Data centre strategy

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Bundesministerium
für Digitales und
Staatsmodernisierung

Contents

Introduction

Comprehensive digitisation and sufficient data centre capacities are key factors for a sustainable and competitive economy and modern public administration.

Both globally and in Germany, we are at the threshold of a new phase of digital transformation. Data centres are a decisive physical foundation for the digital transformation of a society, ensure the efficiency of modern economies, facilitate innovation, strengthen value creation and constitute an essential prerequisite for digital sovereignty and economic security in Germany and Europe. The role of data centres as critical future infrastructure is gaining further importance globally for the development and use of models of artificial intelligence (AI). With its strong economy and the world's most important internet hub comprising numerous technology companies and research institutions involved in digital transformation, Germany cannot afford to stand on the sidelines, but must and wishes to shape the digital future in a self-determined manner together with its European partners. Moreover, in view of the geopolitical risks confronting Germany and Europe, a resilient digital infrastructure and digital sovereignty are a crucial element not only of our digital capability, but also of our national security. We need to develop our own ability to prevent other players with hostile intentions from being able to gain control of critical network, computing, communication and financial transaction infrastructures and their technical components as a means of exerting economic pressure on Germany and Europe. Digital sovereignty also means reducing dependencies on market-dominating providers outside Europe, from software to the chip.

Our aspiration is clear: **Germany is to be one of the leading and most attractive locations for data centre capacities. We intend to at least double data centre capacities in Germany by 2030.** This includes at least quadrupling computing capacities for high-performance computing (HPC) and artificial intelligence (AI).

This requires underlying conditions that strengthen competitiveness and innovative capacity, foster investment and ensure planning security. We are speeding up planning and approval procedures while upholding environmental standards, improving access to power supply connections, targeting competitive electricity prices and strategically aligning our location policy. We combine high environmental and social sustainability standards with economic strength, innovation and technological excellence.

This strategy expresses a clear political commitment: **we wish to raise the digital capability of Germany and Europe to a new level.** Data centres play a key role here as places of economic value creation, technological innovation, European sovereignty and economic security. The expansion of data centre capacity in Germany offers a necessary foundation for the successful development and implementation of AI-supported solutions, for example, and **contributes to more value creation and competitiveness.**

This strategy also supports the **High-Tech Agenda Germany's** objective of implementing innovations in value creation and competitiveness. In particular, the strategy and the expansion of computing capacities in Germany serve to improve the availability and usability of AI capacities for science, research, business, administration and society and provide an important component for implementing technological leadership in the six key technologies of the High-Tech Agenda Germany[1]. It supports the strengthening of skills and development of solutions along the entire technology stack in Germany and Europe, lays the foundation for the execution of compute-intensive applications and in so doing promotes the transfer and commercialisation of innovative solutions. In addition, it underlines our new level of ambition in research and technology policy.

This strategy is not only addressed at the operators, investors, suppliers and designers of the digital future, but also at the public sector. **Its aim is to change the underlying conditions in Germany in such a way that investments in computing capacity can keep pace with the growth in demand for digitisation from business (start-ups, SMEs, industry), science and research, public administration and society as a whole, including organised civil society.** The Federal Government is focusing on dialogue with all stakeholders. Up-to-date action plans are to be published annually. We are indispensable partners as we venture together on this path. **We invite all stakeholders to jointly develop the next generation of digital computing infrastructure with us.**

[1] Artificial intelligence, quantum technologies, microelectronics, biotechnology, fusion and climate-neutral energy generation, technologies for climate-neutral mobility.

Status quo of data centre location and market developments

There is an **exceptional momentum in the development of the data centre landscape** to be observed throughout the world. **Hyperscale** and **AI-driven capacity building** in particular is simultaneously leading to a rapid geographic expansion and shifting of investment priorities. From a global perspective, Europe's share of the expansion of computing capacity is decreasing, especially compared with the USA and China (Cushman & Wakefield, 2025). The data centre markets have grown considerably throughout the world in the past few years: by 24.4% in the USA, by 22% in the Asia-Pacific region and by 20% in Europe. Significant growth rates of 22% per year are also expected in the years to come (Dena, 2025). The International Energy Agency (IEA) has forecast a doubling of global data centre energy demand for 2030 to around 945 terawatt hours (TWh) (IEA, 2025). Geographically, the expansion of computing capacities is increasingly shifting to regions with low energy prices, high availability of renewable energy sources and short approval procedures such as Scandinavia, the United Arab Emirates and parts of the USA (Cushman & Wakefield, 2025; McKinsey, 2025).

Location key figures & market structure

In terms of capacities and the number of locations, Germany is Europe's largest data centre market.

Table 1 Key figures (overview) for Germany

Key figures	
IT connected load	2,980 MW of which ~ 500 MW for AI (Borderstep, 2025)
Electricity consumption	~21 TWh (2025) ≈ 4% of gross electricity consumption (Borderstep, 2025)
Structure	~2,000 DCs (>100 kW); ~100 large DCs (>5 MW); Share >5 MW DCs: 48% (Borderstep, 2024)
Market segments	>50% colocation share; cloud uses 49% of capacities (Borderstep, 2025)

Table 1

Borderstep (2025) puts the IT connected load of data centres in Germany at **2,980 MW**[2]. This has therefore more than doubled compared with 2010. The growth is particularly attributable to large data centres with a connected load of more than **5 MW** whose capacity has increased almost fivefold since 2010. In relation to its economic strength (GDP), Germany lies in mid-range within Europe and behind EU member states such as the Netherlands, Sweden and Ireland (Borderstep, 2024).

[2] The estimate of connected load depends on the underlying data. According to the Federal Government, the estimate by Borderstep (2025) currently represents the most comprehensive and therefore most reliable calculation.

According to Borderstep (2025), the share of data centres used in Germany for high-performance computing (HPC) or **AI applications** lies at 15% and thus just under **500 MW** of connected load[3]. However, unlike in the USA or China, there are not yet any large-scale commercial data centres in Germany that are only used for AI (Borderstep, 2025). Nevertheless, various investments in data centres announced in 2025 will contribute to increasing the country's computing capacities for AI.

The **electricity consumption** for data centres is rising and amounts to approximately **21 TWh (2025)**. Its share of gross electricity consumption lies at around **4%**. Efficiency gains (improvement of power usage effectiveness (PUE) from an average of **1.8** to **1.43** since 2010) are reducing electricity consumption per unit of computation but are exceeded by the growth of demand (cloud, AI, HPC) (Borderstep, 2025). Studies regarding the extent of greenhouse gas emissions by data centres arrive at different results depending on the object of investigation (Borderstep, 2024; Fraunhofer IZM, 2025). However, the mandatory on-balance sheet procurement of electricity from renewable sources and simultaneous further dynamic development of renewable energies are likely to contribute particularly to falling emissions per unit of computing power. Greenhouse gas emissions in the manufacture of information technology (IT) are not included here.

Geographically, the largest data centre capacities in Germany are located in the **Frankfurt/Rhine-Main** region (more than one third of overall national capacity; Borderstep, 2025), although this most important cluster in the EU that developed historically due to its proximity to DE-CIX and the major banking centre is increasingly reaching its spatial and network limits in terms of power grid connection capacities (similarly to the other established major European data centre clusters of London and Amsterdam). **Berlin-Brandenburg** and locations favourable from a power grid perspective (such as the **Rhineland coalfields**) are gaining momentum. Medium-sized and large data centres are currently overrepresented in Germany's structurally strong large cities and metropolitan areas. Overall, 20.1% of data centres are located in rural areas, while just 1.4% are in economically underdeveloped very rural areas.

Market developments

Double-digit percentage global growth rates are forecast for cloud and colocation capacities respectively in the next few years (Borderstep, 2025). At the same time, increasingly more large-scale, energy-intensive AI infrastructures are being planned or announced above all in the USA and China. In addition, hyperscalers can also be expected to establish AI systems in their data centres. The number of neocloud providers is also growing (Bertelsmann Stiftung/interface, 2025).

For Germany, Borderstep (2025) expects the connected load of data centres to rise to a total of 5,000 MW by 2030. The share of data centres that can be used for HPC and AI is set to increase to 40% and hence around 2 GW by 2030. KIRA (2025) expects a rise in the connected load for AI data centres to between 0.8 GW and 5.9 GW by 2028, depending on the level of ambition. Although such expansion forecasts differ in terms of detail, they show that the need for expansion is great.

The market is also shaped on the demand side above all by the rapid increase in AI and HPC workloads. Studies predict, albeit without providing details about assumptions and calculation models, that the demand for computing power for AI in Germany could triple between 2025 and 2030 (from 1.6 GW to 4.8 GW; Deloitte, 2025; KIRA even puts demand for AI computing capacity at 4.2 GW by 2028; KIRA, 2025). Others point out that the market is developing at exceptional

[3] Deloitte (2025) estimates the connected load of fundamentally AI-enabled data centres in Germany and calculates this at 1.6 GW for 2025.

speed and demand in the areas of pre-training, post-training and inference could change greatly in the years to come (Bertelsmann Stiftung/interface, 2025). At the same time, new demand is also arising alongside AI computing power and the like for edge and distributed computing in order to reduce latency and support industrial applications, IoT and autonomous systems as a supplement to cloud.

According to the IEA (2025), the electricity consumption of data centres will double globally by 2030. For Europe the IEA forecasts an increase of 70% by 2030 compared with the level in 2024. Across the world, data centres are therefore responsible for almost 10% of additional electricity demand between 2024 and 2030.

In parallel with this, the coupling of data centres with other infrastructures, such as heating and energy infrastructure, is rising sharply. The market for such coupling solutions grew between 2024 and 2025 from USD 14.7 billion to USD 16.5 billion and is considered a core lever for sustainability and system integration In addition, investor strategies are also changing. As well as colocation providers and real estate funds, more and more infrastructure and private equity investors are emerging with a view to potential data centres who wish to secure land and energy capacities at an early stage in order to create long-term competitive advantages (Datacenters.com, 2025).

According to the medium-term forecast of skilled labour monitoring, the number of focus occupations with bottlenecks is set to double by 2029, including among IT occupations and in production and construction (Zika et al., 2025).

Strengths and weaknesses of the German data centre location

An analysis of the strengths and weaknesses of the German data centre location provides the basis for assessing opportunities and challenges. Energy and sustainability are decisive for the environmental and economic viability of developing the German data centre location. A second topic area concerns the overall availability, development and economic viability of suitable locations and sites. And the third question has to do with technology and sovereignty, which shape the innovative strength, dependencies and strategic autonomy of the data centre location.

	Strengths	Weaknesses
Energy and sustainability	Germany generally enjoys a **very high security of supply** with a well-developed energy supply and specific network infrastructure. Owing to the high share of **renewable energy** in the electricity mix, access to power purchase agreements (PPAs) and proofs of origin in combination with comparatively high **energy efficiency**, corresponding regulations and many available innovative technologies, Germany offers excellent conditions for sustainable data centres. Many operators are already able to procure their electricity in a net climate-neutral manner today.	**There is a shortage of connection capacities in the power grid**, especially at existing hotspots; **long connection times** and a **failure to dovetail energy and location planning** are impeding expansion. **Electricity prices** including network tariffs are among the top third internationally and weigh on competitiveness; (separate) high network tariffs and duties are contributing to this effect. **Systematic integration** into electricity and heating grids is only just beginning, uniform technical requirements for grid connection need to be defined (EU-wide).
Location and site	Thanks to its **central location in Europe**, **excellent connectivity** (including DE-CIX) and **well-developed transport and supply infrastructure**, Germany offers attractive location conditions. **Long-established cluster regions** such as Frankfurt/Rhine-Main as part of the so-called FLAP-D markets (FLAP-D = Frankfurt, London, Amsterdam, Paris and Dublin) and increasingly now also Berlin-Brandenburg and North Rhine-Westphalia have at their disposal increased planning skills and a well-functioning real estate and financing environment. In addition, rural areas also offer suitable decentralised locations, among other things because a large share of renewable energy is generated there. Germany is considered by investors to be a **stable market with high security of demand**.	**Suitable sites are in relatively short supply from the perspective of investors**, especially at current hotspots. **Far-sighted location and spatial planning** is frequently still lacking (including considering the repurposing and multiple use of existing sites instead of new site designation), meaning that cluster development is at present not always strategically aligned with energy/network infrastructure, waste heat and water supply. A challenge is also posed by the procedures perceived by the sector to be too **long, complex and heterogeneous for approving planned projects**; procedures are frequently also not designed for large campus projects and are altogether very municipally driven.

Technology and sovereignty	Germany has at its disposal, as also shown when compared internationally, **excellent state-funded data centres** for research purposes. These include, for example, the Gauss Centre for Supercomputing, which consists of the High-Performance Computing Center Stuttgart (HLRS), Jülich Supercomputing Centre (JSC) and Leibniz Supercomputing Centre (LRZ). This is supplemented by National High Performance Computing (NHR) and the German National Research Data Infrastructure (NFDI). There is also an outstanding specialist community with strong research and expertise along the entire technology stack. In the commercial sphere, a dense **colocation infrastructure** and high network connectivity additionally offer a good **technical basis** for the development of sovereign infrastructures. Data centres in Germany are characterised by a **high technological standard**. Germany furthermore has at its disposal **innovative and efficient enterprises** offering technology for the construction and operation of data centres. In addition, Germany actively helps to shape **European programmes and governance structures** such as EuroHPC, IPCEI Cloud, Gaia-X and the European data rooms for developing common foundations for sovereign digital infrastructures.	Germany barely has any **commercial AI capacities** as yet. It is **strongly dependent on hyperscalers outside Europe** in the areas of cloud computing, AI computing and platforms. As well as EU law, these are also subject to **laws of non-EU countries with extraterritorial effect**. European alternatives are in part unable to compete as yet with market-leading hyperscalers in particular in terms of service scope and scalability. In addition, lock-in effects are impeding the switch to and use of European solutions. **The scaling of technological innovations at data centres** is progressing **slowly or only in stages**, such as the implementation of hot water direct cooling and modular DC architectures. Existing and planned data centres in Germany rely in the field of AI on **hardware from outside Europe**, while energy-saving and trustworthy European semiconductors and systems are barely able to prevail against quasi-monopolies.

Objectives

We intend to at least double computing capacities in Germany by 2030 and at least quadruple computing capacities for AI. In doing so we will take sustainable aspects into account, promote resilient regional deployment and pay more attention to the sovereignty concept of Germany and the EU.

We wish to enable Germany to rank permanently among the world's key data centre locations in terms of connected load and at the same time stand out with a high degree of sustainability. We are strengthening the German data centre location as a flagship of Europe by supporting clusters and regional and decentralised settlements.

We know that a sustainable society and competitive economy can be neither conceived nor created without comprehensive digital transformation. High-performance computing capacities are the basis for the development of innovative and competitive AI applications with which productivity potential for the economy and the world of work can be sustainably realised. High-performance computing capacities are needed for the development of innovative business models, the use of ground-breaking technologies, the creation of innovative jobs and the modernisation of the economy, administration and society in order to guarantee availability, security and sovereignty. Strengthening the German data centre location is therefore a core strategic objective.

We aim to double the IT connected load of data centres by 2030 compared with 2025. We even wish to at least quadruple the connected load of AI data centres by 2030 compared with 2025. To this end we intend to shape the underlying conditions in the energy and sustainability, location and site, and technology and sovereignty fields of action in such a way that investments in computing capacities can keep pace with the growth in demand for computing capacities. Computing capacities in Germany are to grow together with the market and demand and form the foundation for an efficient, sovereign and sustainable digital infrastructure. This requires measures to be implemented and to intertwine in all the aforementioned fields of action.

Energy and sustainability

We want data centres to be provided with energy in a reliable, affordable and environmentally-friendly manner. The prerequisite for a sustainable data centre location is therefore an efficient and flexible energy system. The energy demand of data centres should therefore be integrated into the planning of network infrastructures as early as possible. Grid connection processes and the use of existing capacities must take data centre requirements into account as much as possible. Energy efficiency, renewable energies, waste heat utilisation and water-saving cooling systems are core levers for sustainability and security of supply and all also relevant for the choice of location.

Location and site

There will be no investments in data centres without suitable locations and sites. Sites need to be identified, secured for planning purposes and have their infrastructures developed at an early stage. An approach with both strong central and decentralised locations is decisive for resilient deployment. The reuse, repurposing and dual use of sites should be given priority here in the interests of sustainability in order to avoid further increasing land consumption. Far-sighted location and spatial planning is therefore important. Applicable planning and approval processes need to be accelerated while upholding environmental standards so that Germany remains attractive internationally in view also of the high pace of development in the digital sector.

Technology and sovereignty

Digital sovereignty requires national and European competences, IT infrastructure and technological capabilities and capacities along the entire technology stack. At the same time, data centres in particular represent important undertakings for commercialising and scaling European technologies along the entire technology stack.

We wish to strengthen our sovereignty above all shoulder-to-shoulder with our European partners. We therefore intend to continue to actively help shape European initiatives, promote open standards and secure Europe's technological ability to act in order to strengthen data and technological sovereignty and competitiveness. This will reinforce the economic security of Germany and the EU.

Data centres and their operators must be technological leaders in order to remain competitive and sustainable also in the interests of economic security and sustainability. The same applies to the providers of data centre technologies. Innovations throughout the technology stack will create locational advantages. This applies not least also to the practical implementation of innovations at the data centre itself, for instance in terms of cooling technology, energy efficiency and marketing opportunities.

It concerns innovations with high-performance computers (HPCs) no less than computing infrastructure for AI, cloud and edge through to quantum technologies. The same applies to providers of hardware and software, be this for hardware-related expenses for IT infrastructure (servers, storage solutions and network infrastructure such as routers and switches at the system level as well as underlying components down to semiconductor chips), software for data centres or secondary expenses entailed by the use of technologies such as local waste heat utilisation.

We welcome investments from third countries. However, our primary aim is to strengthen companies from Germany and Europe, especially also SMEs and start-ups. We wish to ensure that European and local value creation is strengthened through the construction and operation of data centres. The use of renewable energy and utilisation of waste heat can also contribute to this.

Energy and sustainability

1.Introduction and strategic framework

Just like in Germany as a whole, a fully renewable, affordable and safe energy supply is also to be safeguarded specifically also for data centres in Germany. A sustainable data centre location therefore requires an energy system that is efficient, flexible and geared towards growth. Energy efficiency and waste heat utilisation are further core factors for the planning and operation of data centres.

2. Strategic objectives and measures

Objective 1: safeguard and accelerate power grid connections of data centres

A reliable and fast grid connection is a core prerequisite for the development of new or expansion of existing data centre locations. However, from the perspective of electricity grids, data centres bundle high ongoing power consumption with at times very rapid changes in power consumption, particularly in the case of commercial data centres (but not scientific data centres). The grid connection is frequently at high-voltage level, with some very large data centre projects even at the transformation level to extra-high voltage. Whenever consumers with a high connected load are involved, aspects of system stability must also always be taken into account. In order to be able to swiftly connect a large number of regionally concentrated data centres, further developed technical requirements for the grid connection are essential in order to ensure stable grid operation. These must be rapidly developed in consultation with the sector and harmonised across the EU as far as possible.

Competitive situations exist at the same time with other grid connection petitioners with a high energy demand. These include companies electrifying their production processes and large heat pumps, for example. The energy demand of data centres should therefore be taken into account in the planning of network infrastructures as early as possible. This calls for transparent planning communication from both sides, i.e. from both grid operators and data centre operators. In addition, grid connection processes need to be made more efficient and connection request processes improved so that location decisions are prevented as far as possible from failing due to the lack of availability of grid connection capacity.

Measure 1: facilitate a revised allocation procedure for transmission grid operators.

Data centres are competing for grid connection capacity as an increasingly scarce commodity with other connection petitioners, particularly at present battery energy storage systems. In the transmission grid alone the four transmission grid operators have received connection requests for battery storage projects in the order of three-digit gigawatts. Grid connection procedures therefore need to be rethought. Transmission grid operators need to be given more room for manoeuvre to reserve capacities for data centres.

As an initial short-term measure to prevent existing power grid connections from being blocked and new data centres therefore also potentially being impeded year on year, the Federal Government amended the Power Plant Grid Connection Ordinance in this respect at the end of 2025.

The Federal Government will present proposals for revising the allocation procedure of transmission grid operators for grid connection capacities.

Measure 2: create improved allocation procedure of distribution system operators, including improved transparency concerning free grid connection capacity.

There are also specific challenges in the distribution network regarding the grid connection of data centres. The processes need to be improved and digitised. Increased transparency concerning available connection capacities and resilient expansion plans for all interested parties as well as data centres could help to distinguish requests for information purposes from serious network connection requests. Reservation mechanisms for grid connection capacity are needed that tie in with individual project progress. This will strengthen planning certainty on both sides. Meanwhile, efficient use must be made of existing capacities. It must be borne in mind when doing so that capacity management in the distribution network can only be implemented effectively in combination with a coordinated structural and location policy. The challenges vary greatly by region, meaning that instead of there being one single mechanism, a tool box is needed that combines allocation procedures, reservation logic, location management and technical requirements.

In order to review the distribution network operators' tendering procedures for grid connections, the Federal Government will also put forward proposals on this matter.

Measure 3: draw up an industry standard for flexible connection agreements (FCAs) for data centres.

In the Solar Peak Act passed in 2025, the legislator created a legal framework for flexible connection agreements (FCAs). FCAs are contractual provisions that permit a connection despite limited network capacity by enabling the maximum permissible offtake or input capacity to be temporarily or permanently restricted. This means that data centres can still be connected even if the available grid connection capacity does not yet suffice to cover the entire connected load required. A data centre location can thus 'grow together' with the grid connection capacity provided.

As the contents of the contractual agreements are not set out in detail in law, the Federal Government will advocate model agreements as an industry standard to assist data centre operators in implementing the instrument of flexible connection agreements in practice.

Measure 4: establish harmonised technical requirements for grid connection throughout the EU as far as possible.

The establishment of binding and uniform technical requirements for grid connection is a basic requirement for successfully connecting a large number of data centres without jeopardising the stability of the European electricity grid. This is the only way of ensuring that data centre operators swiftly gain clarity about prevailing requirements and avoiding a patchwork quilt of differing requirements. This is necessary for efficient development and planning certainty.

High-voltage and extra-high voltage electricity grid operators are therefore called on to develop technical requirements for grid connection as soon as possible together with the sector. The aim should be to incorporate these requirements into both the prevailing national technical connection rules and the relevant EU network codes.

Objective 2: strengthen Germany as a location for sustainable data centres that run entirely on renewable electricity and are energy-efficient.

Sustainable data centres stand out among other things by being operated entirely with renewable energy. Furthermore, low energy consumption due to increased energy efficiency and the integration of waste heat into the heat supply additionally contribute to the objective of climate neutrality and decarbonisation. Enhancing the capacity utilisation of data centres also boosts their sustainability. Relevant aspects of water availability and economical water usage for cooling as well as hardware that is as recyclable as possible must also be taken into account for sustainable data centres. Long-term investment and supply structures, technological standards, research, cooperation and reliable underlying conditions are important for Germany as a location for sustainable and energy-efficient data centres that are run entirely on renewable electricity.

Measure 1: initiate the dialogue process between the data centre and energy sectors concerning opportunities for collaboration in the expansion of renewable energy and self-supply.

Germany is already among the locations with a relatively good sustainability track record for its data centres. A significant factor in this respect alongside increasing energy efficiency is the high use of renewable energy in Germany. According to section 11 (5) of the Energy Efficiency Act, operators of data centres in Germany are required to cover 50% of their on-balance sheet electricity requirement from 1 January 2024 and 100% from 1 January 2027 with renewable energy. Alongside the market procurement of electricity from the grid, own generation of renewable energy for data centre operators is an option that we wish to strengthen. There is a move in industry also to draw on energy supplies from fossil fuels at times when grid connection capacities are limited.

The Federal Government will initiate a dialogue process between the data centre and energy sectors against this backdrop. This dialogue process is to address long-term PPA models, regional renewable energy coupling and self-supply beneficial to the system with the aim of developing an investment-friendly but at the same time effective sustainability framework.

Measure 2: draw up practical requirements concerning efficient electricity consumption by data centres and facilitate waste heat utilisation projects.

Data centres are frequently operated as co-location or co-hosting business models. In these cases the operators often have only limited influence on whether and how much of the contractually guaranteed energy demand is used by the customers. This can come at the cost of low real power usage effectiveness (PUE). Data centre PUE requirements therefore need to be configured more pragmatically.

Above all the establishment of new large data centres calls for a location to be selected at which sufficient grid connection is available, which greatly limits the choice of potential locations. In some cases there is also no suitable heating grid

at the corresponding locations into which waste heat can be fed. The provisions governing waste heat output need to take account of these circumstances and support practical implementation of waste heat utilisation. The Federal Government already introduced mandatory municipal heat planning nationwide in the previous parliament with the Heat Planning Act; this can in future facilitate the integration of waste heat from data centres into the local heat supply.

The Federal Government will present proposals for an amendment of the Energy Efficiency Act that is planned for 2026.

As waste heat also poses an undesired side effect of data centre operation, many operators are prepared to offer their waste heat free of charge or at cost price to heating grid operators or municipal infrastructures. However, this still incurs taxes, even if the waste heat is offered free of charge. This poses a frequent financial obstacle to the realisation of waste heat utilisation projects. The Federal Government will therefore call on the European Commission to jointly seek opportunities for legally enabling waste heat offered free of charge to be exempt from tax.

Measure 3: promote underlying conditions for sustainable data centre operation at EU level

The Federal Government will push for the introduction as part of the Data Center Energy Efficiency Package planned by the European Commission for 2026 of both a meaningful labelling system (common Union rating scheme for data centres) and sensible minimum requirements concerning the energy efficiency of data centres, with the latter envisaged not least also to ensure a level regulatory playing field in Europe. This is also to take account of the water requirements of European data centres that depend particularly on the operation of the cooling system. An example of initial guidance offered in this respect is the Blue Angel for data centres eco-label (DE-UZ 228).

Objective 3: aim for competitive electricity prices for data centres.

Electricity costs play a core role for data centres as the greatest operating cost factor. For reasons of business logic, data centres for the particularly energy-intensive training of artificial intelligence and the operation of AI or cloud applications are constructed in countries or regions where electricity as an operating asset is not only available reliably and sufficiently, but also at low cost. Predictable and competitive prices create investment security and support the transformation towards sustainable data centres. This relates to the total costs for procurement and distribution, network tariffs, taxes and other charges.

Measure 1: continue government subsidies to EEG funding and network tariffs that also benefit data centres.

Various measures for reducing energy costs that also benefit the data centre sector have already been adopted and will be continued. This initially concerns the funding of EEG costs via the federal budget. The Federal Government will continue to bear the costs of EEG funding in the future, thus relieving all electricity consumers, including the operators of data centres. The same applies to the relief for network tariffs through the subsidy to transmission grid costs reducing network tariffs. These subsidies relieve energy-intensive companies directly connected to the transmission grid and also contribute indirectly towards reducing the tariffs of downstream distribution system

operators. They therefore also benefit data centre operators.

Measure 2: include data centres in electricity price compensation

The tool of electricity price compensation can be used to relieve companies with particularly high electricity consumption and trade intensity from some of the indirect CO_2 costs contained in the electricity price in order to prevent an exodus to foreign countries outside the EU. The options under state aid law are based on the ETS State Aid Guidelines. The economic sectors listed in Annex I of these Guidelines are eligible for state aid. It is also possible to have the eligibility of other sectors for state aid recognised by the European Commission if such sectors supply proof that the relevant threshold values have been exceeded. As agreed in the coalition agreement, the Federal Government will push for the European Commission to include data centres in electricity price compensation.

Measure 3: take data centres into account in the configuration of the general electricity network tariff system (AgNES) by the Bundesnetzagentur.

As data centres with proven load flexibility or waste heat utilisation contribute to climate protection and network stability, they are to be taken into account in the configuration of the network tariff system being carried out by way of determinations by the Bundesnetzagentur within the framework of the AgNES procedure (general electricity network tariff system) of the Bundesnetzagentur.

Location and site

1.Introduction and strategic framework

The economic conditions for investments in Germany have already been improved with the Federal Government's growth booster. In addition, the Location Promotion Act is intended to enhance the underlying conditions for private investment, especially in infrastructure and renewable energy as well as venture and growth capital. The Law for an Immediate Tax Investment Programme to Strengthen Germany as a Business Location introduced a declining balance depreciation for moveable assets of up to 30%. This applies to investments made after 30 June 2025 and before 1 January 2028. Corporation tax will then be reduced by one percentage point each year as of 2028, from 15% at present to 10%. Data centres can also benefit from these measures.

At the same time, the availability of suitable locations, which also means that they are attractive for the individual municipalities, remains a core factor for Germany as a location for data centres. In order to facilitate and accelerate settlements, sites need to be identified, secured for planning purposes and have their infrastructures developed at an early stage. For this reason, the Federal Government also considers improved coordination of spatial planning and generally faster planning and approval processes to be necessary.

In addition, another significant factor for location decisions and the operation of data centres on top of energy comprises high-performance gigabit networks, for instance for data transmission, latency-critical applications and remote maintenance. Data centres cannot be operated efficiently without this infrastructure.

2. Strategic objectives and measures

Objective 1: identify sites and make them attractive for investors and municipalities.

The identification and preparation of sites reduces misallocations, shortens location decisions, enables sustainability aspects to be taken into account at an early stage and facilitates interregional coordination. Supporting the individual municipality is one of the decisive success factors for the establishment of all new industrial projects. Data centre projects need to be made attractive for the affected municipalities, population and local economy by creating economically beneficial incentives as part of an improved business location policy.

Measure 1: develop a concept for designating preferential sites for data centres.

Experience from other countries suggests that it could make sense to designate and potentially also market specific sites in Germany as particularly suitable in return for specific preferential regulations. The Federal Government will develop a corresponding concept together especially with network operators, the federal states (including municipalities) and business developers. The identification of brownfield sites, that is, sites already used or developed such as former power plants and mines or industrial facilities, that would be ready to use for data centres and at which no opposing competitive situations with other users conceivably exist, such as for grid connections, could help here. On the one hand, (partial) infrastructure is normally already available there, while on the other hand this can make a considerable contribution to reducing the consumption of new land.

Measure 2: draw up a standardised set of criteria and guidelines for municipalities for assessing and prioritising suitable sites for data centres.

The establishment of data centres both in traditionally strong central clusters and decentrally at many other locations not only contributes to resilient deployment but could also help to relieve the network and promote the use of regional value creation potential. This is particularly the case if the establishment is accompanied by further regional political measures, such as for cluster development along the entire value creation chain.

Not all regions and federal states in Germany have equal experience with the establishment of data centres. At the same time, broad experience already exists in many places that could be taken as a basis to be built upon. Possible tools here include spatial planning and land development plans as well as land use planning and registers of potential sites. Inter-municipal heat planning can also contribute to forward-looking coordination as a supplementary dialogue and exchange platform. In order to learn from each other here, a joint evaluation of on-site location policy with the federal states and municipalities primarily responsible here needs to be carried out as an initial step. This should be combined with the creation of a set of criteria for assessing and prioritising suitable sites for data centres. In the next step, guidelines for municipalities to support them with the establishment and construction of data centres while taking account of sustainability aspects need to be drawn up in consultation with the federal states and municipalities likewise primarily responsible in this respect, also based on work already carried out (e.g. from Hesse).

Measure 3: expansion of telecommunications networks and connectivity for data centres.

As well as the data rate, the signal round-trip time (RTT) or latency, that is, the time it takes for a data package from the user to reach the data centre and for the response to be sent back to the user, is increasingly becoming a quality characteristic of data centres. Round-trip times and transmission errors are not only determined by the length of the transmission path, but also by the number of network nodes passed and the signal processing entailed by this. Latency-critical applications require physical proximity of the data centres to the respective users. High-performance mobile networks also permit mobile usage scenarios for staff on site. The development of a well-functioning and reliably usable fibre optic and mobile infrastructure is therefore also of decisive importance as a location factor for the establishment of data centres. The Federal Government is supporting the development by improving market incentive structures and providing supplementary support measures.

The overriding public interest in expanding telecommunications networks was already incorporated in the Telecommunications Act at the start of the legislative period. As part of the next amendment to the Telecommunications Act, further simplifications are to be implemented for companies expanding that will serve to accelerate the development of the fibre optic network.

It is already possible today using the Federal Government's Broadband Atlas to determine local fibre optic and mobile provision precisely down to 100 m x 100 m. In future it will even be possible to display provision for each specific address.

The gigabit promotion of the Federal Government, including the gap closure programme, and the support services of the Federal Government's Mobile Infrastructure Company are advancing the development also in areas that are uneconomical for market participants. This commitment by the Federal Government is on the one hand supporting the decentralised establishment of data centres and at the same time strengthening the economic potential of areas that are currently still undersupplied in this regard. In addition, it is helping to create equality of living conditions between urban and rural areas.

Measure 4: consider the introduction of a special allocation formula for the trade tax base amount for data centres.

The allocation of the trade tax base amount is fundamentally based on the ratio of the wages paid at the individual business premises to the total wages paid within the company as a whole. However, there are already special provisions in force here for plants generating electricity and other sources of energy, heat from wind energy and solar radiation energy and for energy storage facilities within the meaning of section 3 no. 36 of the Energy Industry Act. In order in the event of the exclusive operation of data centres to give location municipalities a greater and more equal share in trade tax revenues and increase the necessary acceptance of the establishment of data centres at such locations, we will consider the creation of a special allocation formula.

Objective 2: speed up planning and approval procedure for data centres.

Accelerated and digital procedures that uphold environmental standards serve to shorten lead times and provide both authorities and investors with clear guidelines. The Federal Government, federal states, municipalities and investors need to collaborate closely here and jointly work out whether and how the construction and operation of data centres can be accelerated on the basis of the existing or a potentially adjusted legal framework.

Measure 1: conduct a 'practice test' with operators to achieve faster implementation of planning and approval procedures for data centres within the existing legal framework and improve the legal framework where appropriate and necessary.

The existing planning and approval law for the construction and operation of data centres that is primarily applied by federal state authorities and municipalities is being examined in terms of acceleration possibilities by the Federal Government by way of a 'practice test'. Both optimisation possibilities in the implementation of the existing legal framework and any necessary and expedient improvements to the legal framework in compliance with environmental standards are to be identified. Particular attention is to be given to construction planning law and approval procedures under building law as well as procedures under emission control law with a view to alternative emergency power supply. A special focus will also be placed on digitising the procedures to the greatest extent possible.

Measure 2: identify ‘best practices’ in planning and approval procedures for data centres and establish dialogue concerning this between the Federal Government and the federal states (including municipalities).

The authorities responsible at federal state and municipal level have a wide range of experience in practice that also differs to some extent in the planning and approval of data centres. In addition to the ‘practice test’, it is therefore necessary to identify and draw up, on the basis of practical experience in Germany, ‘best practices’ in planning and approval procedures and also to engage in dialogue concerning this between the Federal Government and federal states (including municipalities). The Federal Government will therefore initiate a dialogue on this issue as part of regular exchange with the federal states (including municipalities) that will also make use of already established formats concerning data centres.

Technology and sovereignty

1.Introduction and strategic framework

The objective in the field of digital technologies is to strengthen and make use of the national and European digital economy. Germany and Europe have the skills, capacities and technologies to create their own data centres and computing capacities. We wish to develop these skills, capacities and technological capabilities and put them into practice more. Our aim is to expand national and European provision, strengthen data sovereignty and reduce the technological dependence of Germany and Europe. To do so we must particularly speed up the development of European solutions along the entire technology stack from microelectronics and data centres through to user software.

In order to safeguard Germany's international competitiveness and digital sovereignty, German data centres and their operators and suppliers must also actively help to shape and further develop technology. Technological expertise boosts innovative strength and sovereignty, attractiveness for investors and access to high-performance resources. Innovations along the entire technology stack (i.e. from microelectronics to user software) in areas such as HPC, computing capacities for applications such as AI, cloud, edge and quantum technologies, and innovations for energy-efficient IT, cooling, waste heat and network technology are levers for creating locational advantages and strengthening technological sovereignty. We wish to strengthen the integration of European hardware components and European software in cloud infrastructure.

Another important pillar of digital sovereignty is also the unrestricted ability to act of the Federal Government's security authorities. This concerns high availability, information security, geo-redundancy and safeguarding the protection of classified information and among other things requires a physical hardening of the locations against external influences and self-sufficient energy concepts that exceed standard redundancies.

Companies also need an approved cloud solution for this that facilitates the processing of classified information in compliance with the protection of classified information.

A European cloud infrastructure for networked components is also decisive for the economic security of Germany and Europe. This includes the security of the energy infrastructure and of networked vehicles, for example. The use of European clouds for IT/operational technology applications limits access to data and the remote control of networked components by untrustworthy manufacturers from third countries.

Critical components obtained exclusively from trustworthy manufacturers must be used for the development of a secure and sovereign European cloud infrastructure.

It is crucial for the scaling and commercialisation of innovative technologies to further strengthen the national innovation ecosystem by improving the networking of start-ups, SMEs, industrial users, research and data centre operators even more and speeding up pilot projects and market access so that developments from research quickly become marketable and find their way into commercial data centres. It is important at the same time to take the effects on labour productivity and employment and the broad applicability for the development of specific AI applications in corporate practice into account as early and precisely as possible when developing computing capacities.

2. Strategic objectives and measures

Objective 1: develop sovereign and high-performance computing infrastructure for AI, cloud and other ground-breaking technologies.

The development of high-performance AI computing capacities is decisive for the training and operation of large AI models even if it remains unclear how high the future requirement will actually be. In addition, the development of inference infrastructure is necessary above all for industrial AI applications as well as the AI applications of security authorities, for example. Furthermore, the development and expansion of broadly distributed AI computing capacities is particularly important for latency-critical and highly available applications. We wish to strengthen and expand European alternatives for competitive and technologically innovative data centres and computing capacities. To this end we intend to establish our own strategically relevant capacities, promote interoperability, open standards and federated models and assume an active role in European initiatives.

We wish to continue to strengthen HPC and research networks in the area of data centres, such as GCS and NHR, as well as current European initiatives: in addition to the German-based AI factories JAIF and HammerHAI, this particularly also includes jointly participating with industry in the European AI Gigafactories initiative. The latter represents a foundation enabling innovation ecosystems from research and industry to develop new technologies, models and applications.

With the Federal IT Consolidation project, concentrating on the development of infrastructures made entirely available to the public has made an important contribution towards strengthening the state's ability to act. However, these infrastructures have not always been able to meet the rising demand for flexibility, innovative capacity and scalability. As well as the supply of state infrastructures for ensuring the stable provision of fundamental IT functionalities, ways and means must therefore also be found for making IT solutions offered on the free market available centrally for the federal administration.

Measure 1: support the establishment of at least one AI Gigafactory in Germany.

The Federal Government will support the construction and sustainable operation of at least one AI Gigafactory in Germany as part of a public-private partnership together with the European High Performance Computing Joint Undertaking (EuroHPC JU), the European Commission and a powerful consortium led by a German private-sector data centre operator. The AI Gigafactory represents a primarily commercial project and therefore requires a self-sustaining business model geared to the needs of the European economy. In addition, it will also serve to cover public needs, in particular on the part of research and public administration including the Federal Government's security authorities. Following a Europe-wide funding call at the start of 2026, the EuroHPC JU is expected to make a decision in the summer of 2026 on the construction of a maximum of five AI Gigafactories planned in the EU. We are calling for the AI Gigafactories to integrate European technology on a significant scale: for example, at least some of the chips used in the AI Gigafactories should come from a European chip designer.

Measure 2: create underlying conditions for the accelerated development of sovereign European commercial AI and cloud capacities at EU level.

Within the framework of the planned EU Cloud and AI Development Act for which the European Commission will present a proposal in the spring of 2026, we will actively call for the development of sovereign AI and cloud computing capacities to be advanced. We will also campaign in particular for transparent shared criteria throughout Europe to be developed for sovereign cloud services. We

wish to promote interoperability and the use of open standards and open governance structures.

Measure 3: expand AI computing capacities and data ecosystems for National High Performance Computing.

In dialogue with the federal states, the Federal Government aims to gradually expand the capacities of the NHR Alliance, especially in the area of computing capacities for AI-based research. In addition, the Federal Government will support initiatives as part of the NFDI to facilitate access to and the storage and curation of research data and scientific results and make the data more usable.

Measure 4: support the purchase of quantum computers by research institutions and HPC centres and network high-performance computing and quantum computing communities.

The Federal Government will continue to support the purchase of quantum computers by research institutions and HPC centres. The objective is the investigation and integration of quantum computers into the environment of a conventional high-performance computer. The best locations and utilisation concepts are being selected by competition, with attention paid to the networking of HPC and quantum computing communities.

Measure 5: strengthening of holistic cloud usage by public administration.

The Federal Government is speeding up the 'clouding' of the federal administration ("Cloud-Smart") and focusing on the cloud-first principle in particular for the introduction of new administrative procedures. Public administration will in future rely more on hybrid and federated cloud models that incorporate both state infrastructures and tested commercial and preferably European cloud services. To this end the Federal Ministry for Digital Transformation and Government Modernisation (BMDS) will draw up a draft implementation with a roadmap for cloud migration of the IT solutions identified as part of the Federal IT Consolidation project in consultation with the federal authorities affected by the IT consolidation. This is closely connected to the Network Strategy 2030 and the Germany Stack. While taking into account the specific challenges of the departments, it can accordingly become a blueprint for a future refined cloud usage.

Objective 2: strengthen the development of innovative technologies in particular for AI, cloud and edge computing.

Innovative data centre technologies cut operating costs, strengthen performance, security and resilience, reduce emissions, contribute to sustainability and generate advantages in global competition. German and European companies offer innovative solutions for the construction and equipping of data centres along the entire technology stack, from hardware to the software stack. They also supply important solutions specifically for the operation of data centres, such as for promoting sustainability by means of energy efficiency and waste heat utilisation or in the area of cybersecurity. However, there is a lack of competitive German and European products in central

components such as processor cores and memories (in terms of both design and hardware production). Local capabilities therefore need to be developed, ramped up and bundled at the European level. The following measures therefore serve to supplement the measures for developing capabilities in chip design and for the transfer of chip developments to industrial use that the Federal Government has agreed with its microelectronics strategy.

Measure 1: bundle expertise for the development of state-of-the-art European cloud and AI technologies in pan-European projects such as IPCEIs

In order to facilitate the development of European alternatives for state-of-the-art cloud and AI technologies, it is necessary to bundle expertise in pan-European projects. The Federal Government will therefore not only continue its commitment to the IPCEI (Important Project of Common European Interest) for cloud technologies, but also drive forward the IPCEIs for artificial intelligence (IPCEI-AI) and edge computing infrastructure (IPCEI-CIC) nationally and at the European level and combine them in a comprehensive systemic approach. The Federal Government intends, for instance, with the IPCEI AI to promote open standards and initial industrial applications (application software) in the pre-competitive area of research and development for software basics (joint large AI model, enabling technologies for AI training). The focus is to be placed on data preparation, training, application and retraining for sector-specific AI. The IPCEI for advanced semiconductor technologies (IPCEI-AST) includes developing European AI chips and chiplets and making products for European data centre needs ready for use along the entire semiconductor value chain.

Measure 2: promote innovative and sustainable data centre technologies.

The Federal Government supports research into sustainable data centre technologies with a holistic, cross-sectoral approach. To this end, data centres are to be considered with a view to their environmental footprint as a whole and subject to their individual location-specific conditions. The potential for improving environmental sustainability must be illustrated using suitable demonstrators. This approach will be addressed in 2026 by the Federal Ministry of Research, Technology and Space with a funding call for sustainable data centres.

Measure 3: enhance research and international collaboration concerning the (cyber)security and (cyber) resilience of data centres.

The close intertwining of the economy, science, administration and society with digitally networked products and artificial intelligence makes data centres an attractive target for cyberattacks. Larger data centres are therefore already considered part of critical infrastructure. However, as the outage of smaller data centres can also seriously impact the infrastructure, these must also be configured with sufficient resilience. At the same time, regionally diversified data centre locations can also make an active contribution to risk management in operational and technical terms (reliability, flexibility, synergies with energy policy objectives). Germany needs to make use of its international top position in cybersecurity research to establish itself as a forerunner in the field of cyber resilience and specifically also for AI data centres.

Within the scope of its responsibility, the Federal Government will enhance research and international collaboration concerning the (cyber)security and (cyber) resilience of data centres and also welcomes the active participation of specialist authorities (Federal Office for Information Security) and research institutions at the international level in developing, implementing and reviewing security and resilience standards.

Objective 3: strengthen the application and use of sovereign computing capacities.

The use of German or European computing infrastructure including functional control where necessary safeguards state capacity in certain cases, reduces risks of geopolitical vulnerabilities and helps to promote innovation along European value creation chains.

Measure 1: improve underlying conditions for the use of sovereign AI and cloud capacities at EU level.

We wish to promote the use and application of European AI and cloud capacities. To this end we particularly wish to support simplifications in public tendering procedures and improved visibility for and easier procurement of European products, for instance within the framework of a European market place. The corresponding provisions can be set out in the planned EU Cloud and AI Development Act for which the European Commission will present a proposal in the spring of 2026.

Measure 2: strengthen the integration of European technologies in the construction and operation of computing infrastructure.

We wish to strengthen the integration of German and European solutions along the entire technology stack in the construction and operation of data centres. To this end we advocate binding provisions and incentives to ensure a high degree of European and national local value creation. The corresponding provisions can be set out in the planned EU Cloud and AI Development Act.

Measure 3: establish a sovereign cloud platform for AI applications as a component of the Germany Stack.

The Federal Government is conducting an allocation procedure for the provision of an efficient cloud platform for AI applications. This will create the foundation for a sovereign cloud infrastructure that sustainably boosts the use of AI in the public sector, including the Federal Government's security authorities. This is intended to make administrative processes faster and more secure. The platform is being designed as a modular component of the Germany Stack. It follows the principles of digital sovereignty, with open standards, interfaces, information security and open-source components forming core elements. A multi-cloud strategy with open technologies and federal compatibility stands at the heart.

Measure 4: use the digital sovereignty platform to promote the scaling and commercialisation of sovereign approaches in and for data centres.

The Federal Government also wishes to use the digital sovereignty platform planned for strengthening digital sovereignty as a cross-cutting issue and for fostering dialogue concerning this among representatives of administration, business, science and civil society to dovetail questions and topics regarding data centre infrastructure with other fields of action for strengthening digital sovereignty. To this end, various stakeholders including start-ups, SMEs, industrial users, telecommunications companies, data centre operators and research are to be networked even better in order to promote the scaling and commercialisation of sovereign approaches in and for data centres. In addition, we wish to use the digital sovereignty platform to promote solutions and approaches in order to strengthen the role of the public sector as an anchor client for the use of innovative, sovereign computing infrastructure. Our objective here is also the scaling of digital business models in Germany and Europe.

Next steps

Agile and transparent strategic and operating procedure

This strategy document including the measures set out in it marks the start of various subprocesses in the three fields of action energy and sustainability, location and site, and technology and sovereignty. The Federal Government is focusing on ongoing dialogue with stakeholders.

Updated action plans are to be published annually that build on this strategy document and the measures set out in it. These will not only illustrate and substantiate the state of implementation of the measures already set out, but also incorporate expedient new measures.

Implementation of measures

The announced measures are to be initiated and to the extent possible and appropriate concluded within the next 12 months. Consistent and sustained implementation in close cooperation between the Federal Government, federal states (including municipalities), business, science and civil society will be decisive for their success. The results and experience gained during implementation will be directly incorporated into the further operating procedure.

We wish to coordinate closely on a regular basis with the federal states in particular. We also wish to engage in close dialogue with partner countries on data centre issues.

Development of further measures

In parallel with implementation of the described measures, the Federal Government is working with stakeholders on the development and implementation of further measures. As soon as a measure has reached a given level of maturity for successful implementation within the next 12 months, it will be included in the next update and the next action plan.

Monitoring

All measures, their current status and their results will be tracked by way of monitoring by the Federal Ministry for Digital Transformation and Government Modernisation.

Financing

To the extent that they entail additional spending from the federal budget, the measures set out in the strategy are subject to the availability of funding in accordance with the principles of budgetary law. The allocation of budgetary resources is carried out within the framework of the budget preparation procedure.

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