EMERGING COUNTRIES, IA & ELECTRICITY

THE ENERGY FACTOR: A CONSTRAINT ON AI DEVELOPMENT IN EMERGING COUNTRIES

The development of artificial intelligence (AI) depends largely on the availability of abundant and reliable electricity. The sector currently accounts for 4.5% of electricity demand in the United States, 2% in Europe and around 1% in Asia (including China), where the vast majority of data centres are located. In contrast, this figure is less than 0.5% in the rest of the world, but is set to increase in the coming years. To attract investment in the AI sector, emerging countries must therefore consider significantly increasing their electricity generation capacity and establishing networks capable of continuously powering data centres. Massive investments in infrastructure, along with the use of flexible energy sources (gas, renewables), are assets for attracting AI projects. China, together with India, the Middle East and Eastern Europe, appear to have a better position.

AI ELECTRICITY CONSUMPTION: THE IMPORTANCE OF LOCATION

The availability of sufficient electricity and the ability to transport it are key factors in the establishment of local data centres, which are essential for the deployment and adoption of AI. Data centres are typically evaluated based on the electrical power required to operate them. Their energy consumption can exceed one gigawatt or GW (by way of comparison, the average output of a reactor in the French nuclear fleet is 0.9 GW). More generally, in light of the rapid expansion of data centres in recent years, the issue of facility location is of paramount importance. The growth of the sector depends – in addition to the availability of electricity – on a favourable combination of factors primarily associated with the presence of adequate skills, developed technological infrastructure, and political will. These conditions regarding location and the rapid growth of AI are resulting in a significant geographical concentration of development hubs, which is exerting considerable pressure on local electricity markets in many countries. This is fuelling sharp rises in electricity prices, especially in certain US states[1], and may even lead to moratoriums on the future establishment of data centres. In Ireland and the Netherlands, for example, the establishment of new data centres has been suspended (until 2028 in Ireland).

In 2025, 82% of global AI application development capacity, measured in terms of electricity consumption, was concentrated in the United States, the European Union and China. This trend towards geographical concentration is expected to continue, with around 85% of the new capacity expected by 2030 to be located in these three regions, according to the International Energy Agency (IEA). Approximately two-thirds of new projects are being planned in regions where clusters already exist. In China, the electricity consumption of data centres has increased by 15% per year over the last decade, which is double the annual growth rate of other sectors of the economy. The consumption of these centres is currently equivalent to that of the country's electric vehicle fleet.

The predominance of advanced economies and China in terms of installed capacity leaves little room for emerging countries in this AI landscape. As a result, the impact of AI development on the electricity markets of emerging countries remains marginal. While the sector accounts for around 4.5% of electricity demand in the United States, 2% in Europe and around 1% in Asia (including China), this figure is less than 0.5% in the rest of the world. This very low figure is not surprising, as the increase in electricity demand in emerging and developing countries is mainly driven by industrial development and improving living standards. This is particularly evident in the huge rise in electricity demand for air conditioning, set against a backdrop of rising average temperatures.

CHINA DRIVING THE INCREASE IN ELECTRICITY PRODUCTION CAPACITY

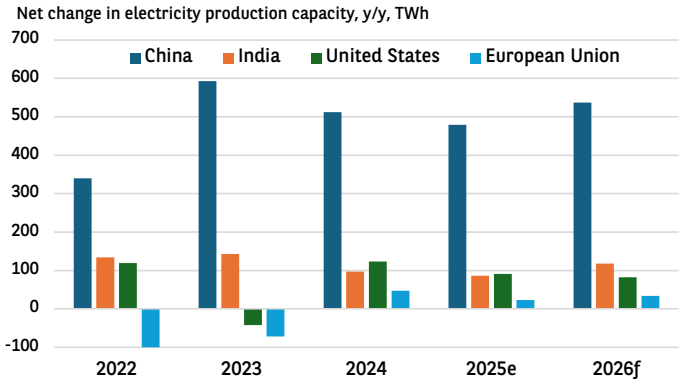

CHART 1 SOURCE: AIE

Nevertheless, even if it remains relatively concentrated in specific geographic regions, the impact of AI on national electricity systems is set to increase. According to the IEA, the development of AI accounted for 4.4% of the increase in electricity demand between 2020 and 2025. This figure is projected to increase to 8.6% during the period 2025-2030. However, this will still be lower than the expected contribution from the growth in demand associated with air conditioning on a global scale (around 10% by 2030).

IN EMERGING COUNTRIES, WHAT ENERGY COMPETITIVENESS CRITERIA SHOULD BE USED TO FOSTER THE DEVELOPMENT OF AI?

- **The expected increase in electrical capacity and/or the availability of abundant energy**

The demand for electricity driven by AI is likely to compete with other sources of demand, even though it is currently growing at a slower pace. In this scenario, countries and regions that invest heavily in energy production capacity, as well as those with abundant energy resources, will be best placed to meet the energy needs of AI. China has a decisive advantage in this regard, owing to the significant increase in its energy production capacity in recent years (*Chart 1*). According to BloombergNEF, China has installed more new energy capacity in the past four years than the total capacity installed in the United States (1,515 GW versus 1,373 GW).

1 See Ecoweek, Electricity prices in the United States: an economic and electoral issue in the run-up to the midterms, 10 February 2026.

Similarly, the new capacity installed in 2025 exceeds that the total available in India. The increase in Chinese production capacity is expected to remain substantial, growing by around 4% per year between now and 2030.

For various reasons, the Middle East also has certain advantages, notably its abundant, flexible and rapidly mobilisable carbon-based energy. Indeed, given the importance of continuous energy availability for the operation of AI systems, the controllability (i.e. flexibility) of the energy supply is crucial. The gas resources of all the Gulf countries are a major asset. Apart from Qatar and, to a lesser extent, the United Arab Emirates, which export part of their gas output, a large proportion of gas resources remains unexploited. Saudi Arabia, for example, aims to develop the use of these resources for domestic consumption in order to reduce the share of oil in its electricity mix.

Another example is India, whose electricity mix is still predominantly carbon-based and largely reliant on coal (74%), yet it aims to significantly increase the share of renewable energy sources. By 2030, this share is projected to increase to around 27% of the mix (compared to 20% currently). At the same time, the total capacity of installed data centres is expected to double to nearly 5 GW. More generally, India's production capacity is expected to grow at a sustained average rate of 4.8% between now and 2030. However, these ambitions can only be realised if the electricity grid is developed alongside.

- **Necessary investment in the electricity grid**

The need to invest in improving electricity grids is a global issue due to the growing electrification of various applications and the structurally more decentralised nature of renewable energy production. The development of AI aligns perfectly with this issue. Indeed, it is responsible for a sharp increase in electricity consumption, which in many countries is expected to be bolstered by an increase in renewable energy production capacity.

There is currently no satisfactory measure to assess how effectively national electricity grids are adapting to new demands. The SAIDI (System Average Interruption Duration Index) metric, calculated by the World Bank, assesses the reliability of the grid for its users (*Chart 2*). This represents a national average that does not provide information on the capacity to deliver sufficient quantities of electricity. However, it is an important indicator for the operation of data centres, which must remain free of power cuts. Among emerging countries, China, the Middle East and Eastern Europe have the highest reliability, whereas sub-Saharan Africa has the longest power outages. Asia (excluding China) and Latin America occupy a middle ground.

Investment in network expansion and improvement is primarily led by advanced economies and China, which together accounted for 80% of total global investment in 2024, according to the IEA. Chinese investment accounted for around 20% of the total. In addition, major investment plans are under way in certain Latin American countries (Brazil, Chile) and India (USD 110 billion in investments planned between now and 2032).

MORE RELIABLE ELECTRICITY GRIDS IN CHINA, THE MIDDLE EAST AND EASTERN EUROPE

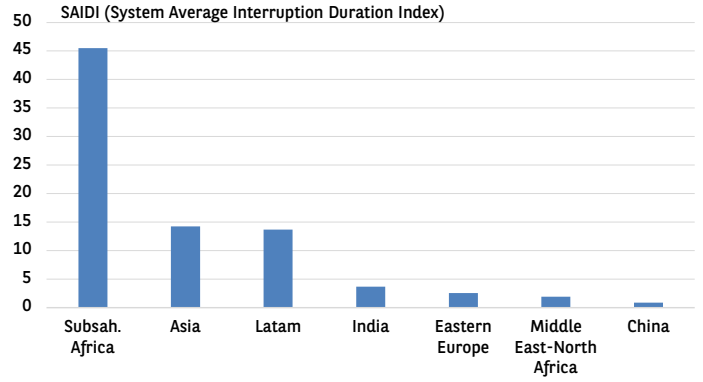

CHART 2

SOURCE: WORLD BANK

While electricity is essential for the deployment of AI, the necessary investments in energy infrastructure could also benefit the economic development of the countries concerned. Given the energy-intensive nature of AI and its rapid expansion, it is becoming increasingly urgent to step up the deployment of low-carbon energy sources to ensure that the rise of AI and decarbonisation can coexist harmoniously.

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