Policy Pushes for Equitable Eco Protection

Policy Express

By LIANG Yilian & LIU Yin

An ambitious plan to establish a more comprehensive, clearly defined, diversified and efficient system for horizontal ecological compensation has been set in motion, after the recent release of a policy document from China's Ministry of Finance, Ministry of Ecology and Environment, and National Development and Reform Commission.

The document, titled "*Opinions on Further Improving the Horizontal Ecological Protection Compensation Mechanism*," outlines a goal to strengthen collaboration between ecological service providers and beneficiaries. It emphasizes that those who protect and contribute to the environment should be fairly rewarded.

According to the document, by 2027, a unified horizontal ecological protection compensation mechanism for the main streams of the Yangtze and Yellow Rivers will be established. At the regional level, provinces will be expected to implement mechanisms covering major rivers within their jurisdictions. Additionally, steady progress will be made in compensation frameworks related to large-scale inter-basin water diversion projects. Pilot programs will also explore horizontal compensation models for various ecological elements, including forests, grasslands, air, wetlands, deserts, oceans, waterways and arable land.

A herd of cattle forage in Chifeng city, Inner Mongolia autonomous region on June 13, 2025. (PHOTO: XINHUA)

By 2035, the compensation system is expected to expand to cover the main streams and key tributaries of major river basins, achieving a broader scope, deeper integration, and more innovative methods. This is expected to significantly improve ecological quality and contribute to the national vision of building a "Beautiful China."

To guide implementation, the document prioritizes seven key tasks: establishing a centrally coordinated mechanism for major river basins; supporting local governments in deepening compensation frameworks; expanding coverage areas; diversifying ecological compensation elements; refining compensation standards; innovating compensation methods; and reinforcing platform support.

Notably, for critical river basins such as the Yangtze and Yellow Rivers, the central government will lead the development of a unified compensation mechanism. Under this model, each province's contributions or compensations will be calculated based on water quality data at national monitoring points where rivers enter or exit each jurisdiction, as well as year-on-year water quality changes. This system aims to facilitate fair interprovincial economic transfers while reflecting the value orientation of ecological products.

At the local level, provinces will be encouraged to negotiate interprovincial compensation agreements based on ecological service value and beneficiary clarity. Regions that have already established such mechanisms are urged to further define responsibilities and strengthen targeted protection efforts.

New Financial Opening-up Steps Unveiled

By ZHONG Jianli

A set of new initiatives aimed at boosting China's financial opening-up and facilitating cross-border investment and financing were released during the 2025 Lujiazui Forum recently held in Shanghai.

Pan Gongsheng, governor of the People's Bank of China (PBOC) speaks at the 2025 Lujiazui Forum in Shanghai on June 18. (PHOTO: VCG)

Among the key measures is the establishment of an international operation center for the digital RMB to advance its international use and develop related financial market services, as announced by Pan Gongsheng, governor of the People's Bank of China (PBOC).

Shanghai's Lingang New Area will serve as a pilot zone for comprehensive offshore trade finance reforms, adopting innovative business rules to support the city's offshore trade development.

Moreover, China plans to develop free-trade offshore bonds to broaden financing options for outbound enterprises.

The reform package also includes upgrading the free trade account functions to facilitate efficient capital flows between quality enterprises and overseas funds, enhancing cross-border trade and investment liberalization, and further opening Shanghai's financial market.

Additionally, Shanghai will pioneer structural monetary policy tools such as blockchain-based letter of credit refinancing in the shipping trade sector, expanded carbon emissions reduction support tools, and risk-sharing tools for innovative technology bond issuance by private equity firms.

Complementing these initiatives, Zhu Hexin, deputy governor of the PBOC and head of the State Administration of Foreign Exchange (SAFE), disclosed multiple new policies aimed at facilitating cross-border investment and financing.

SAFE will increase support for foreign trade enterprises by encouraging banks to include emerging trade entities within trade facilitation frameworks, fine-tuning foreign exchange settlement policies for comprehensive foreign trade service providers, and facilitating centralized management of overseas funds for trusted contracting firms.

Policies will also be implemented to support research institutes in utilizing foreign capital, ease cross-border financing for technology firms, and trim the negative list for the use of capital account income.

A nationwide rollout of integrated funding pools for multinational corporations (MNCs) in both domestic and foreign currencies is also planned to facilitate the utilization of funds within MNC groups.

Furthermore, in free trade zones, SAFE will implement a package of foreign exchange innovation policies, including expanding the Qualified Foreign Limited Partner pilot program and optimizing new international trade settlement mechanisms.

Robots Score Big in Beijing

Vibrant China

By LI Zhongming, SUN Mingyuan, HE Peicong & ZHONG Jianli

In Beijing's E-Town district, a bustling innovation hub, a remarkable scene unfolds on a soccer field. As the referee blows the whistle, starting the game, a player confidently makes a free-kick, sending the ball soaring inside the far post in a perfect curve. What makes the feat even more thrilling is that it is achieved by a robot player and the match is between two robot teams, developed by Chinese techies right here in Beijing.

"Just last year, robots could kick a ball only about 15 centimeters high. Now, they can execute a complete, graceful freekick," said Cheng Hao, founder and CEO of Beijing Booster Robotics, highlighting the rapid advances in robotics technology over the past few years.

In the E-Town Robot Industry Park, the "Robot World" exhibition center showcases a full spectrum of robotics innovations. Visitors witness a decade of breakthroughs with leading humanoid robots, such as the nation's first general-purpose humanoid mother platform "Tiangong," Unitree's G1, Ti5Robot's T170A and UBTECH's Walker S — all emblematic of Beijing's thriving robotics sector.

With enhanced capabilities and versatility, these robots are now operating across factories, pharmacies, warehouses and sports, steadily integrating into everyday life and industrial production.

"Robots completing a half marathon helped us gain wider recognition," said Jiang Zheyuan, founder and chairman of Noetix Robotics, whose robot N2 came second. "By June this year, the orders for our N2 robot exceeded 1,000 units."

Jiang credits this partly to strong support by the authorities of Beijing's Changping district, where the company established a production base earlier this year. Backed by the district's comprehensive industrial policies and incubation systems, the company scaled to mass production in just three months.

To fuel this innovation momentum, Beijing has launched a series of targeted support measures for robotics enterprises. Liang Hongjun, deputy director of the Intelligent Manufacturing and Equipment Industry Division at the Beijing Municipal Bureau of Economy and Information Technology, said the city has set up a 10-billion-RMB robotics industry development fund. Collaborating with major domestic investors, Beijing has formed an integrated investment ecosystem spanning early-stage research, pilot manufacturing, and applied scenarios.

Liang said since 2023, the city has promoted 199 innovative products in 134 usage scenarios. They cover 11 sectors including industrial manufacturing, commercial services, education, healthcare, agriculture and landscaping.

Notably, humanoid robots in Beijing are already deployed in bulk for special hazardous tasks, logistics sorting and unmanned retail. The expanding global stage is opening wider doors for robots, and Beijing stands at the forefront of this exciting revolution.

A humanoid robot is displayed at the "Robot World" exhibition center in E-Town district, Beijing. (PHOTO: LI Zhongming / Science and Technology Daily)

Global Journal Observatory

Aggregate: Platform for Scientific Research Beyond Molecules

By Ben Zhong Tang

Ben Zhong Tang. (COURTESY PHOTO)

Ancient Chinese philosopher Laozi once said, "From Tao there comes one. From one there comes two. From two there comes three. From three there comes the universe." Marxist philosophy emphasizes that quantitative changes lead to qualitative ones. These philosophies reveal that there can be significant differences between the parts and the whole. Similarly, in the realm of materials science, molecules and their aggregates can have distinct structures and properties.

Calling for paradigm shift from molecular science to aggregate science

For a long time, scientific research was influenced by the reductionism conjecture, assuming that every macrosystem (e.g., a substance), no matter how complex it is, is reducible to simpler microelements (e.g., molecules). However, this approach is difficult, if not impossible, to explain the emergent structures and properties of the systems that arise from the aggregation of their individual components.

In contrast, aggregate science adopts a holistic approach, treating the aggregate as an interactive whole. The new knowledge generated from the study of aggregate science will drive scientific progress and technological development to a new height.

Bridging the microscience-macroscience gap

Aggregate is dedicated to cutting-edge fundamental and applied research in aggregate science. In 2020, led by our team and in collaboration with the South China University of Technology, the AIE Institute, and the renowned international publisher Wiley, *Aggregate* was launched to encourage interdisciplinary collaboration and to bridge the gap between micro- and macro-sciences.

Aggregation is a ubiquitous phenomenon across disciplines. While the journal primarily focuses on chemistry and materials science, it also covers life sciences, physics, engineering, energy, and so on. *Aggregate* emphasizes aggregation processes, organization and interactions at the aggregate level, and emergent properties of the aggregate system. This makes *Aggregate* unique and attractive, serving as an academic platform for sharing new discoveries and breakthroughs in aggregate science.

Gaining recognition in the academic community

Aggregate has established a rigorous peer-review procedure to ensure a fair and efficient evaluation and publication process. To meet the needs of multidisciplinary manuscript evaluation, we organized an editorial team of 10 associate editors — outstanding young scientists from China, the U.S., U.K., Canada and Australia — with expertise in chemistry, materials science, biology and physics. The editorial office monitors the review process, achieving an average first-round review time of five days in 2024 and an average submission-to-acceptance time shorter than two months.

Aggregate has so far received submissions from renowned scientists in 45 countries and regions, including Nobel laureates in chemistry. The numbers of submitted manuscripts and published articles, and citations have shown healthy growth. It has been indexed in major databases such as Web of Science (ESCI), CAS, EI and ProQuest. With a latest impact factor of 13.7 and a CiteScore of 18.3, *Aggregate* has consistently ranked in the Q1 category for "Chemistry, Multidisciplinary," "Chemistry, Physical," and "Materials Science, Multidisciplinary" in the Journal Citation Reports from 2021 to 2024.

Nurturing young scientific talents

To build an influential research journal with academic impact, we must not only focus on the present but also look to the future. We have thus devoted much effort to promoting outstanding research accomplishments by young scientists.

We have expanded our young editorial board, organized special issues for emerging young scientists, and launched the "Gathering Talents" interview series for the rising stars. Through these initiatives, we aim to empower young researchers, foster early collaborations, and position *Aggregate* as a platform where emerging scientists take pride in publishing.

This year marks *Aggregate*'s fifth anniversary. Over the past five years, the journal has remained steadfast in its commitment to publishing high-quality research achievements. Looking ahead, we invite aspiring young researchers to join us in strengthening *Aggregate* and the field of aggregate science.

The author is the editor-in-chief of Aggregate and dean of the School of Science and Engineering of the Chinese University of Hong Kong, Shenzhen.

Journal Review

Aggregate is a distinctive and dynamic emerging journal dedicated to the cutting-edge interdisciplinary field of aggregate research. Since its inception, the journal has adhered to a multidisciplinary and comprehensive orientation, rigorous academic standards, and an efficient peer-review process, quickly garnering widespread attention from researchers in chemistry, materials science, biology and related fields.

I am delighted to witness the healthy growth of *Aggregate* over its first five years. The innovative research it has published and the special issues it has organized fully demonstrate the journal's professionalism and leadership. Notably, from the very beginning, *Aggregate* has placed a strong emphasis on nurturing young scholars. Through initiatives such as forming a youth editorial board, launching special issues for rising stars, organizing postgraduate student forums, establishing the "Aggregate Science Rising Star Award," and creating the "Gathering Talents" column for young scientists, the journal has supported the growth and development of early-career researchers.

With the collective efforts of the editorial team and the scholars in the field, I am confident that *Aggregate* will become a benchmark in advancing aggregate science.

—— *Fang Yu, academician of the Chinese Academy of Sciences, and professor at the Shaanxi Normal University.*