

# AI Must Be Understood While Serving

## Dialogue

By LONG Yun & BI Weizi

In a recent interview with *Science and Technology Daily*, Professor Lena Halounová, president of the International Society for Photogrammetry and Remote Sensing (ISPRS), was adamant that from the outset, AI, while powerful, must be handled with care.

### The need for AI governance and public understanding

Halounová described AI as a complex field that brings together enormous amounts of software, mathematics, and data, too big for a single person to process. However, she cautioned that data selection is critical, because choosing the wrong data will inevitably lead to poor results. "AI is a fantastic tool," she said, "but our personal role stays at the highest level." She gave an example of a student who chose good data but failed to realize that its spatial resolution was too rough for his specific purposes, leading to inaccurate results.

This emphasis on responsibility led to the broader question of AI governance. Halounová acknowledged that while AI can bring enormous benefits, it also risks harming humanity if not properly governed. In this regard, she noted that China has been actively participating in global AI governance and building international consensus. She sees China as an "incredibly wide market of knowledge, technology, and human resources." In Halounová's opinion, China's highest priority should be to go global, offer cooperation, and invite international scientists and students to work together, something China is already doing, as evidenced by the many tech-related conferences that attract people from around the world.

Looking ahead to China's 15th Five-Year Plan period (2026-2030), Halounová admitted it was difficult to predict



Professor Lena Halounová. (PHOTO: ISPRS)

how far China's science and technology would develop, given the rapid trajectory it is on. However, she recommended that not only China but all countries should create a "white public area" to explain what AI means and how the public should understand the limits of new technological results. Without such understanding, people cannot know what kind of data or methodology produces a given result, and therefore cannot grasp its limitations.

From governance, the conversation shifted seamlessly to international cooperation. When asked which areas of science and technology hold the greatest potential for collaboration, Halounová gave a surprising answer: psychology.

She explained that understanding each other and finding a common language, not English specifically, but a shared way of communicating, is fundamental. "If you just follow films (about a country), you have no idea how the people live there, what their habits are, and what they eat for breakfast," she said. Without that understanding, behavior

can be misinterpreted, and cooperation suffers. Halounová stressed that personal meetings and people-to-people exchanges are the basic part of future cooperation, because when people rely on each other, much more can be achieved together than separately.

### A long-standing partnership with China

Turning to her organization's long-standing relationship with China, Halounová confirmed that ISPRS has been working with Chinese experts since the 1980s, and the collaboration is solid. She noted that in every four-year period, there have always been Chinese experts in their groups. Currently, the secretary general of ISPRS comes from China, along with many working group officers and the Technical Commission president.

She also highlighted that China was the first country to provide ISPRS members with free satellite data, available for download from a public website. When asked about new innovations in remote sensing and GIS to support digital earth

and sustainable development, she acknowledged that it is difficult to pinpoint what is "new" because remote sensing data has undergone extensive development. Today, the wide variety of data types with different spatial and spectral resolutions allows scientists to focus on specific topics with higher accuracy.

She also emphasized the need for strategic planning: different applications require different data collection frequencies. Such strategies should be planned and budgeted accordingly.

### Encouraging the next generation

Throughout the interview, Halounová repeatedly circled back to the importance of nurturing the next generation. When asked for a message to China's youth, she described remote sensing as a fantastic opportunity, because it deals with data about the Earth's surface and what lies underground.

Halounová encouraged young people to choose how they want to relate to this field, whether by collecting data, processing it, or using it for further applications. "[Ask yourself] what do you want more?" she asked.

Having visited both the Chinese Academy of Surveying and Mapping in Beijing and Wuhan University, she concluded that China is "at the top of the world as far as remote sensing data processing, data collection, and data storage," adding that "you always have to [have people] exchanges, otherwise you will stay isolated." Exchange is beneficial in every sphere because everyone knows something different and holds different opinions. Through discussion, people can move forward together, which is how she sees the process.

Halounová believes that sincerity, whether in AI governance, international cooperation, or mentoring young scientists, is what makes all the difference. For a field as technical as remote sensing, her message was remarkably simple: technology serves people, but only people can truly understand people.

## Letter to the Editor

# Renewable Energy: Our Brightest Future

By Dr. Md Altab Hossin

In an era defined by climate instability and volatile fossil fuel markets, the transition to renewable energy has transcended environmental idealism to become a fundamental pillar of global security.

Investing in clean power is no longer just about saving the planet — it is about building a safer, more stable, and healthier world by reducing geopolitical conflicts over resources, stabilizing energy prices, and cutting the deadly pollution from fossil fuels.

The case for renewables is now overwhelmingly economic. Solar and wind have become the cheapest sources of electricity in almost every country, making energy affordability accessible to developed and developing nations alike.

In 2024, global renewables accounted for over 90 percent of new power additions, with clean energy investments reaching a record-breaking 2.1 trillion USD. This shift is not just about cost but also about health; by replacing fossil fuels, renewable energy drastically reduces air pollution, which the World Health Organization notes affects 99 percent of the global population. A cleaner grid means fewer respiratory illnesses and a more resilient public health system.

China plays a critical role in this scale and transition. Once viewed primarily as a coal-dependent giant, China has emerged as the world's undisputed powerhouse in renewable energy deployment. However, China's contribution extends far beyond sheer scale; its technological, industrial ecosystem, and resource advantages have fundamentally altered the global economics of clean energy.

First, China's major advantage lies in manufacturing dominance and cost reduction. By capitalizing massive economies of scale and vertical integration, Chinese manufacturers have driven down the cost of solar panels by over 80 percent over the past decade.

Today, China produces more than 80 percent of the world's solar photovoltaic (PV) modules and over 60 percent of global wind turbine components. This manufacturing capacity has made renewable energy the cheapest form of new power generation across the globe, a critical factor for energy affordability in developing nations.

Second, China leads the world in ultra-high voltage (UHV) transmission technology. While the world struggles with grid congestion, China has deployed the world's only extensive commercial UHV network. This technology allows electricity generated from remote solar farms (e.g., Gobi Desert or massive hydropower stations) in western China to be transmitted over thousands of kilometers to coastal megacities with minimal energy loss (typically

under five percent). This solves the intermittency problem of renewables by enabling the aggregation of power across vast geographical areas, ensuring grid stability at a scale previously thought impossible.

Third, China holds significant advantages in the clean energy supply chain, particularly in energy storage and electric vehicles (EVs). China accounts for over 70 percent of the world's production capacity for lithium-ion batteries and controls a substantial portion of the global supply chain for critical rare earth elements. This vertical integration allows for the rapid deployment of grid-scale battery storage, which is essential for balancing the variability of wind and solar power.

The data from the China Electricity Council (CEC) reveals the staggering pace of this transition. By the end of 2025, China's total installed power generation capacity reached 3.89 million megawatts. Remarkably, non-fossil fuel sources accounted for 61.7 percent of this capacity, with wind and solar alone making up 47.3 percent. The growth is so rapid that 2026 is projected to be a historic turning point: solar power capacity is expected to surpass coal for the first time.

Crucially, this surge in renewables is meeting real-world demand. In 2025, China's electricity consumption exceeded 10 trillion kilowatt-hours. Despite this massive increase in power use, new energy sources (wind, solar, and biomass) covered an astounding 97.1 percent of the growth in electricity consumption, effectively making clean energy the primary driver of new supply. This structural shift, powered by Chinese technology, is reducing carbon emissions while driving the economic expansion.

Ultimately, the renewable energy transition is a prerequisite for a safe, reliable, and green world. By reducing dependence on imported fossil fuels, nations insulate themselves from geopolitical volatility and price spikes. By investing in domestic solar, wind, and grid infrastructure, they create millions of jobs — three times more per dollar invested than fossil fuels.

As global investment in renewables continues to climb, the path forward is clear. The data and technological advances from China confirm that a high-growth, industrialized economy can indeed be powered by clean energy. This offers a replicable model: a sustainable world is not built on finite resources extracted from unstable regions, but on the infinite, sustainable power of the sun, wind, and advanced technology available.

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# Bamboo: Symbol of Chinese Values

## Traditional Eastern Wisdom

By BI Weizi

China is the first country in the world to cultivate bamboo. Its hollow yet sturdy, highly lignified above ground stems make it ideal for crafting everyday items, tools, and even architectural structures.

As early as 7,000 years ago, during the Hemudu culture period, ancient Chinese began cultivating wild bamboo. By the Liangzhu Culture period 5,000 years ago, archaeological excavations in China have yielded many woven bamboo artifacts. Around 3,000 years ago, during the Western Zhou Dynasty, the artificial cultivation of bamboo officially began — *The Book of Songs (Shijing)*

contains records describing extensive bamboo groves.

During the Spring and Autumn and Warring States periods, bamboo was used for stationery, agricultural implements, and architecture. Through the Southern Silk Road, bamboo products, such as Qiong bamboo walking sticks, were introduced to India, Central Asia, and Afghanistan.

During the Wei, Jin, and Northern and Southern Dynasties period — following the publication of *The Bamboo Compendium (Zhupu)*, China's first specialized treatise on bamboo — cultivation techniques gradually became systematized. These techniques included selecting loose, fertile, and well-drained soil; choosing robust bamboo seedlings for transplanting with their root balls intact, spaced at appropriate intervals; applying "root-setting" water immediately

after planting to maintain soil moisture while avoiding waterlogging; and performing fertilization, weeding, and branch pruning during the growing season.

Furthermore, measures were implemented to prevent root rot caused by water accumulation during the rainy season and to pack soil around the base of the plants in winter to protect against frost damage.

During the Tang Dynasty, bamboo was widely planted in gardens, agricultural fields, and Buddhist monasteries, resulting in a rich diversity of varieties. In the Song Dynasty, the cultivation of bamboo shoots for food, and bamboo stalks for timber was differentiated into distinct categories; the bamboo industry reached a highly advanced state, and bamboo was introduced on a large scale to Korea and Japan.

# New Neural Disease Treatment Rewires the Brain

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They developed a generative model to fill in missing signals, similar to how large language models predict missing words.

"We tested it on ourselves," said Ren Jianxun, researcher at Changping Laboratory. "We erased parts of our own real brain signals and had the AI generate replacements. When the AI-generated signals matched the real ones exactly, we knew we were on the right track."

With the rapid development of AI technology, the team were able to accelerate the model reconstruction. They developed a fast cortical reconstruction al-

gorithm in 2022, followed by a fast cortical registration algorithm in 2024.

By 2025, their efforts had reduced data processing time from over 48 hours to less than 30 minutes, making rapid, individualized brain mapping a reality.

### Breaking the implant barrier

The final step was to provide treatment to patients. The most effective existing treatment, deep brain stimulation (DBS), requires invasive surgery to implant electrodes. It's costly and has a less than one percent adoption rate in China.

The team therefore opted for a non-invasive approach, using a specific

frequency of electromagnetic fields to "re-energize" damaged neural circuits. However, they faced a massive engineering hurdle: the stimulator must track a patient's head movements with pinpoint accuracy. The imported infrared navigation system was too slow and inefficient.

This meant developing imaging technology such as ultrasound and visible light systems using a domestic camera. But initially, the image processing lagged, causing the system to freeze.

The solution came from noticing repetitive patterns in the image data. "We rewrote the algorithm to batch-process

those patterns," explained Ren. The lag vanished. After solving a cascade of other issues — from system calibration to motion tracking — the world's first non-invasive precision brain stimulation system was born.

The device is now being used in dozens of Chinese hospitals, primarily for Parkinson's disease. The total cost of treatment is less than one-tenth that of invasive DBS surgery.

"This breakthrough, achieved by a large team at a national strategic platform, responds to the call for speed in biopharmaceutical innovation," said Xie Xiaoliang, an academician of the Chinese Academy of Sciences and director of the Changping Laboratory. "Most importantly, it brings new hope to patients worldwide."



An aerial view of a solar-powered carport on Mianchuan Island, Jiujiang city, Jiangxi province. (PHOTO: XINHUA)