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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.

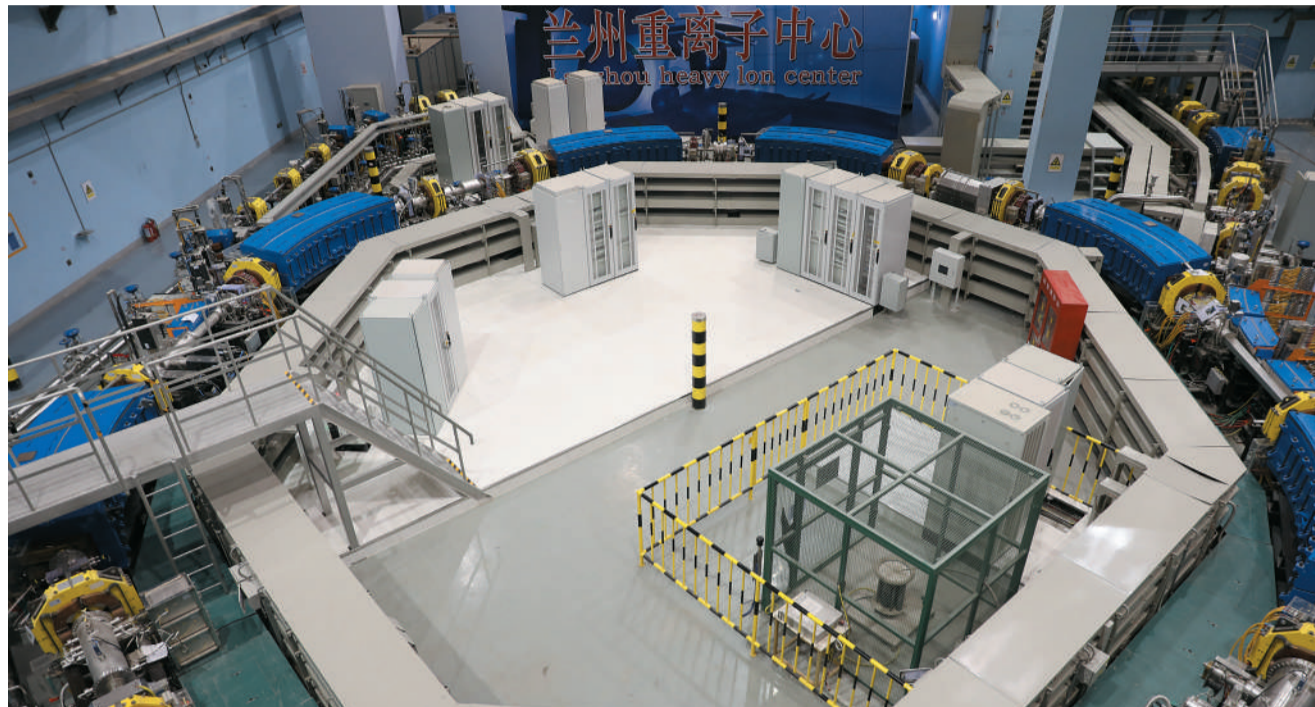
In the speech, Xi made four proposals regarding building a China-Africa community with a shared future in the new era, namely fighting COVID-19 with solidarity, deepening practical cooperation, promoting green development, and upholding equity and justice.

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*



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)

## 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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## 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)

## 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.

## 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.

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