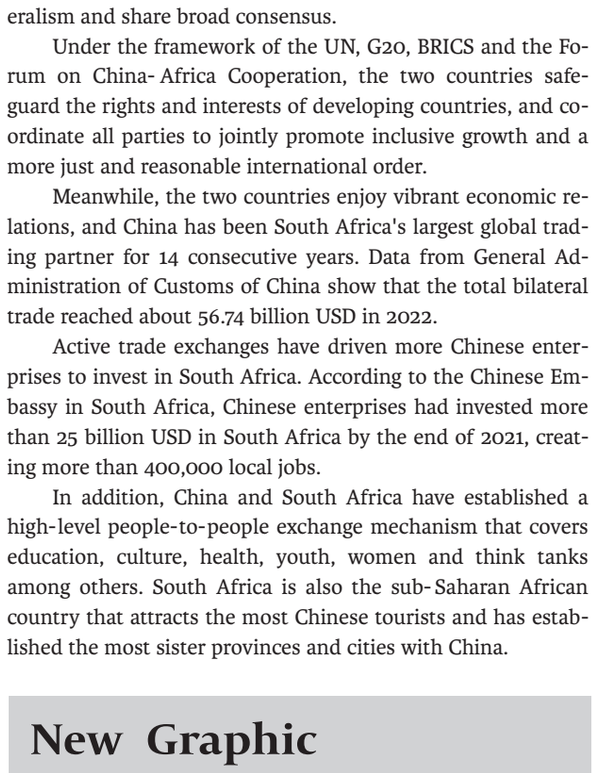
Under the framework of the UN, G20, BRICS and the Forum on China-Africa Cooperation, the two countries safeguard the rights and interests of developing countries, and coordinate all parties to jointly promote inclusive growth and a more just and reasonable international order.

Meanwhile, the two countries enjoy vibrant economic relations, and China has been South Africa's largest global trading partner for 14 consecutive years. Data from General Administration of Customs of China show that the total bilateral trade reached about 56.74 billion USD in 2022.

Active trade exchanges have driven more Chinese enterprises to invest in South Africa. According to the Chinese Embassy in South Africa, Chinese enterprises had invested more than 25 billion USD in South Africa by the end of 2021, creating more than 400,000 local jobs.

In addition, China and South Africa have established a high-level people-to-people exchange mechanism that covers education, culture, health, youth, women and think tanks among others. South Africa is also the sub-Saharan African country that attracts the most Chinese tourists and has established the most sister provinces and cities with China.

New Graphic



On June 2, the Regional Comprehensive Economic Partnership Agreement (RCEP) officially entered into force for the Philippines. This marks the full entry into force of RCEP for 15 member countries.

China's first domestically-built large cruise ship "Adora Magic City" transits into the dock mooring debugging phase on June 6 in Shanghai. (PHOTO: XINHUA)

Editor's Pick

Sci-tech Empowers Inheriting Culture

By LU Zijian

Science and technology have always been important contributors to the passing on of culture, be it tracing the past, protecting the literature or displaying the relics. Now, with advanced technology, this contribution has been made much more efficient and accessible, bringing in a wider audience to connect with culture in a way that has never been possible before.

Sci-tech facilitating archaeology

Archaeology is an indispensable part of tracing the past. Deep sea archaeology has tremendously extended the scale of traditional archaeological activities under water, which enables the invaluable relics on the depths of the ocean to again appear before an appreciative public.

On May 21, the National Cultural Heritage Administration announced that two ancient shipwrecks dating back to the Ming Dynasty (estimated) were discovered about 1,500 meters under the South China Sea, and an archaeological investigation on the two shipwrecks began the same day.

However, archaeology below the ocean is a difficult undertaking and it was the deep water technical equipment that made all the difference.

Tang Wei, director of the National Centre for Archaeology, said that a series of new technologies and equipment were adopted. For example, scientists set up a permanent surveying and mapping base point at the shipwreck, and conducted position calibration via long baseline positioning technology, which greatly enhanced the precision and accuracy of data records and archaeological activities under water.

The Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences, uses manned and unmanned submersibles and devices like new force feedback flexible manipulators, so as to conduct protective extraction of relics on the seabed and under water cleaning of the key relics covered by sediment.

Protecting ancient books

Literature is a crucial carrier of civilization, but the acidification of paper has a bad impact on the preservation of books. Many of the ancient books and pieces of literature suffered from the acidification of paper.

Taking the National Library of China (NLC) as an example, over 50 percent of the 670,000 pieces of literature during the Republican period of China (1912-1949) has a PH value under 5.0, which means they are severely acidized. If they are not deacidized as soon as possible, these literature artifacts will become completely damaged in 50 to 100 years.

In order to solve the problem, NLC has been working on the deacidification of paper since 1981. Key laboratories and research teams have been setup and a series of achievements made, including three patents for invention.

The deacidifier they developed is absolutely safe. Suitable for 99 percent of literature, the deacidifier can dry very quickly without paper shape changing or ink fading. After the deacidification, the PH value of paper will be greatly increased, and a certain amount of alkali reserve will stay in the paper, which could resist the acid destruction for 200 to 300 years.

Displaying cultural relics to the public

By visiting cultural relics and experiencing them in person, people can better understand history and culture. Technology has made it more vivid to visitors.

Dating back 5,300 years, the Archaeological Ruins of Liangzhu City, a UNESCO World Heritage site in Hangzhou, east China's Zhejiang province, has transformed itself into a digital and smart park. *See page 2*

Asia's Largest CCUS Project Begins Operation

By Staff Reporters

Asia's largest carbon capture, utilization and storage (CCUS) project was officially put into operation in Taizhou, east China's Jiangsu province on June 2, according to China Energy Investment Corporation (China Energy), the project developer.

The CCUS project, built in the coal-fired power plant under China Energy, can capture and process 500,000 tons of carbon dioxide annually. Its successful operation marks the maturing of China's large-scale application of CCUS technology in coal power sector, laying a solid foundation for further promotion of CCUS technology.

By optimizing the coupling of the large carbon capture system and power plant thermal system, the project achieved a carbon dioxide capture rate of more than 90 percent and the power consumption was less than 90 kWh per ton of captured carbon, said Ji Mingbin, president of China Energy Jiangsu Branch.

Since fossil fuels continue to dominate the world's energy consumption, CCUS technology, which can capture carbon emissions from fossil power generation and industrial processes, plays a vital role in large-scale carbon emission reduction in fossil energy usage and helps achieve the goal of carbon neutrality.

Sino-New Zealand Ministers Meet to Deepen Sci-tech Cooperation

By LIN Yuchen

Wang Zhigang, China's minister of science and technology, attended the 6th China-New Zealand Joint Commission Meeting on Science and Technology Cooperation in Wellington, New Zealand on May 30, and met with New Zealand's Minister of Research, Science and Innovation Ayesha Verrall. The two ministers agreed to deepen bilateral cooperation in science and technology.

Wang said that science and technology are one of the key areas of cooperation between China and New Zealand, and the convening of this joint commission meeting is a concrete move to implement the previous consensus reached between the leaders of both countries.

Wang affirmed the fruitful achievements in cooperation, joint research projects, platform construction and personnel exchange in cooperation with New Zealand since the two countries signed an agreement in 1987 on governmental cooperation in science and technology. He said that in the future, China is willing to continue to work with New Zealand to provide more support to universities, research institutions and enterprises, and create a good cooperation environment, so that the mutual cooperation can provide more sci-tech solutions for the two countries, as well as responses to globally shared challenges.

Verrall endorsed the cooperation proposals provided by Wang, saying that New Zealand regards China as an important science and technology innovation partner, and confirmed mutual commitment to this strong relationship.

"We have significant mutual research interests, particularly in food, environmental and health sciences. New Zealand and Chinese scientists have been cooperating for more than 40 years, and each year we jointly fund research projects that benefit our two countries," said Verrall.

WEEKLY REVIEW

Non-fossil Energy Dominates Total Installed Capacity

The installed capacity by non-fossil fuels power resources has surpassed that of fossil fuels, making up 50.9 percent of China's total installed capacity, according to Yang Yinkai, vice chairman of the National Development and Reform Commission, on June 11.

Chlorinated Waste Plastics Upcycled into Value-added Products

Scientists from the Shanghai Institute of Ceramics at CAS managed to convert chlorinated waste plastics into additional valuable products, realizing efficient and harmless upcycling. The products can be used in many fields such as new types of energy storage, medical equipment and wearable devices. The research results were published in *Nature Reviews Methods Primers* on June 8.

Elastic Ceramic Plastic Created

Scientists from Zhejiang University invented a new material called elastic ceramic plastic by interpenetrating molecular-scale organic and inorganic ionic compounds. This new material exhibits ceramic-like hardness and strength, rubber-like deformability and resilience, and plastic-like mouldability. The result was published in the journal *Nature* on June 8.

China Builds Largest Earthquake Early Warning System

China has built the world's largest earthquake early warning system, cutting down the time of reporting earthquake information from a minute to a few seconds when an earthquake occurs, said Min Yiren, head of the China Earthquake Administration on June 8.

WECHAT ACCOUNT

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