

## National New Data Centre Development

Policy Briefing | September 2022

Data centres provide essential infrastructure to enable data-driven Industrie 4.0 technologies by storing, transferring, and processing large volumes of data.

In China, the concept “new data centres” is firstly raised in the [Three-Year \(2021-2023\) Action Plan on New Data Centres](#) (hereinafter called the “Plan”). New-generation data centres are supposed to have higher computational power, security and energy efficiency than conventional data centres. They are set up to facilitate the application of 5G, industrial internet, cloud computing and artificial intelligence.

Following the Plan’s publication, the development of new data centres is currently being promoted in China. This policy briefing reviews the Plan and introduces relevant national policy developments.

### *The national action plan of new data centres*

According to the Plan, new data centres shall concentrate on the development of high-quality computational power and efficiency rather than rack size.

The Plan has set specific development targets for new data centres by 2023 including:

- an utilisation rate of more than 60% per new data centre,
- the total computational power scale should exceed 200 EFLOPS<sup>1</sup>,
- high-performance computing should reach 10%,
- the share of the computational power of national data clusters should exceed 70% of the overall computational power of national data centres,
- the power usage effectiveness<sup>2</sup> (PUE) of new large-scale data centre should be less than 1.3 and the PUE of new data centres in extremely cold areas should be below 1.25,
- the internet connection latency should be reduced to twenty milliseconds.

### **New measurement unit to facilitate data-centre quality**

According to the Chinese Ministry of Industry and Information Technology (MIIT)<sup>3</sup>, the Plan is the first Chinese government policy that introduces the measurement unit EFLOPS to assess the quality of data centres. This new measurement method has four purposes: First, each new data centre should strengthen its computational power and efficiency and broaden its service provision diversification. Second, new data centres should support the digital transition and cloud applications in manufacturing industries. Third, new data centres should facilitate a more cost-efficient public service provision. Finally, new data centres should drive the development of cloud networking.

### **National data centre clusters**

<sup>1</sup> EFLOPS is a unit for measuring the speed of a computer system, it equals to one quintillion floating-point operations a second.

<sup>2</sup> Power usage effectiveness (PUE) refers to the ratio between the total data centre electricity consumption and data centre’s electricity consumption.

<sup>3</sup> The whole analysis in Chinese can be accessed [here](#).

To meet the demands of data users, the Plan has urged for promoting the construction of new data centre clusters. These clusters are to be set-up in the Beijing-Tianjin-Hebei area, the Yangtze River area, the Guangdong-Hongkong-Macau Greater Bay area and the Chengdu-Chongqing Economic area. In addition, the Plan also stresses on improving the computing power in regional hubs in Guizhou, Inner Mongolia, Gansu and Ningxia as non-real-time computing power support bases for the nation. For an overview of the recent data centre action plans at municipal and provincial levels in China, please see the [annex](#) below.

### **Green development**

The Plan stresses the green development of new data centres. It mentions three aspects: Firstly, new data centres are encouraged to be equipped with energy-efficient IT devices, cooling systems, electricity distribution systems and to strengthen the power battery cascade utilisation. Secondly, new data centres should have a greater uptake of clean energy resources. Thirdly, new data centres should rely on green designs, construction, procurement and operation management to make them more resource efficient.

## ***Application and regional deployment***

### **New data centre demonstration projects**

In 2021 MIIT has initiated the first application call for [new data centre demonstration projects](#) (hereinafter called the “Application Notice”). The Plan served as key guideline for the application and selection process. [The first list of selected demonstration projects for new data centres](#) has been released by MIIT in February 2022 (hereinafter called the “List”).

According to the Application Notice two types of new data centres are eligible to serve as demonstration projects: Large-scale data centres and edge data centres. Large-scale data centres focus on industrial internet, manufacturing, finance and public administration areas. They are designed to support the digital transformation of various industries and assessed based on their basic infrastructure, digital capabilities, operational management, and ecosystem set-up. A single large-scale new data centre should have no less than 3000 standard rack sizes (2.5 kilowatt per rack). Edge data centres, on the other hand, have application scenario-specific focuses (e.g. AR/VR, smart city, industrial internet, 5G) and are assessed based on their computational power, efficiency, cybersecurity, security surveillance and internet capabilities.

According to the List, new large-scale data centres were selected based on their computational power, efficiency, low carbon footprint, intelligent operations and operational safety. Edge data centres were selected based on scenario applications in policing, public administration, smart city, wood industry, railway, video-making, electricity supply, and coal mining.

### **Data in the East, Computing in the West**

“Data in the East, Computing in the West” (Dong Shu Xi Suan 东数西算) is a national project which aims to relocate data computing and processing capacities from the east to the west of China. The western part of China shall support to meet the data computing needs from the east and to construct a nationally integrated collaborative big data centre innovation system<sup>4</sup>. China’s western region is more abundant in natural resources compared to the eastern region, especially with regards to renewable

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<sup>4</sup> For official information regarding “the Implementation Plan For The National Integrated Big Data Centre’s Collaborative Innovation System” (published by National Development and Reform Commission, Cyberspace Administration of China, MIIT and National Energy Administration in May 2021) can be found [here](#).

energy sources. The relocation aims to enable a more efficient use of energy resources for server and computing structures.

Industrial data plays an increasingly important role for value creation in manufacturing. The industrial data that has high real-time processing requirement (e.g. Industrial Internet) demands its data-processing equipment to be located near the eastern part of China. Those industrial data with low real-time requirements (e.g. offline analysis) could be stored and processed further away from the eastern part of China. According to the Chinese government, the project is supposed to, in the long run, attract new investments and provide new opportunities for small and medium-sized enterprises by allowing for more convenient access to data computing services. The project is also supposed to contribute to the low-carbon transformation of China's digital industries.

## Outlook

- The surging use of data-driven technologies leads to a high demand of data storage capacities and more efficient data processing; infrastructure construction measures for new data centres will continue to be a priority of the Chinese government to support the development of the national digital economy and Intelligent Manufacturing.
- Green transition of the new data centres is the other core objectives of the Chinese government. Besides, it is anticipated that more new data centres will be deployed to enable the development of green manufacturing industries by applying Industrie 4.0 / Intelligent Manufacturing technologies.
- Internet data centre services belong to the value-added telecommunication service<sup>5</sup>. According to the latest [Foreign Investment Negative List \(2021 edition\)](#), the foreign share ratio for all value-added telecommunication services (except for e-commerce, domestic multi-party communications and call centres) cannot exceed 50%.

### Annex – Regional and municipal development plans for data centres (until July 2022, in Chinese):

- *Beijing's 2021-2023 Overall Development Plan for Data Centres* [here](#).
- *Tianjin's 2021-2025 Unified Big Data Centre Construction Plan* [here](#).
- *Guangdong Province's New Data Centre Whitepaper Development Plan* [here](#).
- *Sichuan Province's Three Year (2021-2023) Plan on New Data Centres* [here](#).
- *Shanghai Municipal People's Government's 14<sup>th</sup> Five-Year Plan on City's Digital Transition* [here](#).
- *Jiangsu Province's Implementation Opinions on the Overall Development* [here](#).
- *Guansu Province's Guideline on the Construction of Data Centres* [here](#).
- *Yunnan Province's 14<sup>th</sup> Five Year Plan on Data Centres* [here](#).

Your comments and suggestions to [info@i40-china.org](mailto:info@i40-china.org) are highly appreciated. More policy products can be found in our [download area](#). For more information, please visit the [Sino-German Industrie 4.0 Project Website](#).

<sup>5</sup> [The Classification Catalogue of Telecommunications Services \(2015 Catalogue\)](#), published by MIIT, took effect starting 1 March 2016.