

INSIGHTS

Facilitator of Global Nuclear Energy Evolution

Voice of the World

Edited by TANG Zhexiao

The 68th General Conference of the International Atomic Energy Agency (IAEA) was held in Vienna, Austria, where officials and representatives from IAEA member states discussed nuclear safety activities and the IAEA's technical cooperation program.

More than 2,900 representatives from over 170 member states and multiple international organizations around the world attended the conference in late September, fully affirming China's contribution to global nuclear energy governance and development.

Contributing to global nuclear energy development

This year marks the 40th anniversary of China's membership in the IAEA. Forty years on, China has continued to support the agency's work with concrete actions, established all-round cooperation with the IAEA in the fields of nuclear energy development and utilization, as well as nuclear safety and security, safeguards and non-proliferation.

According to the Blue Book of China Nuclear Energy Development Report (2024), the country's nuclear power generation last year reached about 433 billion kWh, equivalent to reducing the combustion of standard coal by more than 130 million tons.

In 2023, 33 nuclear power units in China scored full marks on the World Association of Nuclear Operator's comprehensive index.

IAEA Director General Rafael Mariano Grossi said China has made enormous



The Tianwan Nuclear Power Plant, located in China's Jiangsu province and is expected to commence in 2027. (PHOTO: VCG)

strides in terms of its own nuclear power program in these 40 years. "China is one of the IAEA's most important partners and a global leader in nuclear energy," he added.

Meanwhile, in an effort to overcome its growing energy crisis, Pakistan is seeking to increase the contribution of nuclear energy and other renewable energy sources to its energy mix. China's assistance in Pakistan's civil nuclear energy program began in earnest in the late 1970s, as reported by *South Asian Voices*.

Anwar Ali, chairman of the Pakistan Atomic Energy Commission, said that the nuclear energy cooperation between Pakistan and China reflects the long-standing friendship between the two countries. Pakistan and China have

jointly built six nuclear power units, which contribute 27 percent of Pakistan's national electricity generation.

"China has played a significant role in combating Pakistan's energy crisis, which is crucial for the state's socio-economic development," said Stratheia, a global policy platform.

Promoting opening-up international cooperation

As of June 30, 2024, the Chinese mainland had 56 operable nuclear power units, with an installed capacity of approximately 58.22 GW, according to China Nuclear Energy Association.

In fact, China is the world leader in nuclear technology at the moment, according to Jacopo Buongiorno, professor of nuclear science and engineering at the Massachusetts Institute of

Technology, on CNBC.

At a meeting during the IAEA's annual general conference, China announced that it would open 12 nuclear research facilities to promote the building of high-level global technological cooperation platforms in collaboration with other countries.

The facilities, including the China Advanced Research Reactor, the new-generation tokamak device Huanliu-3, and the Beishan Underground Research Laboratory, span areas such as basic nuclear research, isotope production, nuclear environment simulation, equipment testing, and radioactive waste treatment and disposal.

The IAEA's Deputy Director General Mikhail Chudakov, welcomed China's decision to open up more of its nuclear research and development facilities, adding that the move will further strengthen the agency's technical capacity to support its member states.

For now, China has established eight IAEA collaboration centers, and has established a nuclear science and technology research and development cooperation mechanism with countries and international organizations such as France, Russia and the European Union.

It has also cooperated with developing countries such as Thailand, Indonesia, Pakistan, Algeria, Ghana and Nigeria to build a series of nuclear scientific research facilities and joint laboratories in local areas.

Moreover, the nuclear energy and technology for the benefit of the Global South, proposed by China, demonstrated the member states' joint commitment to support the development of the Global South.

Comment

Nobel Prize in the AI Era?

By GONG Qian

AI stole the show at the 2024 Nobel Prizes. AI pioneers John Hopfield and Geoffrey Hinton won the prize in physics, using physics tools to develop methods that are the foundation of today's powerful machine learning. David Baker, Demis Hassabis and John Jumper jointly won the prize in chemistry. The latter two from Google DeepMind have developed an AI model to solve a 50-year-old problem: predicting proteins' complex structures.

The prizes awarded to these scientists working in the field of AI has ignited heated discussions on social media platforms. Some are asking, will future science challenges be handed over directly to AI to solve? Do we still need human scientists?

This year's prizes highlight a new trend: AI technology is driving a paradigm shift in scientific research. AI has become a crucial tool for addressing long-standing and complex problems in fields such as physics, chemistry, biology, and medicine.

It is establishing a paradigm with which, theoretically, any scientific problem can be solved. The operation starts with practical issues, transforming them into data that AI can process, running it through deep learning networks, and ultimately producing results. Many scientists think that AI will push the boundaries of traditional frameworks, leading to more profound and far-reaching innovations.

AI and humans are complementary, not each other's substitutes. AI can be powerful in scientific research, assisting with data handling, experimental simulations, and result predictions. In 2020, Hassabis and Jumper presented an AI model called AlphaFold2. With its help, they have been able to predict the structure of virtually all the 200 million proteins that researchers have identified. Since their breakthrough, AlphaFold2 has been used by more than two million people from 190 countries, the Nobel committee at the Royal Swedish Academy of Sciences said.

However, the intuition, creativity, and decision-making abilities of human scientists remain irreplaceable.



A screen shows the laureates of the 2024 Nobel Prize in Physics during the announcement at the Royal Swedish Academy of Sciences in Stockholm, Sweden on October 8, 2024. (PHOTO: VCG)

No Winners in EU Tariff Hikes on Chinese EVs

Opinion

By TANG Zhexiao

The European Union voted on October 4 to impose tariffs on China-made electric vehicles (EVs), announcing the move has received support from its member states.

The new tariffs, as high as 45 percent, will come into effect on October 31 and last for at least five years. While 10 member states supported the measure, 12 abstained, and another five voted against the tariffs, revealing divisions and hesitancy on this issue within EU member states.

Outcries against the tariff have come from many quarters. With a third of their sales in China last year, German

carmakers opposed the tariffs.

IG Metall, the largest German labor union and employee representatives of the nation's major carmakers, said in a statement: "We say unequivocally: tariffs are the wrong approach because they will not improve the competitiveness of the European automotive industry."

"Tariffs on Chinese EVs would be wrong ... We have to speak plainly and negotiate with China — but trade wars only have losers," said German Finance Minister Christian Lindner on social media platform X.

Jörn Fleck, senior director of the Europe Center, said that these EV tariffs and any potential Chinese retaliation will be much more impactful in Europe than in the U.S. — and not just to the European auto industry but also to other key industries and supply chains across the

continent, according to the American think tank Atlantic Council.

An EU duty on EVs from China is a mistake and will do more harm than good, said Bruegel, a Brussels-based economic think tank. "They will harm EU citizens more than help them, and they will eventually backfire on the European automotive industry," said Bruegel.

European countries will emerge as the losers if the EU imposes additional tariffs on Chinese EVs, warned Ferdinand Dudenhöffer, director of the Center for Automotive Research, adding that it would be detrimental to European automakers.

China is a leader in EVs, autonomous driving, intelligent networking and other fields, Dudenhöffer said, adding that only cooperation between Europe and China can benefit both sides.

Advanced technology, components that enhance user experience, and the strength of exterior and interior styling are the reasons. Chinese brands are gaining appeal on the global market. A study by the World Economic Forum suggested that respondents are far less confident in the West when it comes to how quickly and aggressively EV challenges are being addressed. "In the U.S., for instance, 43 percent of EV intenders say there are not enough places to plug a car in (that number is lower by nearly one-third in China, where millions of chargers are in service)," it said.

Currently, the EU Commission continues to call on the two sides to explore an alternative solution. As the new tariffs are expected to go into effect on October 31, the EU still has time to have a change of heart.

China-ASEAN FTA Upgrade to Turbocharge Regional Trade

Edited by GONG Qian

A significant move to facilitate enhanced economic, trade, and investment cooperation between China and ASEAN was announced on October 10, when respective leaders shared the substantial conclusion of the Version 3.0 China-ASEAN Free Trade Area (FTA) upgrade negotiations on the sidelines of the 27th China-ASEAN Summit.

While addressing the meeting, Chinese Premier Li Qiang said the important outcome provides institutional safeguards for China and ASEAN to build super-sized markets together. Li said this outcome would drive East Asian economic integration, while demonstrating their unequivocal support for multilateralism and free trade.

Considering the global economy is still seeing a sluggish recovery, the upgrade will bring more stability and certainty to the regional economic integra-

tion and global development.

Speaking at the summit, Singapore Prime Minister Lawrence Wong said the upgrade is an important move, especially in this time of growing protectionism in the world. "It will send a very clear and important message to everyone on the importance of free trade and win-win market cooperation," he said.

The role of the China-ASEAN FTA in boosting economic prosperity and strengthening economic resilience in the region is indisputable. Since the 2010 inception of the agreement that covers a market of two billion people, ASEAN's trade with China has more than tripled, leaping from 235.5 billion USD to 696.7 billion USD in 2023. China has remained ASEAN's largest trading partner for the past 15 years and becomes ASEAN's third largest source of foreign direct investment.

The 3.0 upgrade will enhance co-

operation covering nine areas including digital and green economies, supply chain connectivity, standards and technical regulations, competition and consumer protection, and micro, small, and medium enterprises (MSMEs), according to China's Ministry of Commerce (MOFCOM). Wong said that China can contribute to ASEAN's transition to cleaner and low-carbon fuels, and help strengthen energy resilience in the region.

Indonesia Vice President Ma'ruf Amin called for a stronger cooperation between ASEAN and China. Amin said market access expansion, innovation, and adaptation are pivotal to prosperity, adding that the substantially completed upgrade to the trade pact would strengthen both sides' partnership in green and digital economy, supply chain, as well as support for MSMEs.

"Once implemented, the agreement will create a more business-friendly and

future-oriented environment for companies to tap into opportunities between ASEAN and China," according to a press release by Singapore's Ministry of Trade and Industry.

Wong said that the close bond between ASEAN and China goes back for centuries. "It is a relationship where countries big or small are treated as equals, and work together on the basis of mutual trust, mutual respect and mutual benefit," he said.

Now, with the Regional Comprehensive Economic Partnership (RCEP) and China-ASEAN FTA 3.0 in place, ASEAN Secretary-General Kao Kim Hourn said he is "confident that trade and investment between ASEAN, China, and the rest of the RCEP partners will continue to flourish for the benefit of the people in this wider region," during a speech at the RCEP High-Level Dialogue on Economic and Trade Cooperation in September.

Algorithm Innovation Making Society Intelligent

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Applicability improves

In September, a research team from Peking University published a paper on large-scale multi-agent systems in the *Nature Machine Intelligence* magazine. This was the first time that Chinese researchers achieved efficient decentralized collaborative decision-making in large-scale multi-agent systems, which is conducive to improving the scalability and applicability of AI decision algorithms.

Decentralized multi-agent reinforcement learning has become a research hotspot in international academic circles. It seeks to explore an algorithm that can extend the decision-making ability to complex real systems containing a large number of agents under the

condition of limited data and resources. Humans possess creative and interdisciplinary thinking, which allows them to pose new questions and introduce fresh perspectives into their research, accelerating the pace of scientific discovery.

Many decisions in research require complex judgments, including dealing with uncertainty, risk assessment, and interpreting experimental outcomes, which typically rely on human intuition and experience. When setting research agendas and determining directions, humans also consider ethics and morality, areas that AI struggles to understand or address.

However, as AI technology matures and is widely applied across industries, we indeed face a series of challenges, such as balancing technological innovation with privacy protection, ensuring transparency and fairness in algorithmic decision-making, and guaranteeing that technological development serves the welfare of all.

Other issues including the infringement of intellectual property, leakage of personal information, and fabrication of false experimental data must also be addressed.

Hinton, widely regarded as the "godfather of AI," and Hopfield have also expressed their concerns. "We also have to worry about a number of possible bad consequences. Particularly the threat of these things getting out of control," Hinton said via phone at the Nobel press conference. Hopfield said there was something unnerving about the unknown potential and limits of AI.

In response, we must further refine and strengthen existing ethical regulations for research by developing policies that promote the healthy development of AI-assisted research and mitigating the risks associated with AI.

The Nobel Prizes awarded for achievements in AI not only recognize technical breakthroughs but also celebrate human ingenuity. We humans should have an open and inclusive attitude towards new technologies, take responsibility for guiding their healthy development, and ensure that technological advancements contribute to social equity and justice.

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