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Science and Technology Daily

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REVISED LAW TO BOOST SCIENCE POPULARIZATION

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CHINA'S SPRING FESTIVAL, A GLOBAL CELEBRATION

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Spring Festival Address

Welcome to the Year of Snake

The Year of the Loong is coming to an end, and we have witnessed a diverse number of sparkling moments in the sci-tech sector in the past year, both in China and abroad.

These include:

** History being made when samples were collected from the far side of the moon. Retrieved by the Chang'e-6 mission, the lunar soil samples opened a new gate for research on the geological features of the moon.*

** Hala Point, the world's largest neuromorphic computer system, performing AI workloads using 100 times less energy, with a speed up to 50 times faster than traditional CPU and GPU based systems.*

** Using CAR-T cell therapy to treat deadly autoimmune diseases with positive effects, transforming laboratory discoveries to practical treatment and bringing hope to patients affected by such diseases.*

As a robust media outlet committed to international sci-tech communication, we at Science and Technology Daily tell China's sci-tech innovation stories, promote international cooperation, and provide necessary information for expats to facilitate their work and life in China. We also proactively widened our reporting spectrum in the past year.

Our column Global Journal Observatory invited editors-in-chief of internationally acclaimed academic journals, and influential experts, to reflect on the development of their journals and the process they use to create groundbreaking content.

To engage with youthful readers, a series of reports was compiled under the column Innovation U&I, where young scientists from Brazil, Egypt, Pakistan, Myanmar and Denmark shared their research and life experiences in China.

Aware of the current wave of attention on AI, we introduced the column AI Ripples, discussing how AI technologies can benefit everyone so as to create a more equitable, safe and sustainable digital future.

And on the verge of Spring Festival, page 4 of this issue is dedicated to the significance of this event's inscription on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity, as well as the stories of expats who shared their unforgettable moments about China's grandest festival.

The Year of Snake is full of potential. We look forward to diving deeper into the sci-tech universe and bringing more informative, educational and insightful stories to our dedicated readers, without whose support we wouldn't have been able to make such great strides in our publishing journey.

We sincerely wish you all health, happiness and success.

The Editorial Office

Xiaonian, the "Little New Year", usually celebrates a week before the Chinese New Year. Many places in China are decorated with red lanterns and ribbons. (PHOTO: VCG)

Editor's Pick

China's Economy Grows 5% in 2024

By WANG Xiaoxia

China's GDP grew five percent year on year in 2024, reaching a record of 134.91 trillion RMB (18.77 trillion USD) and meeting the government's full-year target, according to the latest data from the National Bureau of Statistics (NBS).

Despite mounting external pressure and domestic difficulties, China successfully achieved the major targets set for 2024, NBS head Kang Yi said.

Industry-wise, the added value of the primary industry was 9.14 trillion RMB, an increase of 3.5 percent over the previous year. The added value of the secondary industry was 49.21 trillion RMB, up by 5.3 percent year on year. The added value of the tertiary industry was 76.56 trillion RMB, up by five percent year on year.

Looking into the detailed data, advanced technologies are becoming a more important economic engine. In the secondary industry, the added value of high-tech manufacturing increased by 8.9 percent over the previous year. In terms of products, the output of new energy vehicles, integrated circuits, and industrial robots increased by 38.7 percent, 22.2 percent and 14.2 percent year on year respectively.

Investment in high-tech industries increased by 8.0 percent over the previous year, of which investment in high-tech manufacturing and in the high-tech service industry increased by 7.0 percent and 10.2 percent year on year respectively.

In terms of the high-tech manufacturing industry, investment in aviation, spacecraft and equipment manufacturing, and computer and office equipment manufacturing increased by 39.5 percent and 7.1 percent year on year respectively.

In the high-tech service industry, investment in professional and technical services and the transformation of sci-tech achievements increased by 30.3 percent and 11.4 percent year on year respectively.

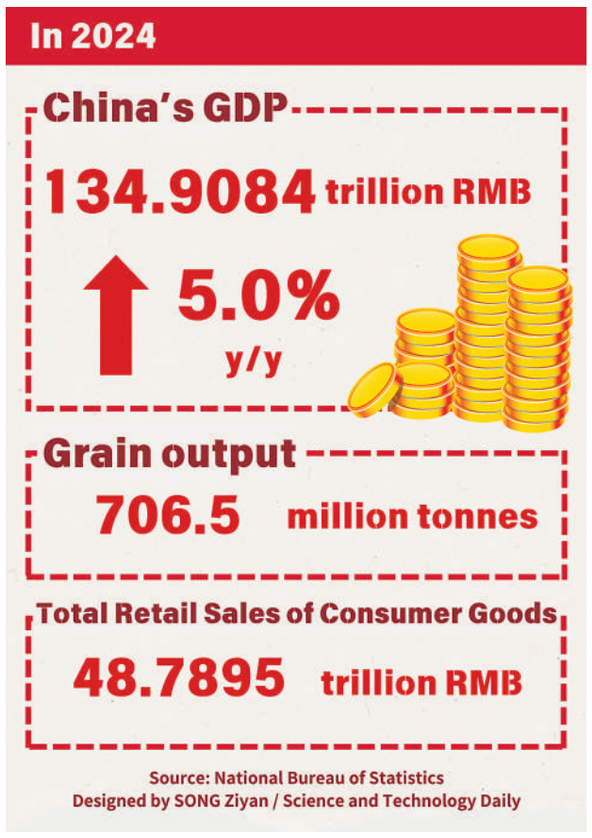
On a quarterly basis, the GDP grew by 5.3 percent year on year in the first quarter, 4.7 percent in the second quarter, 4.6 percent in the third quarter and 5.4 percent in the fourth quarter.

These achievements were "hard-won" despite various difficulties and challenges.

Domestically, consumer spending growth remained modest, some enterprises faced operational difficulties, and risks in certain sectors continued to be a concern, while globally, geopolitical conflicts and rising protectionism added to the complexities already faced by the economy.

China has unveiled a package of incremental policies in a timely manner, which helped boost confidence and economic growth, Kang said, adding that China will continue to promote sustained recovery of its economy.

New Graphic



No Network, No Problem

By LIANG Yilian & CUI Shuang

Forest walks, desert crossings, wilderness adventures — it's always great to be out in nature off the beaten track, but what happens when you find yourself without a phone signal?

In such moments, a smartphone with satellite communication capabilities could be a lifesaver. To realize this vision, China Telecom, in partnership with Huawei and other industry players, spent over two years developing the world's first smartphone with direct-to-satellite communication technology.

Cutting the external antenna

The first challenge was designing antennas and chip modules. Traditional satellite phones rely on external antennas to connect with satellites 36,000 kilometers above Earth. However, smartphone antennas lack the power to receive satellite signals, and space for satellite chips on the motherboard is limited.

Some team members proposed a detachable antenna attachment, but Huawei engineers insisted on a more seamless design. User surveys confirmed that consumers wouldn't buy a phone for an infrequently used feature if it compromised the design. The team restructured the motherboard to accommodate internal antennas and added more antennas around the device to improve signal strength.

"It's like lifting something heavy — if one person isn't strong enough, multiple people can help lift each corner," said Qin Yi'ang, a team member.

Upgrading satellite connectivity

Embedding an internal antenna was just the start. Ensuring stable satellite signal reception was a bigger challenge. "Geostationary satellites are so far away that even with enhanced antenna gain, maintaining a stable signal was tough," said Wang Deqian, a researcher at China Telecom Satellite Application Technology Research Institute.

The team explored two solutions: increasing signal power or reducing data transmission speed. After six months of testing and optimization, they settled on a transmission rate of 800 bits per second. "This rate maximizes network capacity while ensuring stable connections between smartphones and satellites," Wang said. *See page 2*

China-CELAC Forum Marks Decade of Ties

International Cooperation

By LIANG Yilian

This year marks the 10th anniversary of the Forum of China and Community of Latin American and Caribbean States (China-CELAC Forum).

Over the past decade, China and its Latin American and Caribbean (LAC) partners have strengthened ties under the framework, furthering cooperation in trade, technology, and cultural exchange.

Expanding economic and trade cooperation

Since December 2024, container ships carrying Chilean cherries have arrived at major Chinese ports, marking the start of a festive shopping season before the Chinese New Year. Over 92 percent of Chile's cherry exports now come to China, its largest market. Similarly, Latin American products like Ecuadorian bananas, Nicaraguan honey, and Honduran white shrimp have become increasingly popular in China.

Pragmatic cooperation has also driven innovation. In January 2024, the Phoenix Park Industrial Estate, Latin America's first 5G-enabled eco-industrial park, opened in Trinidad and Tobago, supporting economic diversification. In November, Chancay Port in Peru began operation, cutting shipping time to Asia, reducing logistics costs, and creating jobs, becoming a new growth engine for Peru.

Advancing technological partnerships

Meanwhile, China-Latin America technological collaboration has deepened, spanning aerospace, healthcare, agriculture, and energy. *See page 2*

WEEKLY REVIEW

Shenzhou-19 Taikonauts Conduct EVAs Again

The Shenzhou-19 crew members successfully completed their second series of extravehicular activities (EVAs) with support from mechanical arms and ground researchers on January 21, according to the China Manned Space Agency. The taikonauts installed space debris protection devices and conducted an inspection of extravehicular equipment.

EAST Sets New Record in Plasma Operation

China's "artificial sun," the Experimental Advanced Superconducting Tokamak (EAST), managed to operate at over 100 million degrees Celsius for 1,066 seconds at the Institute of Plasma Physics, Chinese Academy of Sciences, on January 20. This steady-state long-pulse high-confinement mode plasma operation set a new world record and greatly pushed forward the research and development of fusion energy.

Sharpest Image of Supermassive Black Hole Acquired

Astronomers from the University of Arizona in the U.S. and Max Planck Institute for Astronomy in Germany captured unprecedentedly clear images of an active galactic nucleus (AGN) in the infrared, using the Large Binocular Telescope Interferometer. An AGN is a supermassive black hole at the center of certain galaxies. Huge amounts of energy are released when matter falls into an AGN.

New System Captures CO_2 Directly From Air

A new system that can remove carbon dioxide at about 420 parts per million from the atmosphere was developed by researchers at the University of Cincinnati in the U.S. The capture process was repeated over 2,000 times without any decline in efficiency or degradation of the materials, and 10,000 cycles were expected to be within reach.

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