

Guideline to Boost Regional Environment Management



Policy

By ZHONG Jianli

In the latest move to protect the ecological environment, China recently unveiled a guideline on strengthening region-specific environmental management.

Jointly issued by the general offices of the Communist Party of China Central Committee and the State Council, the guideline has two targets: by 2025, a

region-specific ecological environmental management system will be basically established; by 2035, the system will be fully established and function smoothly across the country.

The region-specific environmental management system aims to implement differentiated and precise management based on regional ecological functions and enhance the environmental quality. It calls for strict adherence to ecological protection red lines and resource utilization ceilings, while scientifically guiding various developmental and conservation activities.

Three zoning areas have been classified based on air, water, ecology, soil and the ocean: priority protection units, key protection units and general protection units.

To facilitate the implementation of important national strategies, differentiated zoning and management will be promoted in crucial river and basin areas, such as the Yangtze River Economic Belt and the Yellow River Basin.

To advance green and low-carbon development, the guideline proposes that in the key protection units, green, low-carbon transformation and upgrad-

ing of traditional industries such as petrochemicals, steel, and building materials should be strengthened; in priority protection units, models and paths should be explored for developing ecological products, and the capacity of carbon sinks should be enhanced.

For key regions such as the ecological barrier areas of the Qinghai-Xizang Plateau, the northern sand control belt, and coastal areas, specific units will be identified to address prominent environmental issues.

The guideline emphasizes the importance of enhancing information sharing in region-specific environmental management. This includes promoting information sharing and coordination at the national, provincial and other levels.

Innovative technologies such as next-generation information technology and AI will be integrated with environmental management to improve online government services and intelligent decision-making capabilities, thereby enhancing service efficiency.

The document also specifies the need to strengthen supervision and assessment. Relevant departments should use regulatory platforms and technological means such as big data, satellite remote sensing, and unmanned aerial vehicles to conduct dynamic monitoring, on-site inspections of environmental issues and discovery of hidden risks, and enforce the law upon their discovery.



The Qutang Gorge on the Yangtze River in Fengjie county, Chongqing municipality. (PHOTO: XINHUA)

Light: Science & Applications

Thriving with International Scientists

By CAO Jianlin



Cao Jianlin. (COURTESY PHOTO)

The editorial philosophy of *Light: Science & Applications* (*Light*), launched in March 2012, is explicitly defined: creating a top-tier comprehensive journal across the full spectrum of optics research, including basic, applied and engineering results in all areas of optics and photonics. The goal is to enlighten and contribute to the well-being of global optics researchers, engineers, students and the industry.

The journal is co-hosted by the Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences (CAS) and Chinese Optical Society, and co-published by Springer Nature. Its impact has been among that of the world's top three optics journals for the past nine consecutive years.

Light has evolved into a "Light" brand for scientific communication and collaboration, as well as industry integration. It has incubated the Light Doctoral League, China's Top 10 Social Impact Events in Optics, Rising Stars of Light, and many other academic platforms.

The secret to the success of *Light* is the mutual trust between our editorial staff and high-level researchers.

For example, in 2014, Prof. Cui Tiejun from Southeast University in Nanjing, Jiangsu province, first proposed the idea of digitally coding metamaterials. This new representation of metamaterials — still in its preliminary stage — was not widely accepted by the community at the beginning, but *Light* was attracted to its possibility of connecting the physical-digital-artificial worlds, and published it through an expedited green track. *Light* continued to publicize this field by highlighting its follow-up breakthroughs, which helped the field attract wide attention and recognition worldwide.

This paper later became the major representative work for Prof. Cui to win the second prize of China's National Natural Science Award, be elected a member of CAS, and conduct a Basic Science Center project of the National Natural Science Foundation of China. The paper has been among the most cited optics papers in the past decade, has been cited more than 2,500 times in Google Scholar so far, and shows enormous potential for real applications.

Another example is a research paper by Prof. Aydogan Ozcan, Chancellor's Professor of the University of California, Los Angeles. In 2017, we invited him to publish his research paper "Phase recovery and holographic image reconstruction using deep learning in neural networks" in *Light*. This work has been cited more than 900 times in less than six years, making it one of Ozcan's highest-cited papers. In 2022, he was awarded the "Joseph Fraunhofer Award/Robert M. Burley Prize" for his contributions to computational optical imaging and other

optical engineering fields.

The trust between *Light* and optics scientists originates from our intimate communication, ranging from technical discussions about manuscripts to co-planning special issues and events, from discussions about the future layout of the optics discipline to conversations about the history and heritage of optics, meticulously attending to every aspect.

We work and live together with scientists, sharing a common language, and facing joys and challenges together. Over the past decade, our editorial staff spared no effort to travel around the world to reach out. The wide distribution of the *Light* editorial board members and *Light* global offices in renowned universities and research institutions is compelling evidence of our commitment.

Building up close communication and mutual trust with scientists is a perennial task of scientific, technical and medical (STM) journals. *Light* has luckily made a good debut.

With its achievements, *Light* has gained recognition in its home China. It was selected as a leading journal by the "National Outstanding STM Journals", and received the "National Publishing Award" (the highest honor in China's publishing industry), "National Top 100 Journals" and other honors.

Today, *Light* is shouldering the expectations of hundreds of thousands of readers, which in turn enables our branded events to receive widespread acclaim. With such visibility, *Light* has been selected as the golden partner of UNESCO's International Year of Light and International Day of Light. Meanwhile, the editorial office of *Light* receives numerous visits from universities, institutions and industries.

Looking back at 2023, our editorial staff visited 53 cities across 12 countries to promote *Light* and its brand. Looking into the next decade, we aspire to remain in tune with the thoughts of scientists and extend our influence even further.

The author is a former vice minister of science and technology of China, and the founding editor-in-chief and honorary editor-in-chief of Light: Science & Applications.

The mission of *Light: Science & Applications* is exactly as the name implies — to shine a light on the path ahead. Throughout its journey, *Light* has upheld its unique academic appreciation function, striving to lead scientific research rather than be a follower. Its goal is to establish a brand-new communication platform for researchers engaged in the integration of science, technology and engineering.

The key to scientific progress lies in breaking away from the past. In 2014, researchers first proposed a new approach of using digital encoding to represent metamaterials. It was a divergence from the inherent concept and faced resistance during peer review. However, the *Light* team recognized the transformative impact of

this achievement on the information field and industrial layout, and were the first to publish the research. Subsequently, *Light* made significant contributions to nurturing this frontier area and gained widespread recognition.

Light has always adhered to scientific values and explored the essence of scientific research. It dares to publish innovative achievements that challenge the orthodox ideas in terms of basic principles, fundamental ideas, and theoretical frameworks. This has broadened the horizon for researchers in optics worldwide.

— Shi Bei

Researcher at the National Science Library of the Chinese Academy of Sciences.

Global Conference to Co-draw 6G Blueprint for Future

By Staff Reporters

The Global 6G Conference 2024, themed "Better Together, Better Future," sponsored by FuTURE Mobile Communication Forum and Purple Mountain Laboratories, will be held in Nanjing, Jiangsu province, from April 16 to 18. The conference will gather global insights into 6G technology and business.

With the International Telecommunication Union (ITU) recently releasing the Framework and Overall Objectives of the Future Development of IMT for 2030 and Beyond, 6G R&D has entered the next stage of development. Aiming to align with the ITU's roadmap, the conference will discuss the future blueprint of 6G technologies and business

and promote global consensus before the launch of 6G standards.

As an international event covering a wide range of 6G fields and comprehensive content, the Global 6G Conference is not only a grand event for cutting-edge sci-tech communication, but also a bridge to enhancing international cooperation.

This year's conference agenda encompasses eight key frontiers: the integration of communications and AI, wireless integrated sensing and communication, space-air-ground integrated communication, 6G network architecture and key technology, technology trust and security, high-frequency wireless transmission and devices, potential business and applications, and innovation in

new energy and materials.

The advisory committee and chairs of the conference boast a lineup of renowned scholars, including academicians from the Chinese Academy of Sciences, Chinese Academy of Engineering, members of the U.S. National Academy of Engineering, fellows of the Royal Academy of Engineering, members of the German National Academy of Science and Engineering, and fellows of the Academy of Engineering, Singapore.

The conference will be co-organized by prominent international institutions, including 6G Flagship (Finland), the Fifth Generation Mobile Communications Promotion Forum (Japan), Future Communications Programme (Singapore), China Communications Standards

Association, and China Institute of Communications.

Scientists and engineers from China, the U.S., UK, Germany, Sweden, Japan, South Korea, Singapore, the UAE, India and other countries and regions will speak in-person or online, sharing their insights into the trajectory of 6G technology development.

Last year, the conference issued a document, "Global Promotion Initiative for 6G International Cooperation and Development," making two key recommendations for further global cooperation.

One suggestion is to establish a communication platform for unifying research endeavors. The other is to explore new paradigms for global open cooperation.

Sci-tech Innovation Energizes Mining City in Hubei

Case Study

By Staff Reporters

Daye, a typical resource-based city in central China's Hubei province, is employing sci-tech innovation to accelerate the high-quality development of its economy.

To break away from the dependence on mineral resources, Daye is adjusting its industrial structure, utilizing advanced sci-tech to develop emerging sustainable

industries such as machinery manufacturing, new materials and life health.

Centering on the aluminum profile industry, Daye is building, strengthening and supplementing an industrial cluster which includes a number of leading aluminum profile enterprises, and a group of supporting small and medium-sized enterprises.

The city is also developing high-tech "little giant" enterprises to upgrade its traditional industries, such as the mining engineering equipment.

Different categories and models of

energy-saving and environmentally-friendly mining products have been developed. The vision for the future is to switch from traditional fuel-powered equipment to pure electric versions, and control underground operations from the office through intelligent unmanned remote control products.

"Through technological transformation and upgrading, as well as building industrial clusters and chains, we have driven the traditional industries of steel, cement and others to high-end and intelligent development, while also promot-

ing the growth of industrial clusters in areas such as healthcare, electronic information, and energy conservation and environmental protection," said Dong Yang, director of the Science and Technology Bureau of Daye.

Having carved out a new path for the transformation of its resource-dependent economy through technological progress, Daye recently released its 2024 action plan for innovation-driven development. The plan will continue to boost technological innovation and cultivate new drivers of growth.

Commercial Spaceflight Embraces Rapid Growth

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In addition, GalaxySpace built and launched a plate-shaped communications satellite called Lingxi 03, which is the country's first satellite equipped with a flexible solar array, while the Zhuque-2 rocket, developed by LandSpace, became the world's first methane-fueled rocket to reach Earth's orbit.

To meet subsequent needs of the market, China is developing 4-meter and 5-meter class reusable rockets, which are planned to make their maiden

flights in 2025 and 2026 respectively, said the China Aerospace Science and Technology Corporation recently.

Strategic emerging industry

With the strong support of technological innovation, commercial aerospace continues with a process of industrial upgrade as it accelerates to be a new quality productive force.

For example, Changguang Satellite has continuously optimized the satellite design and manufacturing technology to reduce the weight of Jilin-1 satellite

from 400 kg level to 20 kg level. While ensuring satellite performance, the development cost has also been reduced to five percent of the original, laying the foundation for the rapid construction of commercial satellites constellation.

The Lijian-1 and Lijian-2 carrier rockets adopt a new development and manufacture mode. The modular design can largely reduce costs and enables the rapid delivery of rockets. The flexible solar array equipped on satellite Lingxi 03 also laid a solid foundation

for the development of related industries in the future.

For commercial spaceflight, a global industry with strategic importance, international cooperation and competition are inevitable. China has signed more than 150 space cooperation documents with over 50 countries and international organizations. Meanwhile, Chinese companies have carried out cooperation projects on the China Space Station platform and under the framework of the Belt and Road Initiative, in the fields of space scientific exploration and satellite data services.