Analysis

# More Than Meets the AI

## China's Data Centre Strategy

| Toomas Hanso |

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Cover page photo: A staff member checks servers in Guizhou Information Park of China Telecom Cloud Computing in southwest China's Guizhou Province on 9 April 2020. Ou Dongqu/Xinhua via ZUMA Press/Scanpix.

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# List of Abbreviations and Units of Measurement

| | |
|---|---|
| **AI** | Artificial intelligence (人工智能) |
| **BITA** | Beijing Information and Telecommunication Association (北京通信信息协会) |
| **CCP** | Chinese Communist Party (中国共产党) |
| **EDWC** | Eastern Data Western Compute (东数西算) |
| **EFLOPS** | 10^18 floating-point operations (每秒一百亿亿次的浮点运算) |
| **ms** | milliseconds |
| **NDA** | National Data Administration (国家数据局) |
| **NDRC** | National Development and Reform Commission (发展和改革委员会) |
| **PLA** | People's Liberation Army (中国人民解放军) |
| **PUE** | power usage effectiveness (电源使用效率) |
| **R&D** | research and development (研发) |
| **RMB** | Renminbi (人民币) |

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# About the Author

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Toomas Hanso joined ICDS as a junior research fellow in October 2024. His research focuses on China, its domestic and foreign policy as well as international relations. He holds a first-class undergraduate degree from the University of Edinburgh in Chinese & linguistics. Toomas spent one year studying at National Donghwa University in Hualien, Taiwan as a recipient of the Taiwan-Europe Connectivity Scholarship (2021-22), and one year studying in Kunming, China as a recipient of the Confucius Institute Scholarship at Yunnan University (2023-24), where he passed the HSK6 Chinese exam.

# Introduction

In February 2022, Beijing launched Eastern Data Western Compute (东数西算, dōngshù xīsuàn, EDWC), a national megaproject to compute data from China's developed eastern areas in its rural western regions, which enjoy a regional advantage (区位优势) due to plentiful renewable energy and lower average temperatures. EDWC entails the construction of eight hub nodes and ten large-scale data centre compute clusters, to form a nationally integrated compute network (全国一体化算力网). EDWC is China's latest national-scale resource transfer project: while the first three, built in the 2000s, saw the large-scale transfer of water, electricity, and gas across China, the fourth transfers (and enables the computation of) data, key to artificial intelligence (AI).

Artificial intelligence is the 21st century's most transformative technology, pivotal to future geopolitical influence. Its development and deployment rely on computing power ('compute') housed in data centres, the hardware infrastructure that powers AI. China has formally recognised 'compute' as a "key productive force in the digital economy era," likening it to water in the era of agricultural civilisation and electricity in the era of industrial civilisation.[1] Meanwhile, US experts have called compute the "missing piece of national security infrastructure today,"[2] acknowledging that "compute advantage compounds into a broader economic advantage over time."[3]

The EDWC project aims to increase China's national compute capacity to 300 EFLOPS FP32 in 2025.[4] One year into EDWC, in 2023, China had 14 national supercomputing centres (国家级超算中心), 633 hyperscale and large data centres (超大型和大型数据中心), and 60 intelligent computing centres (智算中心). Two years into EDWC, in 2024, the project had attracted 43.5 bn yuan in direct investment.[5] And three years following launch, in January 2025, China's DeepSeek-R1 model, deployed on EDWC's Wuhu Data Centre Cluster, took the world by storm, with President Donald Trump calling China's AI breakthrough a "wake-up call."[6]

These achievements have marked significant milestones in China's plan to become a world leader in AI by 2030.[7] This analysis examines the origin and implementation of EDWC, its role in Beijing's multi-layered AI industrial policy, and its successes, failures, and implications for China's standing in the global AI race.[8]

# 1. AI, Data Centres, and Compute

China's reform and opening (改革开放) began in 1978 under the leadership of Deng Xiaoping, following the death of Chairman Mao. Dengist reforms lay the foundation for China's modern technological progress by emphasising science

1 "'东数西算'：构筑未来发展核心竞争力 [EDWC: Building Core Competitiveness for Future Development]," 中华人民共和国中央人民政府 [PRC Central People's Government], 29 May 2023.

2 Amy Zegart, "The Crumbling Foundations of American Strength," *Foreign Affairs*, 20 August 2024.

3 Lennart Heim, "China's AI Models Are Closing the Gap – but America's Real Advantage Lies Elsewhere," *RAND,* 2 May 2025.

4 An EFLOP is a measure of computer speed equal to one quintillion [$10^{18}$] floating-point operations per second, which is used for measuring a nation's total compute power. A PFLOP [Petaflop, $10^{15}$] can measure smaller-scale compute; FP16 [Half-Precision], FP32 [Single-Precision], and FP64 [Double-Precision] are floating-point formats with varying levels of precision and memory usage. FP16, a 16-bit format, is less accurate but faster, ideal for AI tasks. FP32, more precise but slower, is used in some AI applications. FP64, very precise but very slow, is rarely used in AI.

5 "'东数西算' 八大国家枢纽节点直接投资超过435亿元 [Direct investment in eight national hubs for 'EDWC exceeds 43.5 billion yuan]," 中华人民共和国中央人民政府 [PRC Central People's Government], 29 August 2024.

6 "DeepSeek大模型芜湖'上新' [DeepSeek large model 'launched' in Wuhu]," 芜湖市数据资源管理局 [Wuhu Municipal Data Resources Management Bureau], 17 February 2025.

7 "国务院印发《新一代人工智能发展规划》 [The State Council issued the "New Generation AI Development Plan"]," 中华人民共和国中央人民政府 [PRC Central People's Government], 20 July 2017.

8 Kyle Chan, Gregory Smith, Jimmy Goodrich, Gerard DiPippo, Konstantin F Pilz, "Full Stack: China's Evolving Industrial Policy for AI," *RAND*, 26 June 2025.

and technology as primary productive forces in the country. The first policy addressing the frontier technologies necessary for AI development was released in 2006, with the State Council's National Medium- and Long-Term Plan for the Development of Science and Technology that prioritised research and development (研发, R&D). Further impetus came from the 2012 Five-Year Plan for Intelligent Smart Manufacturing, which included industrial robots and 'Internet of Things' as key technologies. In December 2016, AI was identified as the sixth among 69 major tasks for the central government to pursue.[9] Finally, in the 2017 Development Plan for the New Era of AI, Beijing stated the goal of becoming the global leader in AI by 2030.[10]

*Calls for computation and data centre infrastructure came hand-in-hand with plans for AI development*

For a nation's AI to progress, it must have sufficient compute – calls for computation and data centre infrastructure, therefore, came hand-in-hand with plans for AI development. In China's 13th Five-Year Plan released in 2016, the government called for the "construction of national big data platforms and data centres," as well as to "focus on breakthroughs in the key technologies of big data and cloud computing."[11] The 2017 Development Plan for the New Era of AI, which referenced computation (计算) 64 times, emphasised the need for the construction of data centres (数据中心), AI supercomputing centres (人工智能超级计算中心), and cloud computing centres (云计算中心).[12]

The General Secretary of the Chinese Communist Party (CCP), Xi Jinping, is a staunch proponent of China's AI development, having specifically noted the importance of constructing data centres. Xi has personally presided over two AI-focused Politburo study sessions,[13] i.e., meetings which guide Party leadership's policy decisions.[14] The first such session, held by Xi in October 2018, called for the "healthy development of AI."[15] A more recent May 2025 AI session, meanwhile, concentrated on AI hardware and software sovereignty, likely in direct response to US efforts to curtail China's AI progress.[16] Meanwhile, a 2022 article by Xi in the CCP's *Qiushi* 求实 magazine mentioned the need to build a nationally integrated data centre network.[17] Discussions at such a high level show that AI development and the required data centre infrastructure have political backing at the very top of the CCP.

*AI development and the required data centre infrastructure have political backing at the very top of the CCP*

## 2. From Inception to Implementation

EDWC is China's fourth national-scale transfer project. After the turn of the century, Beijing has launched three large engineering projects, aiming to distribute scarce resources optimally across diverse regions. South-to-North Water Diversion (南水北调), West-to-East Power Transmission (西电东送), and West-to-East Gas Transfer (西气东输) were implemented in the early 2000s, frontrunning EDWC, which transfers data.

[9] Yujia He, "How China is preparing for an AI-powered Future," *Wilson Center*, June 2017.

[10] "新一代人工智能发展规划的通知 [New Generation AI Development Plan]," 国务院 [State Council], 20 July 2017. 到2030年人工智能理论、技术与应用总体达到世界领先水平，成为世界主要人工智能创新中心 [By 2030, [Chinese] AI theory, technology and applications will generally reach the world's leading level].

[11] "中华人民共和国国民经济和社会发展第十三个五年规划纲要 [Outline of the 13th Five-Year Plan for National Economic and Social Development of the PRC]," 中华人民共和国中央人民政府 [PRC Central People's Government], 17 March 2016.

[12] "新一代人工智能发展规划的通知 [New Generation AI Development Plan]," 国务院 [State Council], 20 July 2017.

[13] Neil Thomas and Feifei Hung, "Who Briefs Xi Jinping? How Politburo Study Sessions Help to Decode Chinese Politics," *Asia Society Policy Institute*, 23 October 2024.

[14] Thomas and Hung, "Who Briefs Xi Jinping?"

[15] "习近平：推动我国新一代人工智能健康发展 [Xi Jinping: Promote the healthy development of China's new generation of artificial intelligence]," 新华网 [Xinhua Net], 31 October 2018.

[16] "Forum: Xi's Message to the Politburo on AI," DigiChina, 30 April 2025.

[17] "习近平：不断做强做优做大我国数字经济 [Xi Jinping: Continuously strengthen, optimise and expand China's digital economy]," 《求是》杂志 [Qiushi Journal], 15 January 2022.

EDWC entered official documents in 2020. In March, it appeared for the first time in the National Development and Reform Commission (NDRC) as a plan.[18] In September, a pilot programme was launched in Lanzhou, Gansu.[19] By October, Huawei had begun to mention EDWC in its communication, suggesting the dissemination of the plan from the government to the private sector.[20] Throughout 2021, EDWC gained presence on the national agenda. In May, the launch of EDWC was proposed for the first time by the NDRC, stating the aim of "supporting large-scale computing power scheduling and building a new data flow-oriented computing power network structure."[21]

In 2021, EDWC gained traction in major government policy objectives. China's 14th Five-Year Plan, released in March 2021, noted the need to "accelerate the construction of a nationally integrated big data centre system," while not referring to EDWC specifically.[22] In July 2021, the Three-Year Action Plan for the development of new data centres (2021–23) was published, outlining key targets for compute capacity.[23] The ministerial-level document listed "supporting EDWC" as one of its goals. The plan urged the construction of new data centre clusters and regional hubs for the nation, listing several concrete targets: (i) national compute power of 200 EFLOPS; (ii) 60% utilisation rate for data centre racks; (iii) data centre power usage effectiveness (PUE) below 1.3; and (iv) internet connection latency under 20 ms.[24] The development of the EDWC concept continued into January and February 2022, with the NDRC issuing ten more policy papers over the two months.[25]

EDWC was officially launched on 17 February 2022 with a notice to begin construction of eight national computing hub nodes (国家算力枢纽节点) and ten national data centre clusters (国家数据中心集群).[26] Following the project's approval, each hub node established a construction work leading group and a special team. At the working mechanism level, the leading groups in the Yangtze River Delta, Guizhou, Gansu, Ningxia, and other places are led by provincial "responsible comrades" (负责同志).[27] The wider coordination of EDWC is facilitated in large part by China's National Data Administration (NDA, 国家数据局), inaugurated in 2023, which is tasked with constructing data infrastructure and coordinating the integration, sharing, development, and application of data resources.[28]

With the project progressing to the implementation stage, EDWC opened "a new chapter" in the coordinated cross-regional layout of China's land and space computing resources.[29] The EDWC national network, consisting of nodes and clusters, can be considered a hub-and-spoke model. The nodes are the hubs, acting as central command and

[18] "东数西算：我国数据跨域流通的总体框架和实施路径研究 [EDWC: Research on the Overall Framework and Implementation Path of Cross-Domain Data Circulation in China]," NDRC, 27 March 2020.

[19] "刘宇南同志出席甘肃省"上云用数赋智"行动暨"东数西算"试点启动会并致辞 [Comrade Liu Yunan attended the launch meeting of Gansu Province's "Cloud Computing and Data Intelligence" action and the "EEDWC" pilot project and delivered a speech]," 国家信息中心 [State Information Centre], 27 September 2020.

[20] "迈向智能世界——计算 [Towards an Intelligent World – Compute]," Huawei, 15 October 2020.

[21] "国家发展改革委高技术司主要负责同志就《全国一体化大数据中心协同创新体系算力枢纽实施方案》答记者问 [Answers to reporters' questions on the 'Implementation Plan for the Computing Hub of the National Integrated Big Data Centre Collaborative Innovation System']," NDRC, 26 May 2021.

[22] "中华人民共和国国民经济和社会发展第十四个五年规划和2035年远景目标纲要 [Outline of the 14th Five-Year Plan for National Economic and Social Development of the PRC and Long-Term Objectives for 2035]," 中华人民共和国中央人民政府 [PRC Central People's Government], 13 March 2021.

[23] Data centre is a physical location that houses IT infrastructure for building, running, and delivering applications and services, as well as storing associated data. This infrastructure consists of servers, powerful computers that deliver applications, services, and data to end-user devices.

[24] "新型数据中心发展三年行动计划（2021-2023年） [Three-Year Action Plan for the Development of New Data Centres (2021-2023)]," 中华人民共和国中央人民政府 [PRC Central People's Government], 4 July 2021.

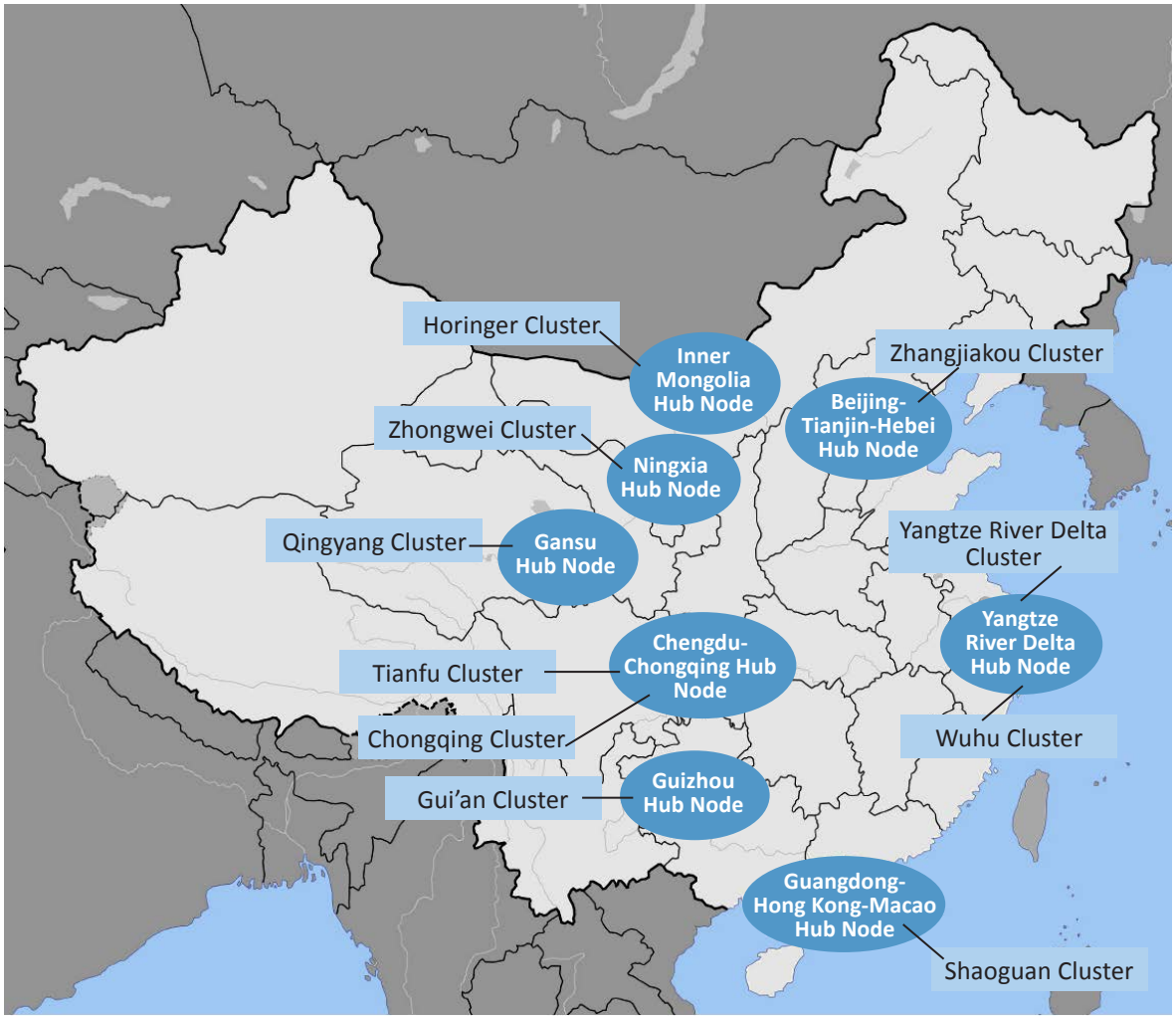
[25] "东数西算 [Eastern Data Western Compute]," NDRC, 12 December 2021.

[26] "正式启动！'东数西算'工程全面实施 [Official launch! The 'Eastern Data Western Compute' project full implementation]," 中华人民共和国中央人民政府 [PRC Central People's Government], 17 February 2022.

[27] "'东数西算'工程建设的现状、问题与对策 [The current situation, problems and countermeasures of the construction of the 'Eastern Data Western Compute' project]," 安全内参 [Anquan Neican], 30 October 2023.

[28] "China inaugurates national data administration," State Council, 25 October 2023.

[29] "'东数西算'工程系列解读之四 | 加快推动'东数西算'培育壮大算力经济 ['EDWC Project Series, Part 4 | Accelerating the "EDWC" Initiative to Cultivate and Expand the Computing Economy]," NDRC, 11 March 2022.




**Map 1.** EDWC Project. *Source:* People's Republic of China, Central People's Government.[33]

coordination points that aggregate, process, and distribute data workloads across regions through an interconnected network. The data centre clusters are the spokes, functioning as operational units that power the network, handling real-time workloads, data storage, and computing tasks. In practice, EDWC infrastructure already provides compute to AI technologies in China, for example, to an AI-powered cleanliness monitor which observes the food safety of street vendors selling rice noodles in Changsha, Hunan,[30] and to the Qingyang City government in Gansu, which uses DeepSeek to provide AI-enabled government services.[31] Simultaneously, AI increasingly enables complex joint operations on the battlefield, showing the diversity of AI tasks that EDWC compute might be used for.[32]

*EDWC infrastructure already provides compute to AI technologies in China and enables complex joint operations on the battlefield*

[30] "《大国基石》第二季 03 算力引领未来：推动"东数西算"工程 助力数字经济腾飞！【CCTV纪录】['The Foundation of a Great Nation' S02E03 Compute Leads the Future: Promoting "EDWC" to Help the Digital Economy Take Off! [CCTV Documentary]]," YouTube, January 2025.

[31] "庆阳完成DeepSeek本地化部署AI赋能政务服务迭代升级 [Qingyang completes local deployment of DeepSeek, empowering iterative upgrades of government services with AI]," 庆阳网 [Qingyang Net], 27 February 2025.

[32] "军事论坛丨浅议生成式人工智能作战应用 [Military Forum: A Brief Discussion on Generative AI Combat Applications]," 中国军网 [China Military Net], 10 April 2025.

[33] "解读｜'东数西算'工程不只是把东部数据拿到西部运算 [Analysis | The 'EDWC' project isn't just about bringing data from the East to the West for processing]," 科普中国 [Kepu China], 31 March 2025.

| Investor | Investment destination(s) |
|---|---|
| Huawei 华为 | Wuhu and Horinger clusters, Guizhou hub |
| Tencent 腾讯 | Ningxia and Guizhou hubs |
| Alibaba 阿里巴巴 | Zhangjiakou cluster |
| Baidu 百度 | Greater Bay Area, Ningxia hubs |
| ByteDance / Douyin 字节跳动/抖音 | Wuhu cluster, Greater Bay Area hub |
| NetEase 网易 | Guizhou hub |
| Amazon Web Services 亚马逊云 | Ningxia hub |
| CloudWalk 云从科技 | Chongqing cluster |
| iFlytek 科大讯飞 | Ningxia hub |
| DeepSeek 深度求索 | Model deployment on Wuhu cluster |
| Bank of Communications 交通银行 | Guizhou hub |
| China Construction Bank 建设银行 | Guizhou hub, Horinger cluster |
| Agricultural Bank of China 农业银行 | Horginer cluster |
| Bank of China 中国银行 | Horginer cluster |
| Everbright Bank 光大银行 | Guizhou hub (planned) |
| China Mobile 中国移动 | Guizhou, Chengdu hubs and Wuhu, Qingyang, Horinger clusters |
| China Telecom 中国电信 | Zhangjiakou, Chongqing, Horinger clusters and Yangtze, Greater Bay, Guizhou hubs |
| China Unicom 中国联通 | Zhangjiakou, Wuhu, Shaoguan, Horinger clusters |
| Zijinshan Lab 紫金山实验室 | Qingyang cluster |
| Pengcheng Lab 鹏城实验室 | Greater Bay Area hub |
| Huatian Tech 华天科技 | Shaoguan cluster |
| Netac Tech 朗科科技 | Shaoguan cluster |
| Zuojiang Tech 左江科技 | Shaoguan cluster |
| StarHan Tech 星汉科技 | Ningxia cluster |
| Sugon 中科曙光 | Wuhu cluster |
| Midea 美的 | Guizhou hub |
| Shanghai Enflame 上海燧原 | Guizhou hub |
| 21Vianet 世纪互联 | Zhangjiakou cluster |
| Hoyinn 合盈数据 | Zhangjiakou cluster |

**Table 1.** Investors in and investment destinations in EDWC.
*Source*: Compiled by the author based on the data available at Zhongguang Hulian.[34]

## 3. Funding, Timeline, and Direction

EDWC has already attracted substantial funding from both the public and private sectors. As of June 2024, direct investment in the eight national hub nodes exceeded RMB 43.5 bn, driving total contribution of more than RMB 200 bn, according to Liu Liehong (刘烈宏), director of China's NDA.[35] These investments fuel China's wider core computing power industry, with industry investment totalling RMB 1.5 tn yuan by 2021, and expected yearly investment increases of RMB 400 bn, according to the

*EDWC has already attracted substantial funding from both the public and private sectors*

[34] "'东数西算' 三年：八大算力枢纽能力几何 [Three Years of 'EDWC: The Capabilities of the Eight Major Computing Hubs]," 中广互联 [Zhongguang Hulian], 12 March 2025.

[35] "'东数西算' 八大国家枢纽节点直接投资超过435亿元 [Direct investment in eight national hubs for EDWC Compute exceeds 43.5 billion yuan]," 中华人民共和国中央人民政府 [PRC Central People's Government], 29 August 2024.

Industry and Information Technology Department of Shaanxi Province.[36] State-owned telecom operators China Mobile, China Telecom, and China Unicom, as well as private companies Huawei and Douyin, are among EDWC's largest investors.[37] Chinese analysts suggest that the state-owned businesses are likely the leading stakeholders in EDWC, as the primary data centre and network providers in the country.[38] Construction of the national data infrastructure is financed by central fiscal funds and ultra-long-term treasury bonds.[39]

While the project's initial launch included eight hub nodes and ten clusters, EDWC is projected to expand to even more locations. Neither Xinjiang nor Tibet were mentioned in EDWC's launch, yet there are numerous reports of EDWC or EDWC-affiliated projects in these regions. In 2024, the implementation of the Action Plan for High-Quality Development of Computing Infrastructure in Tibet was announced, emphasising the need to actively integrate Tibet into the national EDWC plan.[40] In Shuanghe City, 50 km from Xinjiang's border with Kazakhstan, a total of RMB 2.3 bn is being invested into a 12 000 $m^2$ EDWC-affiliated data centre with a planned compute power of 5 000 PFLOPS. This is overseen by the Xinjiang Production and Construction Corps that, as of 2025, is responsible for 37 data centres in Xinjiang, with another ten under construction.[41] Data centres in Xinjiang also offer opportunities for cooperation with Central Asian countries in cross-border compute allocation and data flow.[42] The Urumqi area will be designated as a central computing scheduling zone to form a unified compute network across Xinjiang, critical for digital trade with Central Asian countries.[43] In this way, EDWC is also a vital economic initiative that can bring prosperity to China's less developed regions.

When the project launched in 2022, no timeline for its completion was given. Yet the NDA has since articulated some milestones for the development of China's national data infrastructure, almost synonymous with EDWC. The NDA states that (i) by 2026, various pilot tests will be carried out; (ii) by 2028, data infrastructure will be built out and cover large and medium-sized cities across China; and (iii) by 2029, the main data infrastructure will be completed, including horizontal interconnection and vertical penetration.[44]

[36] "算力赋能数字经济高质量发展 [Compute empowers high-quality development of the digital economy]," Industry and Information Technology Department of Shaanxi Province, 28 February 2023.

[37] "'东数西算' 三年：八大算力枢纽能力几何 [Three Years of 'EDWC: The Capabilities of the Eight Major Computing Hubs]," 中广互联 [Zhongguang Hulian], 12 March 2025.

[38] "中信建投：一文读懂'东数西算'工程带来的投资机会 [CITIC Construction Investment: Understanding the Investment Opportunities Brought by 'EDWC']," *Cailian Press*, 22 February 2022.

[39] "国家数据局：深入实施'东数西算'工程" [NDA: Fully Implementing 'EDWC'], 中国信息协会 [China Information Association], 7 January 2025.

[40] "西藏管局联合六部门印发'算力珠峰'高质量发展行动计划 [The Tibet Autonomous Region Administration and six other departments jointly issued the "Computing Power Mount Everest" high-quality development action plan]," 中共西藏自治区委员会网络安全和信息化委员会办公室 [Office of Cybersecurity and Informatisation Committee of the Tibet Autonomous Region Committee of the CCP], 27 June 2024.

[41] "兵团深度参与'东数西算'工程，掀起数字经济发展新高潮－－为数字中国建设贡献兵团算力 [Xinjiang Production and Construction Corps Deeply Participates in 'EDWC', Driving a New Upsurge in Digital Economy Development – Contributing XPCC Compute to the Construction of Digital China]," 国家数据局 [NDA], 19 June 2025.

[42] "'算'出新疆机遇 ['Computing' opportunities in Xinjiang]," 中国一带一路网 [China BRI Net], 28 August 2024.

[43] "新疆自贸试验区：融入国家'东数西算'工程，推动构建全疆算力一张网 [Xinjiang Pilot Free Trade Zone: Integrating into the National "EDWC" Project to Promote the Construction of a Xinjiang-Wide Compute Network]," 天山网 [Tianshannet], 9 April 2024.

[44] "文字实录｜国家数据局举行专题新闻发布会 介绍"加快推进国家数据基础设施建设"相关情况 [Transcript | The NDA held a special press conference to introduce the situation of "accelerating the construction of national data infrastructure"]," 国家数据局 [NDA], 7 January 2025.

| Location | Compute Achievements by 2024 | Compute Goals |
|---|---|---|
| Beijing-Tianjin-Hebei hub, Zhangjiakou cluster | Zhangjiakou reached 22.8 EFLOPS FP32. | By 2025, Zhangjiakou aims to reach 50 EFLOPS, Beijing 45 EFLOPS, and Hebei 25 EFLOPS. By 2026 Tianjin will reach over 10 EFLOPS. |
| Yangtze River Delta hub, Wuhu and Yangtze clusters | Many new projects in the Yangtze cluster. | By 2027, Wuhu cluster aims to exceed 45 EFLOPS. By 2026, Anhui should reach 15 EFLOPS (not incl. Wuhu). |
| Guangdong-Hong Kong-Macao Greater Bay Area hub, Shaoguan cluster | Shaoguan reached 50.6 EFLOPS. | By 2025, the Greater Bay Area's (not incl. Shaoguan) will reach 38 EFLOPS. |
| Guizhou hub, Gui'an cluster | In 2024, Guizhou reached 55 EFLOPS. | By 2025, Guizhou will reach 150 EFLOPS. |
| Chengdu-Chongqing hub, Tianfu and Chongqing clusters | In 2024, Sichuan reached 15 EFLOPS with another 14 EFLOPS under construction. Chongqing reached 3 EFLOPS. | By 2027, Sichuan's will reach 40 EFLOPS. By 2026 Chongqing will reach 35 EFLOPS. |
| Gansu hub, Qingyang cluster | By end of 2024, Qingyang had reached 50 EFLOPS. | By end of 2025, Qingyang aims to reach 100 EFLOPS. |
| Ningxia hub, Zhongwei cluster | By end of 2024, Ningxia reached 31 EFLOPS at FP16. | By 2027, Zhongwei aims to reach 800 EFLOPS at FP16 (seems unfeasible, but Ningxia gvt documents support this claim). |
| Inner Mongolia hub, Horinger cluster | Total deployed reached 50.6 EFLOPS. | By end of 2025, Horinger aims to reach 79 EFLOPS. |

**Table 2.** Overview of Progress on Computing Hub Nodes and Data Centre Clusters.
*Source:* Compiled by the author based on the data available at Zhongguang Hulian.[50]

## 4. Post-Implementation Successes

One year into EDWC, China had 14 national supercomputing centres (国家级超算中心), 633 hyperscale and large data centres (超大型和大型数据中心), and 60 intelligent computing centres (智算中心).[45] On the three-year anniversary of EDWC, it was noted that demand for computing power in eastern China was being orderly transferred westward, and that the clustering effect of computing power was beginning to emerge, demonstrating success in the project's basic objectives.[46] Importantly, in September 2024, China's data centres had a total computing power of 268 EFLOPS FP32,[47] putting the country on track to meet its goal of national computing power of 300 EFLOPS FP32 by 2025.[48] A government technology department in Shaanxi province noted that while in 2021, the US held 31% of global computing power and China accounted for 27%, China was estimated to overtake the US by 2025.[49] China's national compute is a total of that across various regions, progress on which can be seen in Table 2.

While computing power and rack capacity are key to enabling AI, Beijing has to build

[45] "《大国基石》第二季 03 算力引领未来：推动"东数西算"工程 助力数字经济腾飞！【CCTV纪录】["The Foundation of a Great Nation" S02E03 Compute Leads the Future: Promoting "EDWC" to Help the Digital Economy Take Off! [CCTV Documentary]]," YouTube, January 2025.

[46] "'东数西算'三周年：算力崛起，网络未足 [The third anniversary of 'EDWC: Growing compute, but insufficient network]," 新浪财经 [Sina Finance], 17 February 2025.

[47] "文字实录｜国家数据局举行专题新闻发布会 介绍"加快推进国家数据基础设施建设"相关情况 [Transcript | The NDA held a special press conference to introduce the situation of "accelerating the construction of national data infrastructure"]," 国家数据局 [NDA], 7 January 2025.

[48] "China unveils action plan for computing power infrastructure development," State Council, 9 October 2023.

[49] "算力赋能数字经济高质量发展 [Compute empowers high-quality development of the digital economy]," Industry and Information Technology Department of Shaanxi Province, 28 February 2023.

[50] "'东数西算'三年：八大算力枢纽能力几何 [Three Years of 'EDWC: The Capabilities of the Eight Major Computing Hubs]," 中广互联 [Zhongguang Hulian], 12 March 2025.

out capacity cost-effectively, and one way to achieve this is by optimising data centre PUE. Improving the PUE of power-hungry data centres is likewise essential to minimising energy consumption and associated costs. In 2021, China's data centres had an average PUE of 1.5, while EDWC's 2022 requirements stated that eastern data centres should have PUE <1.25 and western data centres PUE <1.2.[51] As of January 2025, there were some promising results: a reported 246 green data centres in China had an average PUE of 1.2.[52] By 2031, China's average PUE will have reached the international advanced level according to the NDRC, i.e. on par with the US.[53] US data centres are projected to average PUE between 1.15-1.35 by 2028.[54]

Likewise, Beijing must also be wary of not jeopardising its climate goals while increasing compute capacity. Although China's overall power supply remains relatively polluting, with 61% of electricity generation coming from coal, China is also the world's largest builder of new power generation, including renewables.[55] New buildings, like EDWC data centres, are able to utilise renewable energy coming online – the central government, therefore, set the goal of increasing it by 10% annually.[56] In 2024 the NDRC stated that the proportion of green electricity used in newly built data centres at EDWC national hub nodes would exceed 80%.[57] By 2035, it is projected that renewable and nuclear power will supply 60% of the electricity for China's data centres.[58]

Despite difficulties in connecting renewable energy sources to data centres due to grid limitations as well as challenges in monitoring whether electricity is coming from dirty or green sources,[59] perseverance is necessitated by their high energy consumption – in 2020, data centres consumed 2.7% of China's total electricity, and this will increase to 3.7% by 2030.[60] A Tsinghua University study shows that data centres in China's western regions lead in sustainability, while facilities in the Yangtze River Delta and Greater Bay Area are less green.[61]

## 5. Failures and Underutilisation

Domestic and international sources have been critical of the real demand for China's data centres, likening their rapid construction to a gold rush. *MIT Technology Review's* March 2025 report called it China's "AI data centre frenzy," noting the unravelling of AI data centre demand due to speculative investments and industry trends spurred by DeepSeek, as well as data centres becoming a place for struggling real estate investors to park their capital while local officials gamed the system to earn government subsidies. Misaligned incentives may have resulted in surplus construction of data centres in western China, which now struggle to attract business.[62] A similar sentiment was expressed by a researcher at the Institute of Computing Technology at the Chinese Academy of Sciences, who said that some local governments blindly rushed into overbuilding data centres driven by incentives but without a clear plan for usage, whilst also ignoring real market demand.[63] The reported

[51] "东数西算高楼渐起－－全国算力一张网 东西协同一盘棋 [East-West Computing Towers Rise – A National Computing Network, East-West Collaboration]," NDRC, 13 December 2022.

[52] "Blueprint to Action: China's Path to AI-Powered Industry Transformation," World Economic Forum, January 2025.

[53] "数据中心绿色低碳发展专项行动计划 [Special Action Plan for Green and Low-Carbon Development of Data Centres]," NDRC, 23 June 2024.

[54] Arman Shehabi et al., *2024 United States Data Center Energy Usage Report* (Berkeley Lab, December 2024).

[55] Dylan Patel, Daniel Nishball and Jeremie Eliahou Ontiveros, "AI Datacenter Energy Dilemma – Race for AI Datacenter Space," SemiAnalysis, 13 March 2024.

[56] "我国推动数据中心绿色低碳发展 [China promoting green and low-carbon development of data centres]," 中华人民共和国中央人民政府 [PRC Central People's Government], 24 July 2024.

[57] "数据中心绿色低碳发展专项行动计划 [Special Action Plan for Green and Low-Carbon Development of Data Centres]," NDRC, 23 June 2024.

[58] Yuan Ye, "Explainer: How China is managing the rising energy demand from data centres," *CarbonBrief,* 16 April 2025.

[59] "'东数西算' 工程建设的现状、问题与对策 [The current situation, problems and countermeasures of the construction of the 'Eastern Data Western Compute' project]," 安全内参 [Anquan Neican], 30 October 2023.

[60] Ye, "Explainer."

[61] "《国家"东数西算"枢纽节点绿色算力指数研究报告》发布 [The National "East-West Computing" Hub Node Green Computing Power Index Research Report was released]," Tsinghua University School of Economics and Management, 9 July 2024.

[62] Caiwei Chen, "China built hundreds of AI data centers to catch the AI boom. Now many stand unused," *MIT Technology Review*, 26 March 2025.

[63] "'东数西算' 堵在哪儿了？[Where has EDWC got stuck?]," 北京市经济和信息化局 [BITA], 5 May 2025.

overbuilding of data centres aligns with trends of surplus construction in China's wider real estate sector.

The implementation of EDWC has also met technological challenges. China's *Sina Finance Network* reported the underdevelopment of network infrastructure, perhaps owing to inadequate fibre optic networks and data exchange nodes. This negatively affects network integration, resulting in slower compute despite sufficient computational power.[64] Computing infrastructure mismatch was also highlighted as a technological issue by the Beijing Information and Telecommunication Association (BITA, 北京通信信息协会). BITA noted the lack of national-level technical guidance for EDWC as an impediment to building a unified scheduling system, which allocates computing tasks across the national network. In practice, western data centres may be unable to match their computing resources to the computing needs of the east – this system disparity has meant that some tasks cannot be computed at all. BITA highlighted software and hardware issues that have caused this problem – reportedly, many applications lack localised software compatibility, flexible deployment, and tailored solutions, which limits their ability to meet real-world computing demands. Software stack incompatibility could be attributed to running different operating systems across data centres, while hardware architecture mismatch could be caused by sending tasks optimised for GPU to data centres that have only CPU clusters, and vice versa. Overall, this highlights the difficulties in building numerous data centres across a huge land area. Not only is efficiently connecting the network a challenge, but so is standardising software and hardware solutions across the network, considering that data centres are built at different times, with different funding, and in different sizes. Problems may be exacerbated by a lack of central guidance.

High networking expenses may also hinder EDWC's uptake. Renting a 1Gbps private line alone costs approximately RMB 160 000 per month, constituting 75% of the total cost of some computing tasks. Higher capacity lines like 2.5Gbps and 10Gbps are even more expensive. High line costs stem in part from the vast distances that east-west lines must cover. Yet this problem is worsened by lines which have indirect data flows: for example, data from Qingyang first head west to Lanzhou and then southeast to Xi'an before arriving at its final destination in the east. While EDWC was touted to reduce overall compute costs due to the land electricity price advantages of western China, benefits may be offset by high network transmission costs.

*Overbuilding, technological challenges, and high costs have resulted in the overall underutilisation of EDWC AI data centres*

Overbuilding, technological challenges, and high costs have resulted in the overall underutilisation of EDWC AI data centres. BITA found that owing to these factors, many western data centres were often used for storage instead of compute, with analysts coining the term Eastern Data Western Storage (东数西存) to describe the project's real-life outcome. Underutilisation was reported by BITA in the Gui'an, Qingyang, and Zhongwei clusters, where rack utilisation is 34–41%. In addition, a local data investment company's business manager said that Zhongwei's data centre was still primarily used for low-compute rack-leasing services, rather than providing compute directly to clients.[65] BITA has suggested the adoption of a more market-oriented approach to fix EDWC's supply-demand mismatch, basing construction on real demand rather than cheap land and electricity. The reconfiguration of incentives is already being implemented in Zhongwei: data centre builders are only rewarded when clients are found and corresponding equipment installed, therefore preventing the construction of data centre shells. The overbuilding of EDWC data centres likely stems from the same structural issues that have caused overcapacity in many other areas of China's economy in 2025.

[64] "'东数西算' 三周年：算力崛起，网络未足 [The third anniversary of 'EDWC: Growing compute, but insufficient network]," 新浪财经 [Sina Finance], 17 February 2025.

[65] "'东数西算' 堵在哪儿了？ [Where has EDWC got stuck?]," 北京市经济和信息化局 [BITA], 5 May 2025.

# Conclusion

Despite issues in implementation, EDWC has quantitatively strengthened China's national compute capacity (measurable in EFLOPS), increased data centre efficiency (measurable in PUE), and grown the renewable energy share of data centre electricity consumption. This progress in a nationally integrated data centre network is an enabler of China's domestic AI leap, which also carries geo-political implications.

*Progress in a nationally integrated data centre network is an enabler of China's domestic AI leap, which also carries geopolitical implications*

- **Empowering the global competitiveness of China's AI companies.** Computational power provided by EDWC facilitates DeepSeek's training and inference, with the DeepSeek large language model launched on the Wuhu Cluster of the Yangtze River Delta Hub. EDWC allows DeepSeek to utilise local compute resources in Wuhu rather than relying on external cloud services, which would be slower and more expensive.[66] Similarly, EDWC will provide local compute resources to other AI companies in China, enabling industry progress at a better price. This enables Chinese AI companies to first develop domestically, and then later to scale up on the global stage (e.g., DeepSeek).

- **Positioning China as a world leader in the data centre industry.** The implementation of EDWC has seen China invest tens of billions of RMB and build hundreds of large and hyperscale data centres. Construction at this scale promotes Chinese innovation in data centre building, localised component supply chains, and economies of scale, which brings down costs.

- **Data centre diplomacy – integrating data centres into Beijing's BRI offering.** China's expertise in data centres allows Beijing to export data centre-related technology to the global south. Over the past four years, Chinese companies have already constructed multiple data centres in Africa: in 2021, China Jiangxi International and Economic Cooperation Co, Ltd, began construction of a national data centre in Gaborone, Botswana;[67] in 2023, Huawei, in cooperation with Nigerian company Galaxy Backbone, announced construction of a data centre in Kano, Nigeria.[68] As demand for compute in Africa increases, Beijing's data centre offerings to the continent will follow, thereby exerting the BRI's influence even farther. Likewise, EDWC deployment in Xinjiang could be the first step of the project's expansion into Central Asian countries.

- **Growing China's technological sovereignty.** Localised data centre innovation and component supply chains enhance China's AI self-sufficiency, thereby decreasing pre-existing dependence on third countries. This is in line with Xi's goals of "self-reliance and self-strengthening" (自立自强) through building "independent and controllable" (自主可控) ecosystems, with China's leaders viewing AI advancements as key to national security and overall competitiveness.[69] This carries extra importance for Beijing, since supply chains for related technologies have remained heavily concentrated in the US, Europe, Japan, Korea, and Taiwan.[70]

- **Developing PLA AI capabilities.** Already in 2020, approximately 1.9% of public PLA contracts were related to AI or autonomy – in 2025, this figure has likely increased, given the rapid development of AI

[66] "DeepSeek大模型芜湖‘上新’ [DeepSeek large model 'launched' in Wuhu]," 芜湖市数据资源管理局 [Wuhu Municipal Data Resources Management Bureau], 17 February 2025.

[67] "丝路和畅 途顺心连 – – 一线探访江西建设的亚非交通设施及数据中心项目 [A smooth and harmonious Silk Road, a smooth journey and a connected heart: A frontline visit to the Asia-Africa transportation infrastructure and data centre projects under construction in Jiangxi]," 中国一带一路网 [China BRI Net], 30 October 2023.

[68] "驻尼日利亚大使崔建春出席卡诺数据中心启用仪式 [Ambassador Cui Jianchun of China to Nigeria attended the opening ceremony of Kano Data Centre]," 中国外交部 [PRC MFA], 2 February 2023.

[69] Wendy Chang, Rebecca Arcesati, Antonia Hmaidi, "China's drive toward self-reliance in artificial intelligence: from chips to large language models," *MERICS*, 22 July 2025.

[70] "东数西算高楼渐起 – – 全国算力一张网 东西协同一盘棋 [East-West Computing Towers Rise – A National Computing Network, East-West Collaboration]," NDRC, 13 December 2022.

technologies.[71] Indeed, 2025 recruitment advertisements for the PLA Information Support Force were looking for graduates with degrees in AI, among other areas.[72] Recent military procurement records show Chinese companies taking up DeepSeek's technology,[73] and that the PLA procures AI for intelligence analysis, information warfare, and more.[74] EDWC may provide the compute required for the development of such military AI systems, strengthening PLA autonomous capabilities, for example, in unmanned autonomous underwater vehicles.[75]

*Whoever has stronger compute will hold the advantage in intelligent warfare*

- **Facilitating PLA AI deployment.** Chinese military assessments say that whoever has stronger compute will hold the advantage in intelligent warfare. Compute-enabled cloud centres can see real battlefield trends from complex scenes through strategic calculations, while compute can also provide near-real-time scenario simulation to plan weapon selection, strike windows, and attack routes.[76] Therefore, EDWC can offer the compute the PLA requires to calculate real-time battlefield scenarios.[77] Given that at least six of the 25 listed companies investing in EDWC have ties to Chinese military (i.e., Huawei, China Mobile, China Telecom, China Unicom, CloudWalk, and Sugon), it is highly likely that EDWC data centres have a dual-use nature.[78]

- **Adversely utilising third country data** (including European). Of the 25 listed companies investing in EDWC, at least half have a presence in Europe, and thus may send some or all data gathered there back to EDWC data centres in China, thereby threatening European data privacy and security. Huawei, Tencent, Alibaba, ByteDance/Douyin, China Telecom, and China Unicom all have significant operations in Europe, while Bank of China, China Construction Bank, Agricultural Bank of China, and Bank of Communications all have local branches. The data of European consumers, businesses, governments, and other actors, if processed in China, may be used for undesired purposes. EU concerns in this regard were already voiced in January 2024.[79] While those were raised in the context of undersea cables and TikTok, the processing of European data in EDWC data centres presents similar risks. For instance, European data could be used in the development of Chinese technologies, including military ones, given the CCP's Military-civil fusion (军民融合) policy.

- **Closing the 'computing power gap' in US-China great power competition.** In 2023, the US ranked first in the global computing power index with 77 points, and China ranked second with 70 points. Chinese analysts recognise the existence of this gap, seeing it as the reason why American, German, and British digital economies exceeded 60% of GDP while China's was 38.6% in 2023. EDWC is a tool for Beijing to narrow this gap and reach parity with the US in computing power.[80]

[71] Ryan Fedasiuk, Jennifer Melot, Ben Murphy, "Harnessed Lightning: How the Chinese Military is Adopting Artificial Intelligence," Centre for Security and Emerging Technology, October 2021.

[72] "中国人民解放军信息支援部队2025年直招军官 [Direct Recruitment of Officers for the Information Support Forces of the Chinese People's Liberation Army in 2025]," 国聘 [National Recruitment], 2025.

[73] Julian E. Barnes, "China's Spy Agencies Are Investing Heavily in A.I., Researchers Say," *The New York Times*, 17 June 2025.

[74] Fedasiuk, Melot, and Murphy, "Harnessed Lightning."

[75] Alex Lewis Richter, "Experts See Risk and Reward to Integrating AI in Nuclear Weapons," *Jamestown Foundation*, 7 June 2025.

[76] "智能化战争中左右战争胜负的新变量：连接力、计算力、认知力 [New variables that determine victory or defeat in intelligent warfare: connectivity, computing power, and cognitive power]," 中国军网 [China Military Net], 30 November 2021.

[77] "港媒分析：'东数西算'工程为什么至关重要？ [Hong Kong media analysis: Why is 'EDWC' so crucial?]," 新浪财经 [Sina Finance], 6 July 2022.

[78] "Entities Identified as Chinese Military Companies Operating in the United States in accordance with Section 1260H of the William M. ["Mac"] Thornberry National Defense Authorization Act for Fiscal Year 2021 [Public Law 116-283]**," Department of War, 31 January 2024.

[79] "Security and defence implications of China's influence on critical infrastructure in the European Union," Official Journal of the European Union, 17 January 2024.

[80] "'东数西算'工程建设的现状、问题与对策 [The current situation, problems and countermeasures of the construction of the 'Eastern Data Western Compute' project]," 安全内参 [Anquan Neican], 30 October 2023.

Overall, EDWC's primary purpose is to increase China's national compute capacity by building a nationally integrated network of data centres, harnessing the cheaper land and cleaner energy resources of its sparsely populated west. Since the project's launch, China has made progress in building out data centres, albeit with logistical issues. While EDWC is a domestic policy, its results will carry wider geopolitical implications, affecting China's AI advancements, its technological self-sufficiency, digital economy, and military capabilities. For Beijing, greater national compute capacity strengthens its position in the global AI race – and the west should pay close attention.

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