



Data centres and energy efficiency

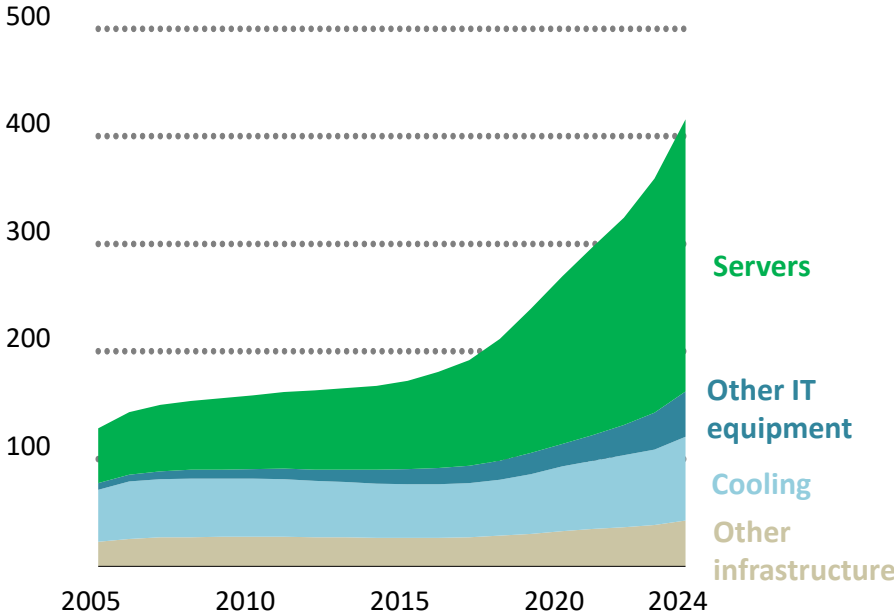
Chris Matthew

Vilnius, 22nd October 2026

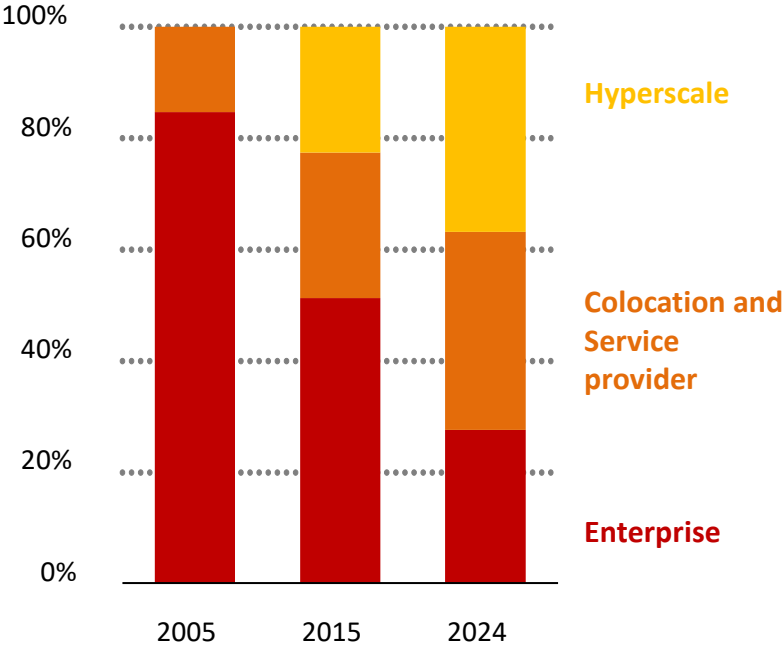
The changing shape of data centre demand

Energy efficiency has helped moderate demand growth

Data centre electricity demand by equipment (TWh)



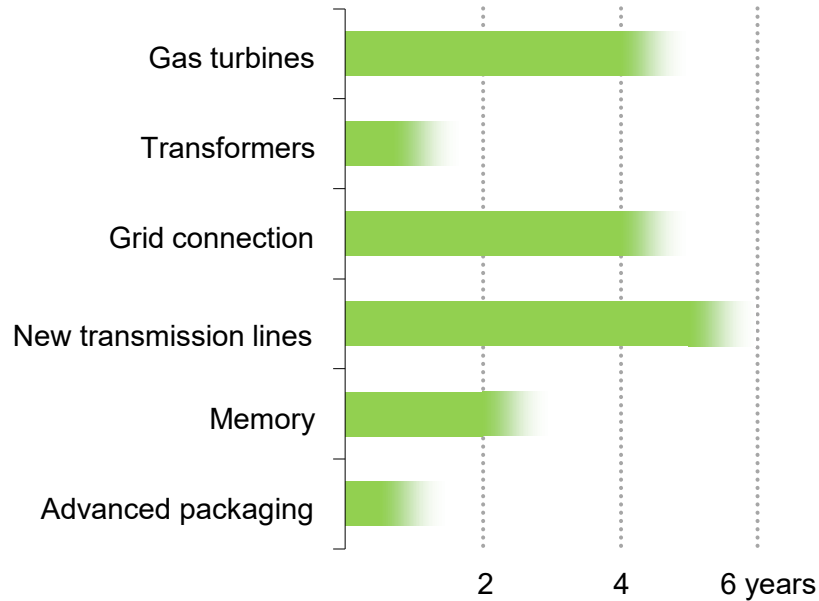
Share of each type of data centres in the demand



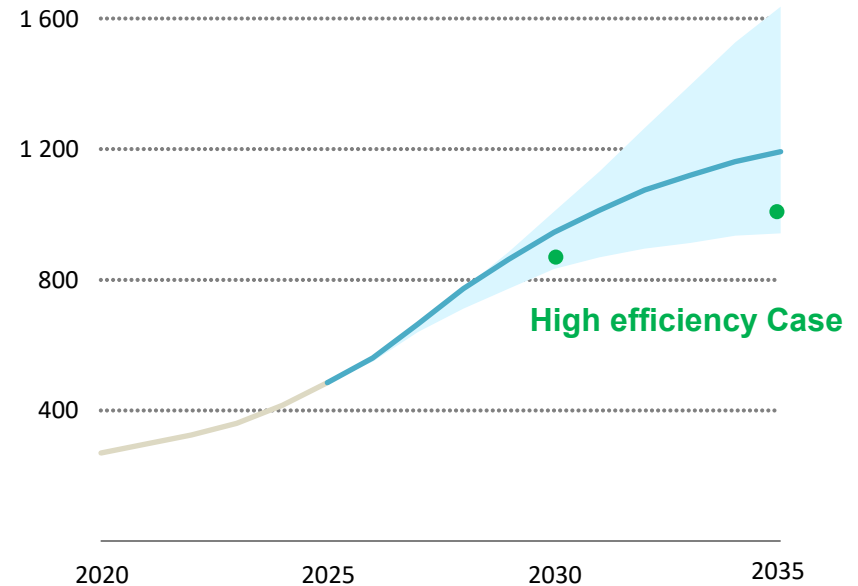
After a decade of very limited growth thanks to hardware and software efficiency improvement, in addition to a shift from small data centres to bigger and more efficient facilities, data centre electricity demand started to grow again in 2016-17.

AI is hitting real-world speed bumps adding to growth uncertainty

Timeline of bottlenecks to data centre deployment

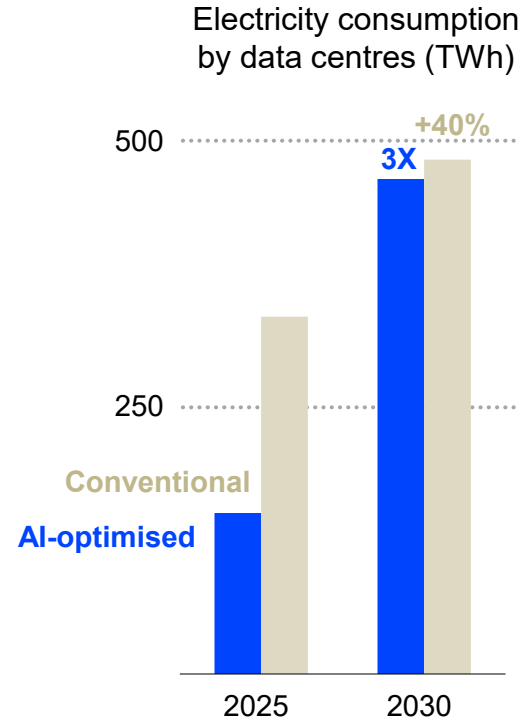


Electricity consumption by data centres (TWh)



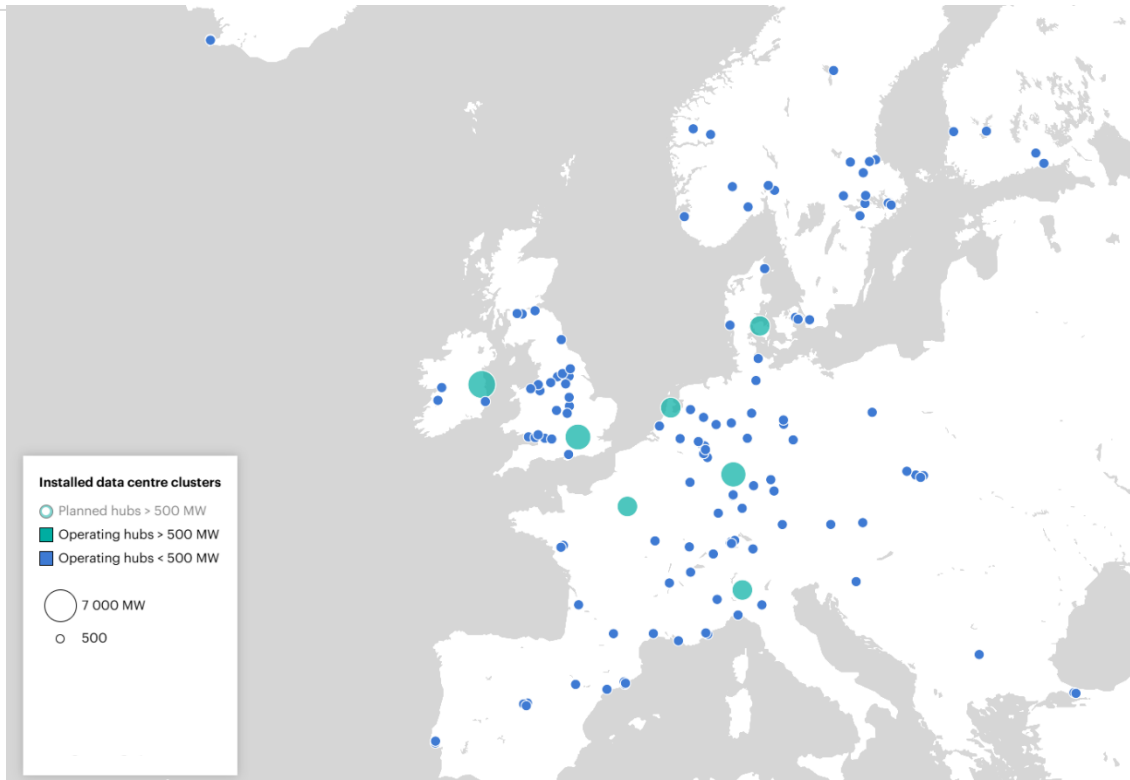
Despite all this dynamism, our central data centre demand outlook to 2030 remains close to the trajectory set out in our 2025 report, as bottlenecks in energy and technology supply chains constrain the near-term outlook.

AI drives the outlook and transforms data centre power needs



AI-optimised data centres drive electricity demand growth from the sector; their unique power needs are pushing electrical technologies and supply chains to evolve at unprecedented speeds.

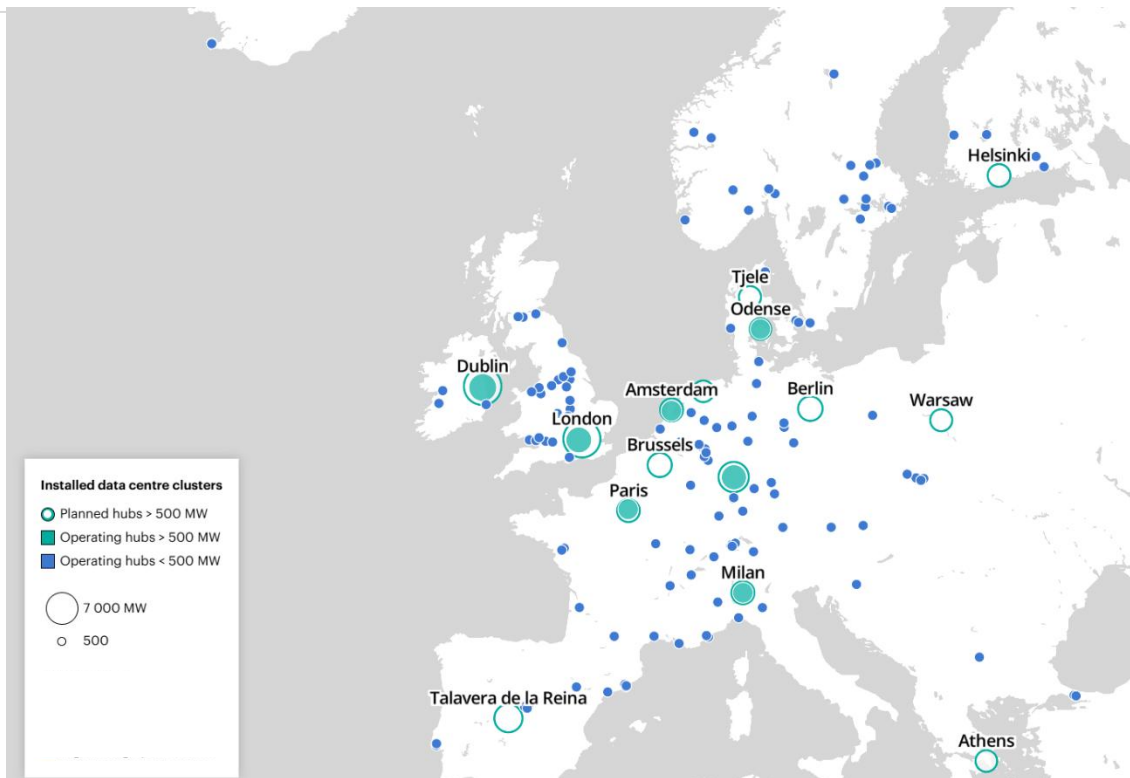
Regional data centre hubs in Europe



Source: [IEA Energy and AI Observatory](#)

Today, most installed data centre capacity is concentrated in a few historical hubs across Europe.

Regional data centre hubs in Europe



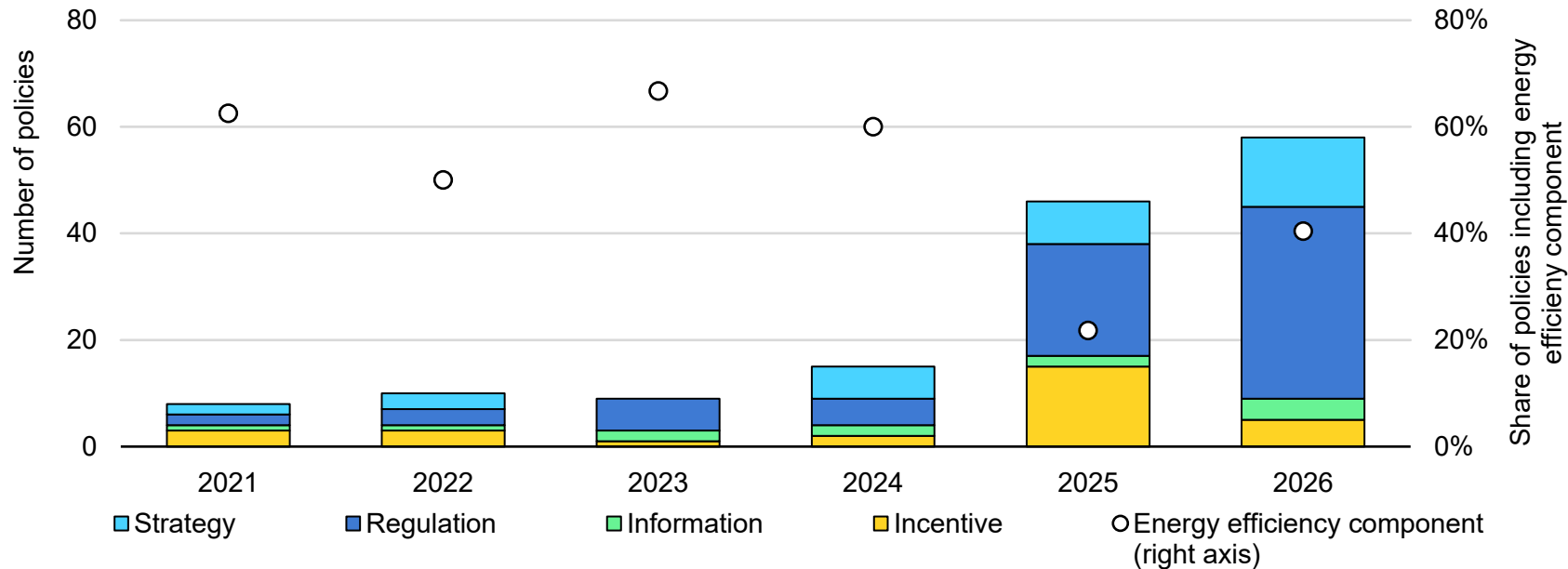
Source: [IEA Energy and AI Observatory](#)

Today, most installed data centre capacity is concentrated in a few historical hubs across Europe. But new data centre hubs in the region are set to emerge in coming years, including in Spain and Finland.

What has been the policy response to data centres internationally?

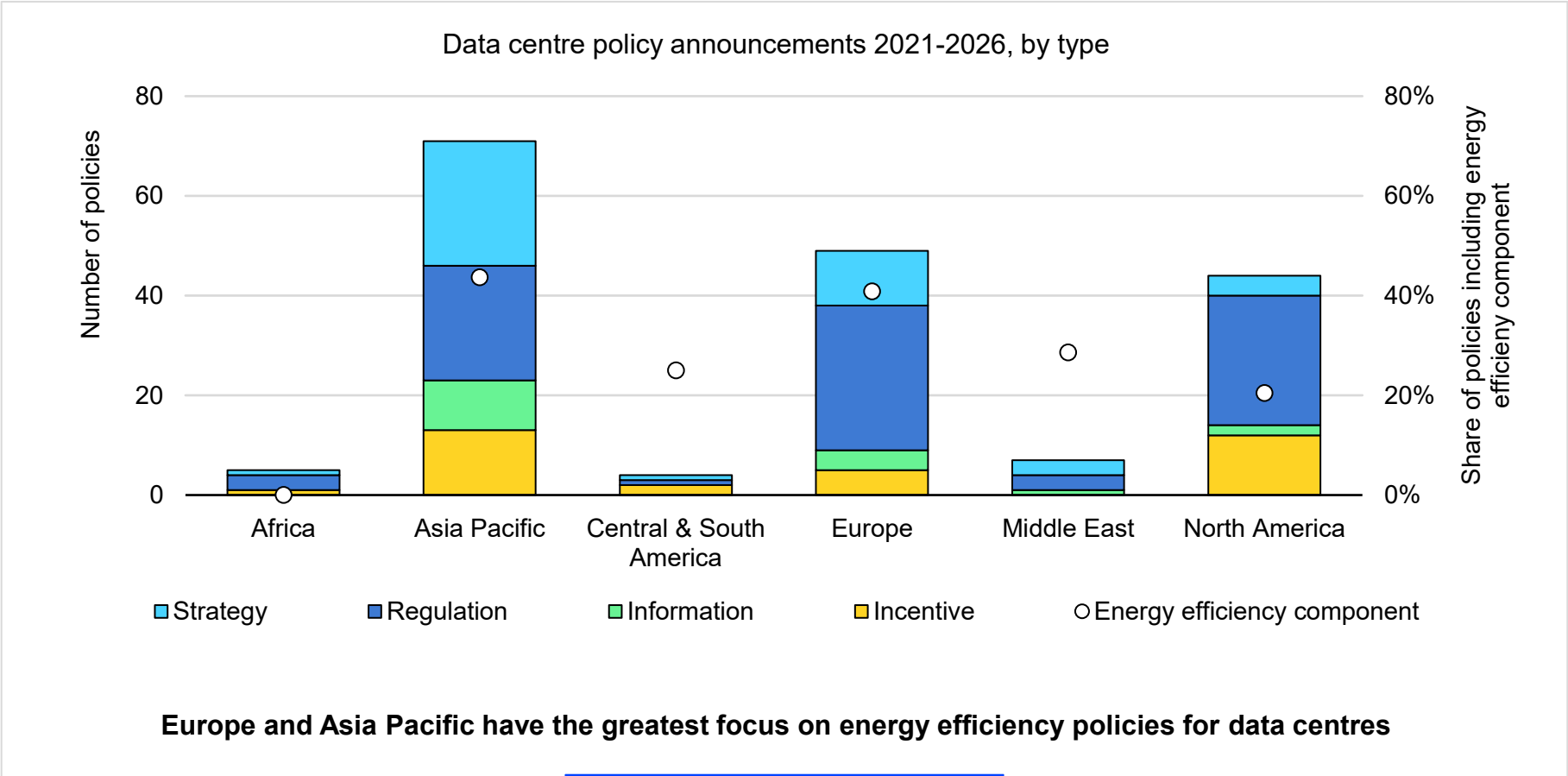
How data centres are governed is changing

Data centre policy announcements 2021-2026, by type



Trends in 2026 point to a greater focus on sectoral regulation rather than incentives as per the previous year

Data centre policy broadly follows regional capacity



How are countries allocating costs of new large loads?

Tariffs currently

Tariffs in Germany, Ireland, Spain, and USA (PJM and CAISO) are regulated by customer class rather than dedicated data-centre category

But some like PJM and starting to introduce carve-outs for data centres

Connection costs

DIRECT CONNETION COSTS

e.g. Germany and Ireland

Germany also applies a capacity-related capital contribution

DIRECT CONNECTION + GRID UPGRADES

e.g. Spain, PJM and CAISO (US)

Direct connection costs plus applicable grid upgrade costs

Recent policy focus

CLARIFY

PJM (US)

FERC order on co-located load treatment and cost responsibility

ASSESS

CAISO (US)

Large-load integration assessment

REFORM

Germany

Review of system-wide grid tariff structure

CONDITION

Ireland

Conditional connection policy with onsite generation requirement

GENERATE

Spain

Hourly demand to be met by renewable generation (pending)

Where policy makers are focusing their attention

Rank	Type of intervention
1	Control where and how quickly data centres can be built
2	Set energy-efficiency requirements
3	Use fiscal measures to influence investment
4	Manage grid access and connection
5	Require or encourage cleaner electricity supply
6	Require energy or resource reporting
7	Manage water and other local environmental impacts
8	Promote waste-heat recovery
9	Use data centres as flexible electricity loads

