FROM "DIGITAL FOUNDATIONS" TO "AI EVERYWHERE": CHINA'S AI TAKES OFF

KONG Tuan Yuen & LI Yao

China's Artificial Intelligence (AI) sector has been elevated from a digital economy enabler to a central driver of national modernisation. The 15th Five-Year Plan Recommendations formalise this shift with the "AI+ Initiative", first outlined in the 2024 Government Work Report, to embed AI across all sectors and defining it as a general-purpose technology driving "new quality productive forces".

The ecosystem is layered and increasingly integrated: upstream foundation is anchored by large-scale infrastructure (including China Computing Net), domestic chip design and data centres, reinforced by the "East Data, West Computing" strategy; midstream efforts centre on intensive R&D, advanced training frameworks and Machine Learning Operations (MLOps); downstream, China's strongest tier, sees widespread deployment in robotics, autonomous driving and smart manufacturing, with regional specialisation, such as the Yangtze River Delta's semiconductor localisation, adding depth.

Implementation will be steered domestically by the AI+ Guideline, while internationally, China aims to shape norms through its Global AI Governance Action Plan, with a particular focus on the Global South. Despite this momentum, structural constraints especially on advanced chips and fabrication tools, as well as emerging overcapacity risks persist. China's long-term success will hinge on balancing rapid expansion with stronger governance and a more resilient technological foundation.

(Click on the link to read the above in Chinese, French and Spanish)

Date of Publication: 8 January 2026

Chinese:
从"数字经济基础设施"到"人工智能无处不在"：中国的 AI 崛起

中国的人工智能（AI）领域已从数字经济的支撑者提升为国家现代化的核心驱动力。《十五五规划建议》通过引入 2024 年《政府工作报告》中首次提出的"人工智能+（AI+）倡议"正式确立了这一转变，将 AI 嵌入各行各业，并将其定义为驱动"新质生产力"的通用技术。

中国的 AI 生态体系分层清晰且日益一体化：上游基础由大规模算力基础设施（包括"中国算力网"）、国产芯片设计与数据中心构成，并由"东数西算"战略强化；中游聚焦于密集研发、先进训练框架和机器学习运维（MLOps）；下游作为中国优势最为显著的环节，已在机器人、自动驾驶与智能制造等领域广泛落地，同时区域化分工加深，例如长三角的半导体本地化为生态增添厚度。

中国国内层面的落实将由"AI+行动计划"统筹推进。在国际层面，中国希望通过"全球人工智能治理行动计划"塑造规则与规范，尤其关注"全球南方"。尽管势头强劲，中国的 AI 发展仍面临先进芯片与制造工具等方面的结构性约束，产能过剩风险也已显露。中国 AI 发展的长期成败将取决于在行业快速扩张与更强政府管制之间取得平衡，并夯实更具韧性的技术底座。

French:
DES « FONDATIONS NUMÉRIQUES » À « L'IA PARTOUT » : LE DECOLLAGE DE L'IA EN CHINE

Le secteur de l'intelligence artificielle (IA) en Chine est passé du statut de facilitateur de l'économie numérique à celui de moteur central de la modernisation nationale. Les Recommandations du 15e Plan quinquennal entérinent ce changement avec l' « Initiative IA+ », présentée pour la première fois dans le Rapport sur l'activité du gouvernement de 2024. Celle-ci vise à intégrer l'IA dans tous les secteurs et à en faire une technologie à usage général propulsant de « nouvelles forces productives de qualité ».

L'écosystème est structuré par des couches et de plus en plus intégrées : l'amont repose sur des infrastructures à grande échelle (dont China Computing Net), la conception nationale de puces et des centres de données, le tout renforcé par la stratégie « Données à l'Est, Calcul à l'Ouest » ; au niveau intermédiaire, les efforts se concentrent sur une R&D intensive, des cadres de formation avancés et des opérations de machine learning (MLOps) ; en aval, le segment le plus solide de la Chine, on observe un déploiement généralisé dans la robotique, la conduite autonome et la fabrication intelligente. Celui-ci s'accompagne d'une spécialisation régionale — comme la localisation des semi-conducteurs dans le delta du Yangtsé — ajoutant ainsi de la profondeur.

La mise en œuvre sera pilotée au niveau national par les lignes directrices IA+, tandis qu'à l'international, la Chine vise à façonner les normes via son Plan d'action pour la gouvernance mondiale de l'IA, avec une attention particulière portée au Sud global. Malgré cette dynamique, des contraintes structurelles — notamment sur les puces avancées et les machines-outils — ainsi que des risques émergents de surcapacité persistent. La réussite à long terme de la Chine dépendra de sa capacité à équilibrer expansion rapide, gouvernance renforcée et fondation technologique plus résiliente.

Spanish:
DE «CIMIENTOS DIGITALES» A «IA EN TODAS PARTES»: EL DESPEGUE DE LA IA EN CHINA

El sector de la inteligencia artificial (IA) en China ha dejado de ser solo un apoyo de la economía digital para convertirse en un motor central de la modernización nacional. Las Recomendaciones del XV Plan Quinquenal consolidan este giro mediante la «Iniciativa IA+», presentada por primera vez en el Informe sobre la labor del Gobierno de 2024. Su objetivo es integrar la IA en todos los sectores y definirla como una tecnología de uso general capaz de impulsar las llamadas «nuevas fuerzas productivas de calidad».

El ecosistema chino de la IA es jerárquico y cada vez más integrado. En la base se apoya en infraestructuras a gran escala, como la Red Nacional de Computación, el diseño nacional de chips y los centros de datos, reforzados por la estrategia «Datos en el Este, Cómputo en el Oeste». En el nivel intermedio, el énfasis recae en una I+D intensiva, marcos avanzados de entrenamiento y operaciones de aprendizaje automático (MLOps). En el nivel de aplicación, el más sólido del sistema chino, la IA se despliega ampliamente en ámbitos como la robótica, la conducción autónoma y la manufactura inteligente, con una marcada especialización regional —por ejemplo, en semiconductores en el delta del río Yangtsé— que aporta mayor profundidad al ecosistema.

A nivel interno, la implementación se articulará a través de la Directriz IA+. En el plano internacional, China aspira a influir en la definición de normas mediante su Plan de Acción para la Gobernanza Global de la IA, con especial atención al Sur Global. No obstante, pese a este fuerte impulso, persisten limitaciones estructurales —en particular en chips avanzados y herramientas de fabricación—, así como riesgos emergentes de sobrecapacidad. El éxito a largo plazo dependerá de la capacidad de equilibrar una expansión rápida con una gobernanza más sólida y una base tecnológica más resiliente.

FROM "DIGITAL FOUNDATIONS" TO "AI EVERYWHERE": CHINA'S AI TAKES OFF

KONG Tuan Yuen & LI Yao[*]

China's AI Industry: Infrastructure, Ecosystem and Governance

1. China's Artificial Intelligence (AI) industry has rapidly scaled from pilots to economy-wide deployment, becoming a key enabler and strategic component of China's modernisation drive. It is closely tied to efforts to manage structural slowdown through productivity growth, reinforce digital governance and national security, and underpin broader development goals. AI is increasingly viewed as general-purpose infrastructure grounded in secure data, scalable compute and deployable platforms.

2. China's current AI ecosystem spans the entire value chain, enabling rapid deployment across its economy. Upstream, the country has established large-scale foundational infrastructure, including massive initiatives like the China Computing Net, hyperscale data centres and a rapidly growing chip design base ensuring reliable computational power.

3. Midstream, the sector is anchored by intensive research and development (R&D) efforts, specialised training frameworks and sophisticated Machine Learning Operations (MLOps) platforms, which are crucial for the deployment and management of scalable AI models. Downstream, the wide-ranging application and deployment of AI across numerous industries see pervasive adoption across gaming, robotics, autonomous driving and smart manufacturing.

---

4.   Regionally, strengths are distributed: Beijing–Tianjin–Hebei leads in research scale; the Yangtze River Delta is the chokepoint-breaking hub for semiconductors and embodied AI; the Greater Bay Area excels in hardware-driven applied AI; and central and western regions, supported by "East Data, West Computing", expand computing and energy-based resilience.

5.   This trajectory can be traced through China's planning cycles. The 14th Five-Year Plan (FYP) (2021–2025)[1] laid the digital foundations: computing hubs, data centres, 5G networks and the industrial internet, and deployed AI chiefly in manufacturing and service upgrading, with a target of ~10% GDP share for the digital economy by 2025.

6.   The 15th FYP Recommendations (October 2025)[2] places AI at the centre of national development, embedding it across science, industry, culture, public services and governance as a general-purpose driver of new quality productive forces.

7.   Embodied AI is designated a frontier industry, alongside quantum computing, brain–computer interfaces and 6G, expanding the scope of strategic technology development.

8.   The State Council's AI+ Guideline of August 2025[3] operationalises AI+ through scenario libraries, compute and data deployment, and establishing technical standards. Local governments, such as Shanghai, are issuing embodied AI action plans under this framework.

9.   The Guideline also sets milestones: by 2027, more than 70% penetration of AI-native smart terminals and agents; by 2030, more than 90% penetration; and by 2035, comprehensive modernisation through AI+ integration.

---

[1]   https://en.ndrc.gov.cn/policies/202203/P020220315511326748336.pdf, accessed 29 October 2025.

[2]   https://www.gov.cn/zhengce/202510/content_7046052.htm, accessed 29 October 2025.

[3]   https://www.gov.cn/zhengce/content/202508/content_7037861.htm, accessed 29 October 2025.

10. China's domestic policy is increasingly linked to its external posture. Externally, the Global AI Governance Action Plan (July 2025)[4] emphasises inclusivity, fairness and security in AI development, promoting resource sharing with Global South partners, cooperation on risk management and ethics, and the establishment of international organisations for AI governance.

11. This global initiative dovetails with the domestic governance that combines capability- building and regulatory guardrails to shape global standards and institutions.

12. Governance and security remain core: from the 14th FYP's data protection measures and platform oversight to the 15th FYP Recommendations' calls for end-to-end breakthroughs from chips to basic software, stronger intellectual property protection, tighter platform regulation and faster translation of research into application.

13. Overall, AI has evolved from a digital-economy enabler under the 14th FYP to a core driver of new quality productive forces under the forthcoming 15th FYP. The AI+ Guideline and the Global AI Governance Action Plan reinforce this trajectory, combining domestic application and governance with international outreach and norm-setting. Together, these initiatives demonstrate that China now regards AI as both the backbone of its long-term transformation and an instrument of international influence.

China's AI Ecosystem

14. China's AI economy runs on a layered stack—upstream, midstream and downstream—each with distinct strengths and challenges, reinforced by regional specialisation. Eastern hubs lead overall AI development, while central and western cities cultivate niche strengths. This architecture underpins China's unique strengths in AI and shapes its growth potential.

---

[4] https://www.fmprc.gov.cn/mfa_eng/xw/zyxw/202507/t20250729_11679232.html, accessed 29 October 2025.

15. Upstream AI stack covers chips, servers, storage, networking and data infrastructure. While frontier constraints persist in training-class accelerators and advanced lithography, China has built strengths in data centres, intelligent-compute clusters and domestic accelerators. Compute is sited in central and western regions, with backbone networks serving coastal demand under the "East Data, West Computing" strategy[5] to ease resource strain and lower costs.

16. The China Computing Net[6] centrally orchestrates nationwide compute, pooling capacity across provinces to lift utilisation, mitigate regional imbalances and build resilience amid advanced-chip limits. It complements "East Data, West Computing" in a coordinated efficiency-first infrastructure approach.

17. Advantages stem from policy-driven capacity expansion, systems integration and market depth. Even without single-component parity, Chinese firms deliver integrated stacks that meet enterprise workloads. The China Computing Net further reinforces this system-level integration by linking distributed resources into a coordinated whole.

18. Persistent challenges include uncertain access to frontier Graphics Processing Units (GPUs) and fabrication tools, weaker developer ecosystems for domestic accelerators and thermal and power constraints in legacy sites. The China Computing Net and "East Data, West Computing" partially offset these gaps by load-balancing across regions, making efficiency gains as critical as raw capacity.

19. Key upstream players (Table 1) include Huawei, which offers Ascend accelerators, Atlas servers and AI-in-a-box bundles; Cambricon, a designer of accelerators for internet and government workloads; Inspur Information and Sugon, providers of AI servers and supercomputers; and device vendors embedding vision and inference in robots and terminals. Their common edge is vertically integrated solutions adapted to local regulation and workloads.

---

5   https://www.gov.cn/zhengce/zhengceku/202401/content_6924596.htm, accessed 29 October 2025.

6   https://www.pcl.ac.cn/html/1030/2023-09-07/content-4292.html, accessed 29 October 2025.

TABLE 1 SELECTED KEY AI INDUSTRY ENTERPRISES IN CHINA

Company Name	Stock Code	Industry Role	Key Sector	Location	Market Position and Share
Alibaba Group	9988.HK	Cloud, model platform, developer ecosystem	Qwen models, ModelOps, retail/finance AI	Hangzhou	Top-tier domestic cloud provider; extensive open-weight adoption; broad enterprise penetration
Tencent Holdings	0700.HK	Cloud and model platform	Hunyuan models, agents, social/enterprise integration	Shenzhen	Top-three domestic cloud provider; strong distribution via consumer/enterprise networks
Baidu, Inc.	BIDU; 9888.HK	Models plus mobility platform	ERNIE suite, search, autonomous driving	Beijing	Leading search-anchored AI platform; among the largest AV pilots in China
Huawei (Ascend)	—	Accelerators, servers, complete AI systems	Ascend chips, Atlas servers, AI-in-a-box	Shenzhen	Core domestic compute stack; strong position in on-prem deployments
Cambricon	688256.SH	AI accelerator IP and products	Data centre and edge inference/training	Beijing	Key domestic accelerator vendor with growing design wins
Inspur Information	000977.SZ	AI server OEM	GPU/accelerator server clusters	Jinan	Leading supplier to clouds, municipal compute hubs
Sugon (Dawning)	603019.SH	HPC and AI servers	Supercomputing and government systems	Beijing	Major vendor for state clients and research institutes
iFLYTEK	002230.SZ	Downstream applications	Speech, education, healthcare AI	Hefei	National leader in Chinese ASR/NLP; "China Speech Valley" ecosystem
SenseTime	0020.HK	Downstream applications	Computer vision and generative video	Shanghai/ Hong Kong	One of China's largest vision platforms; expanding generative stack
CloudWalk	688327.SH	Downstream applications	Financial-grade vision and retail analytics	Guangzhou	Listed CV player with bank and city deployments
Fourth Paradigm	6682.HK	Enterprise AI platform (midstream)	AutoML, feature stores, MLOps	Beijing	Prominent decision-AI and MLOps vendor for industry
Zhipu AI	—	Model provider (midstream)	GLM model family	Beijing	Competitive Chinese-language LLMs with government/enterprise pilots

Source: WIN.

20.   China's midstream, including clouds, model providers, toolchains and MLOps, translates scale into developer reach. Cloud vendors supply APIs, retrieval pipelines and observability tools, while model firms offer both open-weight and commercial lines. China is highly competitive in application-ready services, though frontier benchmarks still favour international peers.

21.   Strengths include privileged access to vast commerce, finance, messaging and media ecosystems; aggressive pricing and bundled credits that lower experimentation barriers for start-ups and municipal pilots; compliant on-premise subscriptions; and vibrant open-source and model toolchains that compress time to prototype and encourage widespread fine-tuning.

22.   Weaknesses include fragmented APIs, heterogeneous hardware back-ends and guardrail plug-ins that raise portability costs, pushing multi-cloud and hybrid adoption. On-premises resurgence supports sovereignty but complicates lifecycle management amid uneven facilities and skill levels. Tight coupling of retrieval layers and embeddings heightens vendor lock-in risk.

23.   Key midstream players include Alibaba, whose Qwen models and cloud services anchor one of the largest developer ecosystems; Tencent, with Hunyuan models and agent frameworks supported by its extensive consumer and enterprise footprint; Baidu, with ERNIE models tied to mobility and autonomous driving ecosystems; and Fourth Paradigm, a specialist in enterprise MLOps, Automated Machine Learning (AutoML) and feature stores for banks and manufacturers. Together they deliver breadth, compliance-adapted offerings and clear paths from prototype to scaled deployment.

24.   Downstream is China's strongest lane. Dense application scenarios, powerful procurement and tolerance for real-world environments drive rapid adoption. Robotaxi pilots now span city cores, airports and transport corridors, with expanding driverless operations. Manufacturing integrates AI for inspection, acoustic sensing, scheduling and anomaly detection. Healthcare institutions use AI to improve triage and imaging quality control, while education utilises adaptive platforms and speech interfaces to augment teachers. Finance, retail and logistics deploy AI scoring, recommendations, service agents and warehouse robotics within compliance frameworks.

25.   These advantages are structural: municipal pilots unlock infrastructure, data and users at scale; national champions in automotive, telecoms and energy anchor ecosystems that attract start-ups and integrators. Abundant edge devices foster

hardware-software feedback loops. However, challenges include robotaxi unit economics, underdeveloped safety metrics for human–machine collaboration and evolving content safety standards.

26. Leading downstream enterprises include iFLYTEK, a pioneer in speech technologies that now serves education, health care and embodied AI interfaces; SenseTime, which has grown from computer vision to generative visuals and city-scale AI platforms; CloudWalk, which began with finance-grade vision and now deploys AI in retail and smart cities; and Baidu Apollo alongside other peers operating large-scale fleets. Their strengths are in domain depth, integration capacity and a growing ability to assure performance and compliance after deployment.

Regional Patterns and Strategic AI Cities

27. China's AI geography reflects the distribution of talent, compute and demand, shaped by industrial policy and geopolitical pressure. Nationally, the ecosystem spans upstream infrastructure such as the China Computing Net, data centres and chip design; midstream R&D, training and MLOps; and downstream applications in gaming, robotics and autonomous driving.

28. The "East Data, West Computing" strategy further reinforces this layout by directing data-intensive workloads from coastal markets to inland regions with abundant energy and land, embedding western computing hubs into the national AI infrastructure.

29. Beijing–Tianjin–Hebei is the largest cluster, home to 93 AI headquarters. It serves as the country's governance and research nexus, concentrating national labs, top universities and policy pilots (Table 2). The region's dominance in application models (36), compute infrastructure (20), algorithms (15) and foundational technologies such as computer vision and natural language processing provide the foundation for national standards-setting and establishes its leadership in research.[7]

---

[7] Data source for enterprise headquarters is Wind Global Enterprise data base.

TABLE 2   CHINA'S KEY AI CITIES IN 2024

Category	City / Cluster	Strengths / Specialisation	Representative Companies / Institutions	Major Supporting Documents / Initiatives
Top AI Cities	Beijing	National policy leadership, academic R&D, NLP, foundation models	Baidu, ByteDance, Tsinghua University, Institute of Automation (CAS)	*New Generation AI Development Plan (2017)*; Beijing AI Pilot Zone
	Shanghai	Commercial AI, finance, healthcare AI, semiconductors	Alibaba (Damo Academy), Huawei (Ascend), SenseTime East China HQ	Shanghai AI Strategy (2019); Zhangjiang AI Island plan
	Shenzhen–Guangzhou	Hardware + applied AI hub. Shenzhen is strong in drones, robotics, embodied AI, chips; Guangzhou in computer vision, AV, and manufacturing pilots	DJI, Huawei, Tencent (Shenzhen); CloudWalk, Pony.ai (Guangzhou)	Guangdong AI Development Plan; AV Pilot Zone approvals; Greater Bay Area Strategy
Emerging AI Cities	Hangzhou	Private-sector-driven AI, LLM innovation, smart city pilots	Alibaba Cloud, DeepSeek, Zhejiang University	Hangzhou AI Industry Plan; Zhejiang Provincial Digital Economy Strategy
	Suzhou	Robotics, industrial automation, advanced manufacturing AI	Yuanhu Tech, Suzhou AI Industrial Park, SenseTime projects	Suzhou Industrial Park AI policies; Yangtze River Delta Integration Plan
	Nanjing	AI for biomedicine, smart governance, software R&D	Nanjing AI and Software Valley, iFLYTEK (regional presence)	Nanjing AI Pilot Zone; Jiangsu AI and Digital Economy Plan
	Xi'an	Supercomputing, aerospace AI, defence–civil fusion, AV research	Xi'an Jiaotong University, National Supercomputing Centre, Huawei	Western Development Strategy; Xi'an High-Tech Zone AI cluster
	Guizhou (Guiyang)	China's national big data hub: data centres, cloud AI, governance	Guizhou-Cloud Big Data, Tencent Cloud, Apple iCloud China	"Big Data Valley of China"; Guizhou Big Data Exchange; State Council support
	Zhengzhou	AI applied to logistics, transport, supply chain optimisation	Foxconn (AI in manufacturing), Airport Economy Zone AI pilots	Zhengzhou Airport Economy Zone strategy; Henan AI Action Plan
	Chengdu–Chongqing	Comprehensive western AI hub: consumer AI (gaming, finance), logistics, AV pilots, chip R&D	Tencent SW AI Hub, Chengdu AI Innovation Centre, Baidu Apollo (AVs)	*Chengdu–Chongqing Twin-City Economic Circle* (State Council, 2020); AI Pilot Programmes
	Hefei	Voice AI, intelligent speech, semiconductors; strong university research	iFLYTEK HQ, University of Science and Technology of China (USTC)	National AI Innovation Pilot Zone; Anhui Provincial AI Action Plan
	Wuhan	Robotics, autonomous driving, smart city pilots, strong university R&D base	Huazhong University of Science and Technology, Wuhan University, Pony.ai, Baidu Apollo test zone	Wuhan East Lake Hi-Tech Zone ("Optics Valley"); National AI Pilot City designation

Source: Authors' compilation from various online sources.

30.   The Yangtze River Delta is the key battleground for overcoming external chokepoints. Anchored by Shanghai, the region concentrates efforts to localise semiconductors, lithography and embodied AI.[8] Shanghai hosts the country's most complete, end-to-end integrated circuit (IC) value chain,[9] spanning design, manufacturing, equipment, materials and packaging.

31.   The newly built Huawei Technologies Shanghai R&D Centre,[10] along with firms such as Semiconductor Manufacturing International Corporation (SMIC), Hua Hong, Advanced Micro-Fabrication Equipment Inc. (AMEC), Shanghai Micro Electronics Equipment (SMEE) and Shanghai Xinsheng, has delivered critical breakthroughs in domains most vulnerable to geopolitical pressure, including 14nm fabrication, 5nm etch tools, 28nm lithography and 300mm silicon wafers.

32.   In early 2025, SMEE reportedly delivered China's first domestically developed 28nm lithography machine capable of producing chips down to 7nm or potentially quasi-5nm (等效五纳米).[11] These advances build on decades of consistent policy support dating back to the 1999 "Focus on Zhangjiang" strategy[12] and are reinforced by global orientation, talent attraction and overseas returnees programmes, transforming Zhangjiang into a 220 km² "Science City".

33.   Complementing Shanghai, Hangzhou has risen as a global competitor through DeepSeek and its "six dragons"[13] of AI start-ups; Suzhou specialises in industrial AI and biomedicine and Hefei anchors semiconductors[14] and embodied AI, hosting

---

[8]   Embodying AI means making AI in physical forms.

[9]   http://www.ipforefront.com/article_show.asp?id=1716&BigClass=%E8%B5%84%E8%AE%AF, accessed 29 October 2025.

[10]   https://www.stcn.com/article/detail/1358277.html, accessed 29 October 2025.

[11]   https://www.baiguan.news/p/china-self-sufficiency-35-stranglehold-technologies-semiconductors-euv-lithography-chip-manufacturing-smic-smee-harmonyos-eda-software-aircraft-engines-heavy-duty-gas-turbines-lidar-uniontech-uos-huawei-gauss-eda-biotechnology-scientific-instruments, accessed 29 October 2025.

[12]   https://www.pudong.gov.cn/023004002/20231010/767883.html, accessed 29 October 2025.

[13]   The six dragons are DeepSeek, Unitree, Game Science, DEEP Robotics, Brain-Computer Interface and KOOL.US.

[14]   Hefei is notable for its capabilities in producing specific semiconductors such as high-bandwidth memory (HBM) which are necessary for large-scale training in generative AI. HBM is nearly indispensable

iFLYTEK and ChangXin Memory Technologies (CXMT).[15] Together, the Yangtze River Delta accounts for 41 AI headquarters and is pivotal to strengthening China's resilience under US technology restrictions.

34. The Greater Bay Area (Shenzhen and Guangzhou) ranks third, hosting 29 AI firms, with notable strengths in application-driven AI (11) and core technologies (7). Leveraging its electronics supply chains and robotics industries, the region pioneers AIoT, edge AI and humanoid robotics under experimental local rulebooks. Shenzhen's hardware ecosystem cements its role as China's AIoT hub.

35. Other regions play specialised roles. Chengdu–Chongqing supports "East Data, West-Computing" implementations and smart manufacturing. Xi'an hosts Micron's largest China-based DRAM facility and is developing packaging and memory capabilities, though private entrepreneurship remains constrained by state and military dominance.

36. Zhengzhou advances embodied-AI manufacturing, while Xiamen emphasises entertainment AI through Meitu and its links to the Golden Rooster and Hundred Flowers Film Festival.[16] Guizhou and Sichuan attract cloud and AI workloads with renewable power, with Guizhou becoming a national showcase featuring Apple's iCloud China services and the Gui'an Supercomputing Centre helped power the visual effects for the blockbuster Nezha 2.

---

for generative AI as the volume of data processing AI training is significantly larger than non-AI types of computing (less so for AI inference).

[15]   CXMT (长鑫存储) is one of the only two Chinese companies, apart from Wuhan's YMTC (长江存储), reported to be producing indigenous HBM and keeping the HBM technology currently within two generations following the most advanced HBM products manufactured by three globally superlative enterprises, namely SK Hynix, Samsung and Micron. https://www.tomshardware.com/tech-industry/chinas-cxmt-begins-mass-producing-hbm2-memory-well-ahead-of-schedule-2026-was-the-previously-telegraphed-target, accessed 30 October 2025. By US laws, SK Hynix, Samsung and Micron have been banned from exporting HBM to China since the end of 2024. https://www.bloomberg.com/news/articles/2024-12-02/us-tightens-curbs-on-china-s-access-to-ai-memory-and-chips-tools, accessed 30 October 2025.

[16]   It is the largest festival and exhibition in China's rapidly rising film industry.

AI in China's Policy Architecture

37.   China's approach to artificial intelligence has undergone a significant evolution from the 14th FYP (2021–2025) to the 15th FYP Recommendations (2026–2030). The 14th Plan concentrated on laying the foundations of a digital economy, emphasising the construction of computing hubs, data centres, 5G networks and the industrial internet. Within this framework, AI was applied mainly to manufacturing and service upgrading, with the guiding ambition of expanding the digital economy's share of GDP to around 10% by 2025. At that stage, artificial intelligence was treated as one element within the broader digital transformation agenda.

38.   The 15th FYP Recommendations, released in October 2025 (and currently under consultation), significantly elevate AI to a key driver of national development. This shift formalises the "AI+ Initiative", first outlined in the 2024 Government Work Report. In this new conception, AI is no longer merely a digital-upgrading tool but is positioned as a general-purpose technology underpinning new quality productive forces. The Recommendations envision embedding AI comprehensively across all domains of science, industry, culture, public services and governance.

39.   The execution of this ambitious vision rests on two foundational pillars: infrastructure and market integration. The Recommendations prioritise fundamental advancements by calling for breakthroughs in basic theory and core AI technologies. This includes ensuring the efficient, at scale supply of compute, algorithms and data through the construction of an integrated national data market and deeper integration of the real and digital economies. Furthermore, hard infrastructure remains central, with a continued focus on information and communications networks, a nationally integrated computing network and retrofitting traditional infrastructure with digital and AI technologies.

40.   A strong, dual emphasis is placed on technological self-reliance and frontier expansion. The strategy mandates science and technology self-reliance through end-to-end ("whole-chain") breakthroughs in critical areas such as integrated circuits, basic software, high-end equipment and advanced materials. This is paired with accelerated translation from research to application via pilots and strengthened

intellectual property protection. Concurrently, the scope expands to future techno-industrial systems, explicitly identifying embodied AI as a frontier industry, alongside quantum computing, brain–computer interfaces and 6G.

41. Finally, the policy framework strengthens AI governance through new laws, policies, standards and ethics. While keeping the platform economy under sound regulation, the Recommendations encourage innovative regulatory approaches and risk-sharing finance to specifically promote the innovation and development of frontier industries.

42. When compared with the 14th FYP and its companion blueprints such as the 2021 National Informatisation Plan[17] and the 2022 Digital Economy Plan,[18] the 15th FYP Recommendations reveal both continuity and change. Continuity lies in the shared emphasis on digital foundations, namely data, computing and networks, and the use of AI to upgrade manufacturing and services. The earlier plans set clear quantitative goals, such as expanding core digital-economy industries to about 10% of GDP by 2025 and launching initiatives to build national computing hubs and strengthen data governance. The 15th FYP deepens and operationalises these goals, broadening them under the AI+ banner and designating future industries.

43. The shift in emphasis is also significant. Whereas the 14th FYP framed AI primarily within digital-economy growth and intelligent manufacturing, the 15th elevates AI to a horizontal lever cutting across the entire economy and society. Both planning cycles emphasise technology self-reliance, but the 15th is more explicit about end-to-end, whole-chain breakthroughs from chips and basic software to applications, together with application-oriented pilot programmes.

44. The relationship between the 15th FYP Recommendations and the State Council's AI+ Guideline, issued in August 2025, further clarifies the implementation architecture. The Recommendations articulate the strategic intent of embedding AI across the board, while the Guideline provides operational details. It specifies

---

[17] https://www.cac.gov.cn/2021-12/27/c_1642205314518676.htm, accessed 30 October 2025.

[18] https://www.gov.cn/zhengce/content/2022-01/12/content_5667817.htm, accessed 30 October 2025.

domains and mechanisms such as scenario libraries, standards, safety and ethics measures, and talent development.

45.   Local governments, notably Shanghai, have begun issuing embodied AI action plans[19] within this framework. Together, the Recommendations and the Guideline form a strategy–execution pairing, one sets the vision and the other drives implementation. Public reporting[20] around the Guideline also highlights embodied and robotic AI as key directions, aligning closely with the 15th FYP's designation of embodied AI as a future industry.

46.   At the international level, the Global AI Governance Action Plan released in July 2025 adds an outward-facing dimension. This initiative calls for jointly seizing AI opportunities, promoting innovation, empowering industries and advancing risk and safety governance within an inclusive, fair and secure framework. It also encourages new platforms for international science and technology cooperation and emphasises openness to the Global South.

47.   The Global Action Plan aligns naturally with the domestic Recommendations: the domestic Recommendations strengthen governance and capacity through laws, standards and ethics, while the Global Action Plan extends these ambitions outward, seeking to shape international rules and norms. At the World Artificial Intelligence Conference in July 2025,[21] senior leadership paired the Action Plan with a proposal for a global AI cooperation organisation, underscoring China's bid to lead in norm-setting.

48.   The overall trajectory for China's AI sector is clear. From its role as one of several enablers of the digital economy under the 14th FYP, AI is being repositioned as a ubiquitous force, driving the shift from "digital foundations" to "AI everywhere". The focus now lies in building both the hard and soft stacks: chips, basic software,

---

[19]   https://www.sheitc.sh.gov.cn/cyfz/20251014/8363d29292c6433195e55f35d607b5d5.html, accessed 30 October 2025.

[20]   http://www.news.cn/20250827/dad2df50de424c54ba6988d5bf009b3f/c.html, accessed 30 October 2025.

[21]   https://aiii.global/waic-2025, accessed 30 October 2025.

a national computing network and an integrated data market on one side, and legal, ethical and standards-based governance on the other, all reinforced by accelerated pilots and faster technology transfer. The country is also making strategic bets on embodied AI and other frontier domains, with local governments already publishing action plans to scale these technologies. Through the Global AI Governance Action Plan, China is also extending its ambitions to the international arena, seeking to shape rules on standards, safety and interoperability.

Challenges and Risks in China's AI Development

49.   While China's AI sector benefits from scale, integration and strong state backing, it is also shaped by structural limits that complicate its long-term sustainability. China's AI strategy is less a US-style AGI[22] race for artificial general intelligence than an application-first, policy-driven ecosystem that leverages scale, procurement and indigenous innovation to raise productivity amid resource and geopolitical constraints.[23]

50.   The 15th FYP Recommendations reinforce this orientation by elevating AI into a central pillar of national development through the "AI+ Initiative". This initiative formalises a deeper push to embed artificial intelligence across all sectors of society and the economy, positioning it as a general-purpose technology underpinning new quality productive forces. Yet even as this framework sets ambitious goals, China's AI development still faces technological, economic, regulatory and geopolitical risks.

51.   First, China's most immediate challenge lies in advanced semiconductors and fabrication tools. Access to state-of-the-art GPUs, EUV lithography and high-bandwidth memory is constrained by export controls, while domestic alternatives such as Huawei's Ascend and Cambricon's accelerators still lag in performance, developer tooling and ecosystem support.

---

[22]   AGI stands for artificial general intelligence, a highly advanced type of AI that is more intelligent than human, fully autonomous and self-evolving without human interference.

[23]   https://www.wsj.com/tech/ai/china-has-a-different-vision-for-ai-it-might-be-smarter-581f1e44, accessed 29 October 2025.

52. Even as hardware capacity expands, thermal management, power availability and integration bottlenecks remain pressing concerns. Although strategies like "East Data, West Computing" and the China Computing Net improve load balancing and efficiency, they cannot fully substitute for access to frontier technologies, leaving China vulnerable at the high end of AI training and inference.

53. Second, heavy investment in data centres, compute hubs and AI pilots raises the risk of overcapacity and diminishing returns. Some facilities already face underutilisation,[24] while energy-intensive operations create mounting financial and environmental costs.

54. The economic model of downstream applications such as robotaxis remains fragile, as large-scale pilots have yet to demonstrate sustainable unit economics. Regional imbalances compound these problems: coastal hubs attract talent, capital and leading firms, while central and western provinces lag in skills and commercialisation, despite being tasked with hosting much of the nation's computing capacity. These disparities risk inefficient resource allocation and uneven regional benefits.

55. The state's emphasis on governance—laws, standards, ethic and tighter regulation of the platform economy—seeks to ensure safe and compliant AI development but also risks stifling innovation. The uncertainty around guardrails for generative AI, content moderation and data-sharing regimes raises costs for start-ups and may slow application scale-up.

56. At the midstream layer, fragmented APIs, compliance-driven on-premises requirements and vendor lock-in dynamics create high switching costs and limit interoperability. Striking the right balance between control and dynamism will be critical: overly restrictive measures could reduce private-sector initiative, while insufficient oversight risks reputational or safety crises.

---

[24] https://www.technologyreview.com/2025/03/26/1113802/china-ai-data-centers-unused/, accessed 30 October 2025.

57. Internationally, China's AI ambitions are deeply entangled with geopolitics. US-led export controls aim to restrict access to critical chips, fabrication tools and software ecosystems. Allies in Europe and Asia are also tightening scrutiny over AI-related cooperation, limiting China's ability to import know-how or build overseas partnerships.

58. At the same time, China's Global AI Governance Action Plan positions it as a rule-shaper, promoting inclusivity and cooperation with the Global South. Yet trust deficits persist. Advanced economies may resist Chinese leadership in norm-setting, while developing countries may remain cautious about dependencies in standards, data, or platforms. This external environment exposes China's AI sector to heightened volatility, sanctions risks and the possibility of fragmented global governance regimes.

59. China's AI sector has undeniable momentum, but its rise is accompanied by fragilities that will shape how far and how fast it can advance. The interplay of technological chokepoints, economic strains, regulatory trade-offs and geopolitical headwinds presents a complex risk landscape. Whether China can sustain its vision of "AI everywhere" will depend on its ability to mitigate these vulnerabilities while balancing growth, efficiency and security.

EAI values your feedback and input ...

We would appreciate it if you could take a few minutes to share your comments on EAI Background Brief No. **1863**, which you have just read.

Please visit https://forms.office.com/r/gS1fmpL6mR to complete a short survey. Your feedback will be tremendously helpful in improving this series.

Thank you once again for your continued support.

Best regards,
East Asian Institute,
National University of Singapore