

# Industrial Data Foundation to Boost AI-powered Manufacturing

## Policy Express

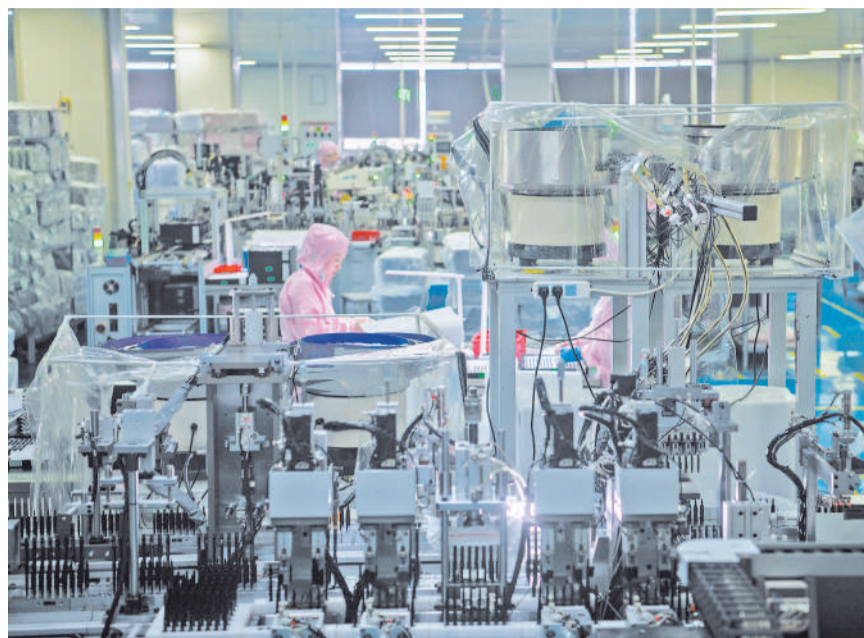
By TANG Zhexiao

The Ministry of Industry and Information Technology (MIIT) recently launched an initiative on building industrial data foundation to pilot the construction of datasets of high-quality industries empowered by AI.

With the main focus on promoting the development and utilization of industrial data, key industries of the manufacturing sector will be selected, and category-specific policies will be introduced based on leading enterprises of key industries, platform institutions, advanced manufacturing clusters and city-level pilot programs for the digital transformation of small and medium-sized enterprises.

By the end of 2026, China will establish a number of industrial data consortia, build trusted interconnection platforms for key industries, gather a wealth of industrial data resources, tackle a batch of key data technology challenges, develop a set of industrial data standards, and create several high-quality, standardized and tradable industrial datasets.

Support will be provided for the ap-



Workers operate intelligent equipment in a digital workshop in Ningbo, Zhejiang province. (PHOTO: XINHUA)

plication of industrial large models, industrial intelligent agents and other applications. Effective approaches, innovative mechanisms and experience models for the efficient collection and processing, trusted circulation and aggregation, and in-depth integrated application of industrial data will be summarized and formed to empower industries to im-

prove quality, reduce costs and increase efficiency.

Key tasks of the action include establishing a trusted interconnection platform for industrial data, an industrial data resource repository, a repository for key data technology breakthroughs, an industrial data standards library, a repository of high-quality industry datasets

and a portfolio of data application scenarios.

Efforts will be made to integrate data infrastructure capabilities, including the Industrial Internet, big data centers, computing power centers, data governance platforms, data engineering capability platforms and industry-specific trusted data spaces to build a trusted data interconnection platform for key industries. Industrial data production and training bases will also be established to provide data collection in simulation environments, specialized data annotation and data synthesis for extreme scenarios.

Focusing on key stages such as R&D and design, pilot testing and validation, production and manufacturing, operational management and industrial collaboration, the industry-specific large model applications and industrial AI agent development will be promoted to empower the industry in improving quality, reducing costs and enhancing efficiency.

MIIT also called for financial support through local incentives, the development of an industrial data open-source section based on national AI open-source communities, and closer collaboration between universities and enterprises.



## Case Study

# Guangdong Building Robot Industry Cluster

Edited by TANG Zhexiao

In Guangdong province in south China, human-robot collaboration is reshaping a new production landscape.

Flexible welding production lines for new energy vehicle manufacturing, 100 percent robot-operated, have ushered in a production cycle of only 74 seconds. Embodied intelligent high-end welding industrial robots have increased single-shift production capacity in the auto parts sector by 50 percent. The multi-connected robotic automatic assembly production line for air conditioners has achieved a one-time product qualification rate of 99.3 percent.

The 2026 government work report proposes fostering the industries of the future such as future energy, quantum technology, embodied intelligence, brain-computer interfaces and 6G.

As a major robot manufacturing province, Guangdong has ranked first in China in the output of industrial robots for six consecutive years. Its robot industry leads the country in both application breadth and penetration rate.

For example, in the medical field, Shenzhen Edge Medical's independently developed single-port laparoscopic surgical robot can complete complex surgeries with only one incision, significantly reducing trauma to patients. The traditional multi-port laparoscopic surgical robots require four to six incisions.

The launch of a humanoid robot with a "distributed heterogeneous multi-machine collaborative operating system based on open-source HarmonyOS" will expand application scenarios from single functions to cross-domain collaboration.

Large-scale and multi-scenario application of robots also depends on local

policy support. Data shows that since 2018, Guangdong has launched five batches of special projects on "new generation AI" under its key field R&D plan, investing nearly 1.5 billion RMB.

Coordinating with major and key special projects such as intelligent robots, it has built a scientific R&D system covering basic research, technological R&D and innovative application at multiple levels.

In 2025, Shenzhen released an action plan for an additional special investment of 4.5 billion RMB to support the development of the AI and robot industries.

"The Guangdong-Hong Kong-Macao Greater Bay Area is the only place in the world with a complete supply chain system for robotics. The iteration speed here is 10 times that of Silicon Valley, while the cost is only one-tenth of Silicon Valley's," said Li Zexiang, founder of XbotPark, an accelerator and incubator program, dean of Shenzhen InnoX Academy, an engineering technology innovation hub, and professor at the Hong Kong University of Science and Technology.

The recommendations for Guangdong's 15th Five-Year Plan point out the need for a large-scale application demonstration initiative for new technologies, new products and new scenarios, and promoting embodied intelligence and 6G for new economic growth points.

"Next, Guangdong will focus on technological R&D and application empowerment to further promote leaping development of the robot industry," Wu Hong, deputy director of the Department of Industry and Information Technology of Guangdong, said.

# Comprehensive Use of Photovoltaic Modules Encouraged

By YAO Yian

Guidelines to encourage the comprehensive utilization of photovoltaic (PV) modules have jointly been released by six Chinese national authorities. These include Ministry of Industry and Information Technology, Ministry of Ecology and Environment, Ministry of Commerce, State Administration for Market Regulation, National Financial Regulatory Administration, and National Energy Administration.

Key tasks of the guidelines include refining relevant laws, regulations, policies and standards, boosting R&D of processing technologies, broadening application channels for related products, and strengthening support for key production factors. These will help foster organized development of China's comprehensive PV module utilization sector.

By 2027, the country will further raise green production levels of PV modules, effectively increase the proportion of recycled materials in production, and refine the evaluation criteria and inspection methods of module retirement, according to the guidelines.

In addition, breakthroughs in core

technologies including surface structure disassembly, efficient separation of PV laminates, and component extraction will be achieved. The comprehensive utilization of retired PV modules will be further scaled up in key sectors including metal smelting, equipment manufacturing and building materials production.

A series of technical standards for the green design and comprehensive utilization of PV modules will be developed, a batch of leading enterprises in the sector will be fostered, and the cumulative volume of PV modules processed through comprehensive utilization will reach 250,000 tonnes.

By 2030, the technological and equipment level for comprehensive utilization of PV modules will be further enhanced with significantly strengthened industrial innovation and development capabilities, the guidelines noted. Application scenarios and methods for comprehensive utilization products will continue to expand, creating a strong capacity for using end-of-life PV modules. This capacity will feature close coordination across the industrial chain, rational production capacity layout, and the ability

to address large-scale retirement waves.

Efforts should be made to advance the green design and manufacturing of the PV industry, improve the ease of dismantling and recycling of PV modules, and raise the proportion of recycled materials used in production, according to the guidelines. It calls for the orderly decommissioning of end-of-life PV modules, and guides relevant stakeholders to standardize the handover and delivery of waste PV modules.

The guidelines also stipulate the promotion of green and high-efficiency dismantling and utilization, encourage the development of non-destructive dismantling technologies, and support the extraction of silver materials from the metal grid lines of crystalline silicon solar cells.

Furthermore, the guidelines advocate promoting the coordinated development of the entire industrial chain for the comprehensive utilization of PV modules, and encourage PV module manufacturers, solar power station operators, and comprehensive utilization enterprises to actively extend their industrial chains.

Efforts will be made to optimize

the environment for industrial innovation and development. Management measures for comprehensive utilization of industrial resources will be accelerated to clarify the responsibilities of all parties involved in the comprehensive utilization of waste photovoltaic modules. Policy support will also be strengthened.

Qualified PV industrial parks are encouraged to develop "waste-free zones." Support will therefore be given for collaboration among PV module manufacturers, comprehensive utilization product producers, and end-users to develop exemplary green and low-carbon industrial practices within the PV sector.

Enterprises in the PV module comprehensive utilization industrial chain will be supported to strengthen cooperation with internationally advanced companies. This will involve exchanges and learning from each other in areas such as technology, talent, and management model innovation. Ultimately, it would help improve their international competitiveness.



At a nursing home in Shenzhen, intelligent robots accompany the elderly in practicing Tai Chi. (PHOTO: Luo Yunpeng / Science and Technology Daily)

# Blueprint for Unified National Power Market

By LIN Yuchen

To deepen electricity sector reform and accelerate the development of a modern energy system, China has issued a comprehensive policy document to establish a unified national power market.

The policy aims to break regional barriers, eliminate market segmentation, and strengthen nationwide coordination to enable the market-based allocation of electricity resources across the country.

Phased development targets have been set. By 2030, a unified national power market system will be basically established in which all types of power generation sources and all non-guaranteed users will directly participate in market transactions. Market-based electricity trading is expected to account for around 70 percent of total electricity consumption.

Cross-provincial and intra-provin-

cial trading mechanisms are to be integrated, and core rules and technical standards unified. By 2035, the national power market system will be completed, with more mature market functions.

A key priority is optimizing electricity resource allocation on a nationwide scale. Cross-provincial, cross-regional and intra-provincial trading will come under a unified framework.

Interoperability among trading platforms will be promoted and a national power trading center established when conditions permit.

Cross-regional trading mechanisms will be improved by facilitating market-based transactions between the operating areas of the State Grid and China Southern Power Grid, expanding transmission capacity, and increasing the share of clean energy delivered across regions.

Strengthening market functions is another core component. Full operation

of spot markets will be accelerated, enhancing the role of real-time pricing in reflecting supply and demand conditions, and ensuring better coordination between spot and medium- to long-term markets.

Medium- and long-term contracts will continue to play a stabilizing role in guaranteeing electricity supply, with improved contract adjustment and transfer mechanisms.

In addition, ancillary services markets will be developed to support system flexibility. Efforts will be made to refine green electricity and green certificate markets to better reflect environmental value, and explore establishing capacity markets to provide reliable support for the development of flexible power generation.

The policy emphasizes equal and broad participation by all types of market entities. Renewable energy generators, distributed energy resources, virtual power plants and adjustable loads

will be encouraged to enter the market under unified rules, while retail markets will be further standardized to improve price transmission and protect end-user interests.

To underpin the unified market, there will be harmonized trading rules, pricing mechanisms driven primarily by supply and demand, unified technical standards, and a nationwide credit system for market participants. Stronger regulatory coordination will curb improper local intervention and prevent anti-competitive behavior.

By promoting institutional integration, technological standardization and policy coordination, China aims to create a unified, open, competitive and secure power market system that supports energy security, economic development, and the country's green and low-carbon transition.



# High-Altitude Sentinel in Global Climate Fight

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The use of a "herding under panels" model that allows sheep to graze under the shadow, with grass growing even better and local livelihoods improved.

From Waliguan's solitary peak, China has expanded its efforts to a national network of over 120 greenhouse gas monitoring stations. The resulting data shows tangible progress: in 2024, the growth rate of China's carbon emissions slowed significantly, increasing by only 0.6 percent compared to the global average of 0.8 percent.

A curve that connects to the world

The "Waliguan Curve" mirrors data from the Mauna Loa Observatory in Hawaii. Together, these two stations — one continental, one oceanic — provide peer-reviewed proof of rising global greenhouse gases and serve as a key scientific pillar for organizations like the UN's Intergovernmental Panel on Cli-

mate Change (IPCC).

At the 2025 UN Climate Change Conference (COP30), China made its meteorological AI models and global climate datasets available to the world, offering practical tools for climate adaptation.

At the 62nd Plenary Session of IPCC hosted by China in February 2025, Chinese scientists actively provided scientific support for future climate change projections and contributed to global climate science governance.

Ultimately, the "Waliguan Curve" is more than just a line on a graph. It is a powerful symbol of scientific dedication and international cooperation. It charts our planet's vital signs and fuels the global hope that one day, through continued effort and innovation, the curve will finally begin to bend towards a stable and sustainable future for our shared Earth.