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Promoting Marine Economy's High-quality Development

Edited by WANG Xiaoxia

Chinese President Xi Jinping stressed efforts to promote high-quality development of the marine economy at a meeting of the Central Commission for Financial and Economic Affairs, which he heads, on July 1.

To promote the high-quality development of the marine economy, there should be a greater focus on innovation-driven growth, efficient coordination, industrial renewal, harmony between human and the sea, and win-win cooperation, according to the meeting.

It also emphasized increasing policy support and encouraging private capital participation in the marine economy.

China should boost its capacity for marine technological innovation, strengthen, optimize and expand its marine industries, enhance marine ecological protection, and promote global cooperation in marine scientific research, disaster prevention and mitigation, and the blue economy.

In 2024, the gross ocean product (GOP) of China's marine economy exceeded 10 trillion RMB (about 1.4 trillion USD), according to the Ministry of Natural Resources. This milestone represents a robust expansion in the marine sector, with emerging industries maintaining rapid growth and technological innovation gaining traction.

Emerging marine industries, such as marine manufacturing and offshore wind power, have seen significant growth. Marine manufacturing emerged as a key driver, with a substantial increase in new orders, accounting for over 30 percent of the total GOP. Offshore wind power has scaled up, as annual power generation rose by nearly 30 percent year on year.

In terms of traditional marine industries, China's shipbuilding industry continued to dominate globally, holding a leading position in global maritime transportation and port operations.

The marine economy has also seen increased investment in technological innovation, with a focus on digitalization, intelligent equipment, and sustainable development. This has improved ocean governance, fostered smart fisheries and smart ports, and enhanced shipbuilding capabilities.

New Graphic

As of May 2025

China's Valid Domestic
Invention Patents Reached

4.97 Million

Between January and May

CNIPA processed **84,000**
priority patent examinations,
fast-tracked **116,000** applications.

Source: China National Intellectual Property Administration (CNIPA)
Designed by SONG Ziyao / Science and Technology Daily

WECHAT ACCOUNT



E-PAPER



Xiong'an New Area

The first full life cycle "near-zero carbon" substation in Xiong'an New Area — the Fuxing 220-kilovolt Substation — is put into operation on June 30. It will power the core area of Xiong'an's headquarters cluster and support relocated Beijing enterprises and universities. (PHOTO: XINHUA)

Innovation Frontier

Giant Solar Telescope Empowers Space Observation

By LIN Yuchen

In the remote highlands of Daocheng, a county nestled 4,700 meters above sea level in Sichuan province in southwest China, a groundbreaking scientific feat promises to reshape our understanding of our closest star.

The 2.5-meter Wide-field and High-resolution Solar Telescope (WeHoST), a national major scientific instrument project recommended by China's Ministry of Education and approved by the National Natural Science Foundation, represents not only a technological marvel, but also a strategic leap for the quest to decode solar mysteries. Its supporting facilities are expected to be completed by the end of 2026.

As the world's largest axisymmetric solar telescope, WeHoST is a symbol of China's contribution to global space

science and planetary safety in an increasingly complex cosmic environment.

Filling the gaps in global solar observation

Though the Sun is vital to life on Earth, our scientific instruments fall short of capturing the full complexity of its behavior. Existing solar telescopes, while able to provide minute surface features of the star, have a limited field of view. WeHoST fundamentally changes the equation. With its 2.5-meter aperture, it combines ultra-high resolution with a greatly expanded observational field, three to four times wider than that of existing instruments.

"Just like using a microscope to observe bacteria, current solar telescopes can capture fine details but lack the broad perspective needed to fully understand solar eruptions. With WeHoST, we aim to bridge that gap," explained Professor Ding

Mingde, the project's chief director and a professor at Nanjing University.

Dual approach to space weather monitoring

WeHoST will not operate in isolation. It joins the "Xihe" satellite, China's first space-based solar observation platform, in a strategic configuration known as "earth-space synergy."

Academician Fang Cheng from the School of Astronomy and Space Science at Nanjing University pointed out that WeHoST will enable multi-height observations of solar atmospheric changes. The telescope could provide the most comprehensive continuous observations of solar active regions ever achieved from their formation to evolution. Combined with "Xihe", it will significantly improve China's capability in monitoring and forecasting space weather.

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Large-scale Facilities Boost Research on Cultural Relics

By LU Zijian & ZHANG Gailun

In order to assist with the research and conservation of cultural relics, high tech is playing an increasingly vital role, with large-scale scientific facilities like High Energy Photon Source (HEPS), Shanghai Synchrotron Radiation Facility (SSRF) and China Spallation Neutron Source (CSNS) leading the charge.

In May 2023, a major research base in nuclear technology application and equipment in the field of cultural relics, established by the Institute of High Energy Physics (IHEP), Chinese Academy of Sciences (CAS), was approved by the National Cultural Heritage Administration.

The purpose of this base is to build a platform for cultural relic research facilitated by nuclear technologies and develop corresponding specific equipment

with the help of large-scale scientific facilities, said Wei Cunfeng, a researcher at IHEP, CAS, while addressing a forum to celebrate this year's Cultural and Natural Heritage Day recently in Changsha, central China's Hunan province.

Isotope and radiation technology has the ability to examine, research, and modify materials. Used in large scientific facilities like HEPS, SSRF and CSNS, the technology can be used to conduct research on the texture, structure and crafting of cultural relics, according to Wei.

Synchrotron light source, part of the technology, is like a super microscope that can help people observe objects at molecule and atom level. "It can help us understand the degeneration of cultural relic materials in a more detailed way, simulate an in-situ device based on the environment, and evaluate the effect of

protection materials, thus providing the rationale for the protection of cultural relics," Wei said.

The technology can also indirectly estimate the place of origin of cultural relics, offering strong support for tracing research. According to Wei, researchers can analyze the elemental composition and crystal structure of cultural relics with the help of synchrotron light source based on the historic information of the materials, and indirectly estimate the production time and restoration history of cultural relics, facilitating their chronological study.

Neutron imaging technology is another powerful tool. Neutron beams have greater penetration power than X-rays and can be used to conduct CT scans on cultural relics.

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New Project Supplies Potable Water in Nigeria

International Cooperation

Edited by WANG Xiaoxia

A China-assisted water supply project was recently completed in Abuja, the capital of Nigeria, which is expected to relieve the water supply shortage and directly improves locals' lives.

Constructed by Chinese firm CGCOC GROUP Co., Ltd., the project, named Greater Abuja Water Supply Network, consists of 422 kilometers of new pipelines, with a total water supply capacity of 480,000 cubic meters per day. Notably, it will ensure effective distribution of water from the supply plant to the end users in the capital region of Nigeria.

At the commissioning ceremony of the project, Nigerian President Bola Tinubu extended gratitude to Chinese enterprises and Chinese workers for helping more Nigerian households enjoy safe and sufficient water sources.

"We are showing the world that partnerships built on mutual respect and shared prosperity can deliver real impact," Tinubu said, adding that this project would help make Nigerians using unsafe water a thing of the past.

This project was entirely designed and constructed by CGCOC, adopting Chinese standards and Chinese technologies to supply potable water to at least three million people in Abuja. The project also trained a large number of local professionals in water supply and pipeline technologies, creating thousands of jobs, according to Zhong Xiang, managing director of CGCOC Nigeria.

WEEKLY REVIEW

Genetic Switch to Reactivate Organ Regeneration Discovered

A group of Chinese scientists have discovered a genetic switch called ALDH1A2 that can reactivate nonregenerative mammals' ability to regenerate damaged organs. The activation of ALDH1A2 or supplying retinoic acid externally using a gene enhancer from rabbits can restore the regenerative capacity in nonregenerative mammals like mice. The discovery was recently published in *Science*.

New Material Greatly Lifts Perovskite Solar Cell Efficiency

Researchers from the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, have developed a new type of diradical self-assembled molecules with high photothermal and electrochemical stability, significantly improving the photovoltaic conversion efficiency, operational stability and large-area processing uniformity of perovskite solar cells.

1st Domestic 100-Billion-Parameter Large Model for Power Generation

China Energy Investment Corporation launched the country's first 100-billion parameter large model in the power generation industry on June 28. The model has been successfully applied in safety and environmental protection, power trading, production and transfer center, equipment maintenance and other business areas.

Neuralink Releases Latest BCI Achievements, Future Plans

Elon Musk's brain-computer interface (BCI) company Neuralink released a video on its latest achievements, with the roadmap for its development until 2028. Seven people received N1 chip implants, and they used relevant equipment 50 hours per week on average. By 2028, 25,000 channels are expected per implant.

DeepMind's New Model Helps Decode Genome Function

Google DeepMind recently unveiled a new AI model called AlphaGenome, which can predict how single variants or mutations in human DNA sequences influence gene-regulating biological processes. It can take inputs of up to one million DNA base-pairs and make thousands of predictions about molecular properties.