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Innovation Pathway

New 5-year-plan: Meeting People's Aspirations for Better Life

By Staff Reporters

This year marks the final year of the 14th Five-Year Plan (2021-2025) and the year for formulating the 15th Five-Year Plan (2026-2030) for national economic and social development. The proposals will be studied at the fourth plenary session of the 20th Communist Party of China (CPC) Central Committee in October.

In a recent instruction, Chinese President Xi Jinping has stressed efforts to study and absorb netizens' opinions in formulating the country's 15th Five-Year Plan, following an online campaign to seek netizens' opinions on the plan.

Xi called on Party committees and governments at all levels to learn more about people's lives, hear their views and gather their ideas extensively to meet their aspirations for a better life.

To meet this goal, a series of landmark achievements have been made during the 14th Five-Year Plan period, including establishing a resilient economy and taking significant steps in green transition and opening up.

According to the National Development and Reform Commission, China's economic increment is projected to exceed 35 trillion RMB (4.89 trillion USD) in the five-year period, contributing about 30 percent annually to global economic growth. The economy has seen an average annual growth of 5.5 percent over the first four years of the period.

The steady economic performance has translated into tangible livelihood improvements, creating more than 12 million urban jobs each year.

Domestic demand accounted for 86.4 percent of the GDP growth on average, with final consumption contributing 56.2 percent — an 8.6 percentage point increase over the previous planning period.

Innovation played a key role in driving development. Total R&D expenditure surged nearly 50 percent, or 1.2 trillion RMB, from 2020 to 2024, and R&D intensity reached 2.68 percent, approaching the average of the member economies of the Organisation for Economic Co-operation and Development. *See page 3*



The high-grade highway from Lhasa to Nagqu in southwest China's Xizang autonomous region. (PHOTO: XINHUA)

STI Frontier

Mega Power Loop Brings Clean Energy Across Desert

By WANG Xiaoxia

After 15 long years of effort, toiling high above the shimmering heat of the Taklamakan Desert, tens of thousands of powerline workers have finally completed the 4,197-km-long 750 kV power transmission loop, a major infrastructure milestone along the edge of the Tarim Basin, the country's largest inland basin.

The loop is the driving force for the development of southern Xinjiang Uygur autonomous region, while also being a confidence booster for the many ethnic groups in southern Xinjiang seeking an improved lifestyle.

Overcoming challenges

Most of the construction of the loop project was carried out along the

Taklamakan Desert, the world's second-largest drifting desert, lying within the Tarim Basin, where relentless sandstorms brought a raft of challenges.

As there was no road in the desert, large construction vehicles could not operate, and faced a risk of falling into sand pits, so workers had to build roads along the entire line to transport materials, said Li Jun, a manager at State Grid Xinjiang Electric Power Co., Ltd., contractor of the project. To prevent material to build the steel power line towers from being lost or buried by the sand dunes, tall layers of color-marked sandbags were used as identifying markers.

During the construction process, which the State Grid Xinjiang Electric Power Co., Ltd., said included nine substations and nearly 10,000 steel towers, the

engineering team applied new technologies and processes according to local conditions.

For the first time in Xinjiang, the spiral anchor technique was used in the foundation construction of an extra-high voltage project. With a high degree of mechanization, few processes and high efficiency, each tower foundation was completed in three days.

The engineering team adopted new technology to install lines, which integrates an UAV and intelligent control system. The UAVs replace the manual work to erect the primary guide lines, with a remote centralized control console set up in the tension field and traction field, and monitoring device installed in the tower, to ensure control of equipment and monitoring of risks. *See page 4*

Equipment Upgrades Fueling Smart Industrial Base

Observer

By LIN Yuchen

Recent data from China's National Bureau of Statistics shows that the equipment purchase investment increased by 17.3 percent year-on-year in the first half of 2025, contributing around 86 percent of total investment growth. This surge in equipment investment, that is fueling greener, and more intelligent and digitalized industries, is being driven by a national trend of technology-driven transformation in the industrial sector.

Countrywide, enterprises are embracing intelligent equipment renewal to replace outdated and inefficient machinery. In Zhejiang, Kuaijishan Shaoxing Wine Co. invested over 10 million RMB to introduce 84 advanced membrane filter

presses, doubling production efficiency and saving three million RMB annually.

Similar investments have been seen in Chongqing, Jiangsu, and Guangdong, where automated systems and high-end tools have driven sharp increases in output and quality.

China is also turning traditional workshops into smart factories. At Millison Technology in Hubei, digitalized production lines powered by AGVs, robotic arms, and real-time monitoring have slashed production time to just 100 seconds per engine block.

Across the nation, 80 percent of manufacturers now have digitalization plans, with over 40 percent adopting it as a core strategy. In Tianjin and Anhui, companies investing vast amounts of money in automation report not only efficiency gains, but also improvements in product quality and cost control.

Equally significant is the green shift

sweeping energy-intensive sectors. Baogang Group, for example, has invested nearly 10 billion RMB in 124 ultra-low-emission upgrade projects, cutting sulfur dioxide emissions by nearly 57 percent. Nationwide, over 170 steel enterprises — accounting for 70 percent of China's crude steel capacity — have completed green transformations. Similar shifts are underway in cement and ceramics sectors, with cleaner energy use, waste heat recovery, and AI-assisted environmental controls becoming standard.

The equipment renewal is not just about upgrading machines — it is about reshaping the nation's overall industrial foundation. With an expected market size exceeding five trillion RMB annually, this new wave of equipment renewal is becoming a vital engine for high-quality growth, industrial modernization, and the emergence of new quality productive forces.

China, ASEAN Initiatives Popularize Science

International Cooperation

By Staff Reporters

Robots throwing balls and AI used to solve logistics and transportation problems, were some of the entries battling it out for top honours at the 22nd Guangxi Adolescent AI and Robotics Competition and the Cross-Regional Invitational Tournament for Teenagers from ASEAN Countries, recently held in Guigang, south China's Guangxi Zhuang autonomous region.

This competition saw the participation of approximately 1,600 domestic contestants as well as around 200 from Indonesia, Vietnam, Malaysia and Thailand. Four teachers and students from Brunei were also present as observers to the event.

"The wider participation from ASEAN countries is a vivid reflection of Guangxi's efforts to promote scientific and technological exchanges with ASEAN countries in recent years," said Li Ning, vice chairman of the Guangxi Association for Science and Technology.

With its geographical advantages and opportunities brought about by the Belt and Road Initiative, Guangxi has become an important window for exchange and cooperation between China and ASEAN, and is committed to building a scientific popularization community for ASEAN countries.

In 2019, the China Association for Science and Technology approved the establishment of the China-ASEAN Science Popularization International Exchange Center by the Guangxi Association for Science and Technology.

This center, officially inaugurated at the Guangxi Science and Technology Museum, integrates resources from various sectors such as science popularization associations, universities, enterprises, and research institutes, and continuously builds a high-end international science popularization exchange platform. *See page 2*

WEEKLY REVIEW

Gene Editing for Large-Scale DNA Manipulations Developed

Researchers from the Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, have developed a new genome editing technology that enables scarless DNA manipulations of thousands, even millions, of bases in plants and human cells. The technology greatly enlarges the scope of genome editing applications in molecular breeding, therapeutic development, and synthetic biology.

New Mechanism for Plants to Resist Pests Found

Researchers from the Anhui Agricultural University have discovered and analyzed a new mechanism for plant insect resistance through protein modification and degradation. When plants are attacked by insects, the novel cap-binding protein undergoes glutathione and ubiquitination modifications, and the proteasome, responsible for protein degradation, takes action to degrade the protein, giving the plant its insect resistance function.

Genetic Changes Key to Human Evolution

A group of international researchers have discovered that two changes in the genes of modern humans' brain half a million years ago likely to have reshaped human behavior and led to their successful evolution. These changes affect the stability and genetic expression of an enzyme called adenylosuccinate lyase, which is involved in the biosynthesis of purine, particularly in the brain.

Altered Stem Cells Create Cancer-fighting Cells

By modifying a patient's blood-forming stem cells, scientists at the University of California, Los Angeles enabled the continuous production of cancer-fighting T cells. This clinical trial has for the first time validated in humans a novel therapeutic strategy: using stem cells as an "internal factory" to continuously generate tumor-targeting immune cells.

New Graphic

China's High-end Manufacturing Advances Steadily

First half of 2025

Sales revenue increase

8.9%
y/y

Equipment manufacturing industry

11.9%
y/y

High-tech manufacturing industry

Source: State Taxation Administration
Designed by SONG Ziyun / Science and Technology Daily

WECHAT ACCOUNT

E-PAPER

