

China's Sci-tech Leap During 14th FYP Period

By Staff Reporters

The 14th Five-Year Plan (FYP) (2021-2025) elevated innovation to an unprecedented level of importance. Among the targets for development proposed in the plan, the three major indicators of "innovation-driven development" have all been achieved ahead of schedule.

China's R&D expenditure has been steadily increasing with an annual growth of more than seven percent from 2021 to 2024, which accounted for a higher share of GDP than during the 13th FYP period (2016-2020). The number of high-value invention patents per 10,000 people has increased from 7.5 to 14. By the end of 2025, the added value of core digital economy industries is expected to exceed 10 percent of GDP.

Chinese President Xi Jinping has underscored the importance of sci-tech modernization and innovation in pursuing Chinese modernization and high-quality development.

The science community has lived up to its mission during the 14th FYP period, risen to challenges, and made milestone leaps in sci-tech innovation for the new era.

Key breakthroughs made

The 14th FYP lays down the objective of developing "an action plan for building prosperity through science and technology, with a focus on strengthening institutional support on a national level and leveraging the advantages of our socialist market economy."

It also encourages innovation and breakthroughs in core technologies in key areas, aiming to improve the efficiency of the entire innovation chain.



The photo shows a photovoltaic base located in Dalad Banner in the city of Ordos, north China's Inner Mongolia autonomous region. (PHOTO: XINHUA)

In space exploration, China has recorded a series of landmark achievements: The Tiangong space station has been completed and put into operation; the first-ever unmanned sample return from the far side of Moon by the Chang'e-6 mission; continued progress in deep space exploration with the Tianwen-1 Mars mission; and the launch of the Tianwen-2 asteroid sample-return mission.

In deep Earth, the deepest vertical well in Asia, "Shenditake 1," has been drilled, reaching a depth of 10,910 meters. The world's deepest underground laboratory, the China Jinping Underground Laboratory, is exploring the mysteries of the universe with 2,400 m of

rock overburden.

The "China speed" of high-quality development continues to gather momentum. The "Jinghua" shield machine, with a 16.07-meter super-large diameter, has set a new record of 542 meters of monthly excavation. A 100-megawatt-hour sodium-ion energy storage project began operation, representing the first large-scale commercial use of its type globally.

Surge in new quality productive forces

Xi has also stressed developing new quality productive forces amid the country's accelerated efforts to foster new growth drivers and promote high-quality development.

New quality productive forces mean advanced productivity that is freed from traditional economic growth mode and productivity development paths, with innovation playing the leading role. They feature high-tech, high efficiency and high quality, and the concept is in line with China's new development philosophy of green growth.

During the 14th FYP period, China has launched a specific plan for sci-tech innovation, increasing support across 20 key areas including investment in basic research and the cultivation of innovative enterprises.

With policy support, sci-tech innovation integrated with industrial innovation is generating breakthroughs in information technology, new energy and other fields, leading the vigorous development of emerging industries.

China has built 4.6 million 5G base stations, maintaining a leading position globally in terms of technology and user numbers. Over 35,000 basic-level intelligent factories and more than 6,000 green factories have been built.

New records have been set for the efficiency of crystalline silicon PV cells, with the newly installed capacity of PV and wind power exceeding 100 gigawatts for four consecutive years. The cumulative sales of new energy vehicles across the country have exceeded 40 million units, and the production and sales volume have remained the top in the world for 10 consecutive years.

As for cutting-edge technologies such as AI and brain-computer interfaces, China is accelerating their application.

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COMMTR: A Beacon of Global Transportation Research

By QU Xiaobo & WANG Shuaian

Communications in Transportation Research (COMMTR) has rapidly emerged as a leading international platform in the field of transportation research, since its inception in 2021. The peer-reviewed journal is committed to publishing high-impact, authoritative studies and serves as a vital bridge connecting Chinese expertise with global innovation.

Building an interdisciplinary ecosystem

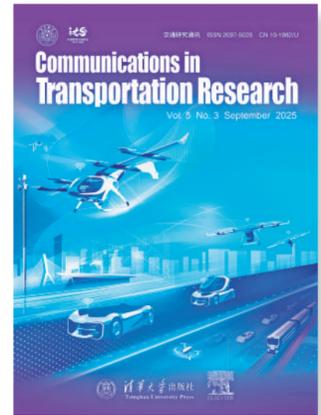
Modern transportation systems represent a complex integration of civil engineering, information science, energy, environmental studies and social behavior. Recognizing this, *COMMTR* has embedded interdisciplinary collaboration at its core from the outset. The journal's editorial board comprises 55 members from over 20 countries, with overseas scholars accounting for 69 percent — including 13 academicians. This international diversity has attracted high-quality submissions worldwide, with international contributions reaching 70 percent.

A representative example of a modern transportation system is the Demand-Responsive Transit Vehicle Scheduling (DRTVS) method developed by Tsinghua University and CRR Electric Vehicle Co., Ltd. This research innovatively integrates spatiotemporal network algorithms, user behavior analysis, and transportation demand modeling. By analyzing multi-source data such as historical order records and population density distribution, the approach enables dynamic optimization of an on-demand vehicle dispatch system. The implementation of this system in Zhuzhou, Hunan, boosted daily revenues to several times those of conventional buses, demonstrating the significant practical value of interdisciplinary research. Following its publication in *COMMTR*, the research has been widely cited, spurring international collaboration across Asia, Europe and North America.

Promoting data sharing and open research

Upholding open science as a core principle, *COMMTR* launched the ETS-Data platform in 2022 in collaboration with Tsinghua University Press. This initiative provides the global research community with open data resources, hosting nearly 100 datasets from 24 countries by 2025. The platform's impact was recognized when it was included in the Data Citation Index in 2023. To ensure transparency and reproducibility, *COMMTR* mandates that contributing authors share their research code and key data. This policy not only allows reviewers to verify research findings but has also significantly increased the reuse rate of research materials compared with similar journals.

Furthermore, *COMMTR* supports



Cover of *Communications in Transportation Research*, Vol. 5, Issue 3, 2025. (COURTESY PHOTO)

an international reviewer database and an intelligent pre-screening system, reducing the average time from research submission to first decision to just seven days. To foster inclusive academic exchange, *COMMTR* co-organized an online symposium in 2022, attracting 7,700 scholars from 18 countries. In addition, its 2024 "micro-lecture" series reached a cumulative audience of over 100,000 viewers.

Future trends and leading transformation

To anticipate emerging research and industry directions, *COMMTR* employs a "Trend Radar" mechanism. As part of this mechanism, the platform proactively organized a special issue on "Advanced Low-Altitude Transportation Systems" in early 2023 and a virtual issue on "Transportation Electrification and AI Integration" in early 2024. This trend tracking is driven by a global team of early-career researchers from institutions such as Tsinghua University and the University of Wisconsin-Madison, who conduct quarterly scans of frontier research, with insights validated by senior scholars.

COMMTR is now indexed in both SCIE and SSCI. In June 2025, it received a Journal Impact Factor of 14.5, ranking first among 61 journals in the JCR Transportation category.

In 2026, *COMMTR* plans to transition to independent operation on the SciOpen platform — an international digital publishing platform launched by Tsinghua University Press. The journal aims to evolve into a collaborative infrastructure for global transportation research, contributing Chinese expertise to addressing shared challenges facing humanity.

The authors are the co-editors-in-chief of *COMMTR*: Qu Xiaobo, a professor at Tsinghua University, and Wang Shuaian, a professor at The Hong Kong Polytechnic University.

New Course for Service-oriented Manufacturing

Policy Express

By LIN Yuchen

China has implemented a four-year plan to deepen innovation and development of service-oriented manufacturing. This marks a major policy step in shifting manufacturing toward deeper integration with services, digital intelligence and value-added growth.

The plan defines service-oriented manufacturing as a model that orients around customer demand, uses digital and intelligent technologies as support, embeds service elements deeply across the entire lifecycle of manufactured products, and extends industry chains. It reshapes value chains, builds new ecosystems, and achieves a fusion of manufacturing and service as a new industrial form.

The plan stresses the new development paradigm of innovation, coordina-

tion, and green, open and shared development. It focuses on building a modern industrial system with advanced manufacturing at its core and deep integration of information and industrialization.

It emphasizes reform momentum, tech-industrial innovation, application-driven transformation, integration development, and strengthening service industries that support production. Other focus areas are activation of enterprise vitality, and optimization of industrial ecology.

Concrete targets have been set with a 2028 deadline: The role of servitized manufacturing in high-quality manufacturing should be significantly enhanced; 20 standards should be built; 50 leading brands cultivated; 100 innovation development highlands constructed; typical model applications widely spread; and the ecosystem continuously upgraded. Multi-level, broad-domain, deep-integration of manufacturing and service should be further completed, thus laying a solid foundation for a

world-class level manufacturing system with Chinese characteristics.

The plan defines seven major tasks:

- Strengthening common-generic technology breakthroughs and model innovation;
- Growing key production-oriented service industries;
- Promoting mode diffusion of servitized manufacturing across sectors and field;
- Building a standard system;
- Stimulating business vitality;
- Building development highlands;
- Consolidating the foundational infra-service base.

These tasks are accompanied by three special actions: shared manufacturing cultivation, brand enhancement, and fusion application scenario demonstration.

"Shared manufacturing" action means building shared manufacturing platforms and factories, aggregating equipment, tools, production lines and test facilities, enabling online order-

matching, multi-plant collaboration and intelligent scheduling.

"Brand elevation" targets cultivating service-manufacturing top enterprises and brand images.

The "fusion application scenario" supports production demand, consumption demand and national strategic demand scenarios for service-manufacturing.

In today's era of accelerating information-technology iteration, industrial-service fusion has become a key direction for manufacturing development. Service-oriented manufacturing enhances product value-added, boosts enterprise competitiveness, and strengthens supply-chain resilience.

It also promotes the fusion of advanced manufacturing and modern services, advances the construction of a modern industry system and fosters new quality productive forces.



CPC Plenum Adopts Recommendations for China's 15th Five-Year Plan

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It was stated that we should achieve greater self-reliance and strength in science and technology and steer the development of new quality productive forces. We must seize the historic opportunity presented by the new round of technological revolution and industrial transformation to boost China's strength in education, science and technology, and human resources in a well-coordinated manner. We should enhance the overall performance of China's innovation system, raise our innovation capacity across the board, strive to take a leading position in scientific and technological development, and keep fostering new quality productive forces. We should promote advances in original innovation and breakthroughs in core technologies

in key fields, facilitate full integration between technological and industrial innovation, pursue integrated development of education, science and technology, and talent, and advance the Digital China Initiative.

It was noted that we should build a robust domestic market and work faster to foster a new pattern of development.

It was stated that we should move faster to develop a high-standard socialist market economy and boost the momentum for high-quality development.

It was also stated that we should promote high-standard opening up and create new horizons for mutually beneficial cooperation.

It was noted that we should accelerate agricultural and rural modernization and take solid steps to advance all-

around rural revitalization.

It was stated that we should refine China's regional economic layout and promote coordinated regional development.

It was noted that we should inspire the cultural creativity of our entire nation and foster a thriving socialist culture.

It was stated that we should work harder to ensure and improve public wellbeing and promote common prosperity for all.

It was pointed out that we should accelerate the green transition in all areas of economic and social development in an effort to build a Beautiful China.

It was noted that we should modernize China's national security system and capacity and advance the Peaceful

China Initiative to a higher level.

It was also noted that we should work to achieve the centenary goals of the People's Liberation Army on schedule and modernize national defense and the armed forces.

At the session, a call was issued to the whole Party, the entire military, and Chinese people of all ethnic groups to rally more closely around the Party Central Committee with Comrade Xi Jinping at its core, work hard together toward the goal of basically realizing socialist modernization, and continue to break new ground in building a great country and advancing national rejuvenation on all fronts through Chinese modernization.

Source: XINHUA

Journal Review

COMMTR has charted a distinctive path, becoming a successful exemplar of how China's transportation journals can rise to world-class status. The journal has established robust mechanisms for data sharing and international collaboration, providing a high-level platform for global academic exchange in transportation.

At the intersection of academia, industry and research, *COMMTR* demonstrates remarkable foresight by focusing on cutting-edge topics such as intelligent transportation and green mobility. It serves as a bridge connecting research innovation with industrial application, accelerating the transformation of scientific advances into

productive forces — embodying the mission and responsibility of a high-caliber academic journal.

It is hoped that *COMMTR* will continue to uphold this vision, take on a leadership role in driving disciplinary innovation, provide strategic support for building a strong transportation nation, and contribute Chinese wisdom to global science and technology governance, becoming a key force for the sustainable development of transportation science and technology.

—Wang Yunpeng, academican of the Chinese Academy of Engineering, and president of Beihang University