April 2026

The AI Curse

The Hidden Public Costs of the “AI Magic”

Joana Pedroso

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ISBN: 978-91-989871-7-1
Layout: Arenagruppen
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The report in one sentence:
The expansion of AI comes with hidden public costs that may constitute state aid, which requires urgent legal scrutiny.

Artificial Intelligence is here to stay. But what are the real terms and conditions behind the apparent “magic” of AI? Beneath its speed, convenience, and extraordinary computational power lies a vast physical infrastructure: energy-intensive data centers, major demands for electricity and grid expansion, significant water use for cooling, and extensive land requirements.

Governments have historically supported economic expansion on the assumption that public facilitation can be justified by broader public gains, especially job creation and local development. Yet, AI unsettles these traditional trade-offs. While its productive capacity is undeniable, the jobs created may be limited, whereas the space, the resources, and demand on public infrastructures can be immense.

At the same time, welfare systems cannot stand still. Public authorities must keep pace with technological changes, modernize their operations, improve the efficiency of public services, and support the economic development of their economies. But this cannot mean that AI-related public policies escape legal scrutiny. Public financing, support, and deployment of AI demand urgent legal attention.

This report central aim is therefore to examine whether public measures linked to the physical establishment of AI DCs, the use of AI by tax authorities to produce tax decision outputs, or the development of AI systems by public authorities for supply in digital markets may constitute State aid within the meaning of Article 107(1) Treaty on the Functioning of European Union (TFEU).

This report shows that the legal risks do not only arise through explicit aid or express governmental favoritism, but also through closed infrastructure deals, cumulative forms of facilitation, and AI systems that shape public decision-making without sufficient transparency and reproducing cultural biases. In this context, Article 107(1) TFEU must be understood as more than a technical prohibition. It is a necessary legal instrument for exposing concealed public costs of the AI economy and for asking fundamental democratic questions of who benefits, and who ultimately pays, for the so called "AI magic".

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European Macro Policy Network

This report was produced as part of Arena Idé’s project on the energy systems of the future, in collaboration with EMPN. Read more here: https://arenaide.se/energiinitiativ/

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ABREVIATIONS

AI – Artificial Intelligence

Action Plan for Affordable Energy – Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Action Plan for Affordable Energy, Brussels 26 February 2025, COM(2025) 79 final, p. 1.

ADM – automated decision-making

Awir or General Act on Income-Dependent Schemes – Algemene wet inkomensafhankelijke regelingen.

Childcare Act – Wet kinderopvang

Commission Delegated Regulation (EU) 2024/1364 on common rating scheme for DCs – Commission Delegated Regulation (EU) 2024/1364 on the first phase of the establishment of a common Union rating scheme for data centres, OJ L, 2024/1364, 17 May 2024.

Commission Notice on the notion of State aid – Commission Notice on the notion of State aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union.

Commission Regulation 2019/424 on ecodesign requirements for servers and data storage products – Commission Regulation (EU) 2019/424 of 15 March 2019 laying down ecodesign requirements for servers and data storage products pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 617/2013, OJ L 74, 18 March 2019.

Commission Regulation 2024/264 on energy statistics – Commission Regulation (EU) 2024/264 amending Regulation (EC) 1099/2008 of the European Parliament and of the Council on energy statistics, as regards the implementation of updates for the annual, monthly and short-term monthly energy statistics, OJ L, 18 January 2024.

DC – data center

Digital Services Act or DSA – Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market for Digital Services and amending Directive 2000/31/EC, OJ L 277, 27 October 2022.

Ecodesign for Sustainable Products Regulation – Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC, OJ L, 2024/1781, 28 June 2024.

Energinet Act – Bekendtgørelse af lov om Energinet, LBK nr. 271 of 09 March 2023.

Energy Efficiency Directive or EED – Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast), OJ L 231, 20 September 2023.

EU AI Act – Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828, OJ L 2024/1689, 12 July 2024.

EuroHPC Joint Undertaking Regulation – Consolidated Regulation 2021/1173 on establishing the European High Performance Computing Joint Undertaking.

Executive Order on reporting and publication of information regarding the energy performance of data centers – Bekendtgørelse om indberetning og offentliggørelse af oplysninger vedrørende datacentres energimæssige ydeevne, Lovtidende A, Nr. 926, 9 July 2024.

GenAI – generative artificial intelligence

LLMs – large language models

Parliamentary inquiry report – Tweede Kamer der Staten-Generaal (2020) "Ongekend onrecht".

PUE – power usage effectiveness

Regulation 2015/1589 for the application of Article 108 TFEU – Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the EU.

Regulation 1099/2008 on energy statistics – Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics, OJ L 304, 14 November 2008, pp. 1–62.

TFEU - Treaty on the Functioning of the European Union

VLOPs – very large online platforms

VLOSEs – very large online search engines

WUE – water usage effectiveness

1. INTRODUCTION

1.1. Contextual background: The AI duality

The magic of Artificial Intelligence (AI) is mesmerizing. There is a sense of unanimous awe among new users. What initially appeared as a highly advanced search tool or a language programme is now increasingly becoming part of our society, shaping all sectors and human interactions with this technology. As van Wynsberghe put it, AI is pervasive.[1] It is changing our reality, and it is here to stay.

The transformative potential of AI as a sophisticated and efficient tool for solving diverse societal issues comes inextricably attached to systemic risks and failures.[2] Beyond this, it is spurring a societal crisis, not only through the proliferation of AI-based criminal actions that challenge our legal systems,[3] but equally relevant, the threat it poses to replace human labor across sectors, illustrating this technology revolution's duality.

Structurally, AI development is embedded in a geopolitical landscape characterized by concentrated economic power.[4] As of 2025, approximately 1,330 AI models were registered globally across domains.[5] Ownership of the most sophisticated systems, associated with patents and vast datasets, is concentrated in a small number of male figures steering the tech giants. Eight out of the ten richest men in the world are major owners of AI multinational companies, mostly based in the U.S.[6] These tech companies hold our century's new gold, which is the combination of (i) property rights over AI patents,[7] (ii) sophisticated AI systems capable of processing and cross-matching millions of data points in a split second such as *generative AI* (GenAI),[8] and (iii) access to a deep level of personal data tradable in today's digital market.[9]

1 van Wynsberghe, A. (2021) "Sustainable AI: AI *for* sustainability and the sustainability *of* AI", *Springer,* AI and Ethics, 1, pp. 213–218, at 214.
2 *Ibid*.
3 Schultz, D. (2026) "Personhood, Crimes and Criminal Liability in the Age of Artificial Intelligence", *Bulletin of the Transilvania University of Brasov,* Serie VII: Social Sciences and Law, 18(67), pp. 301–308.
4 Statista, "Artificial Intelligence – Worldwide," at https://www.statista.com/outlook/tmo/artificial-intelligence/worldwide (last accessed 23 March 2025).
5 Epoch AI, "Data on AI Models", at https://epoch.ai/data/ai-models (last accessed 23 March 2026).
6 Investopedia, (2025) "The 10 Richest People in the World", 03 September 2025, at https://www.investopedia.com/articles/investing/012715/5-richest-people-world.asp (last accessed 23 March 2026).
7 Maslej, N., *et al.* (2025), "The AI Index 2025 Annual Report," Institute for Human-Centered Artificial Intelligence, Stanford University, pp. 42–45.
8 *Generative AI* means those deep-learning models that can produce texts, images, etc. with extremely high quality, based on the data these systems were trained to use). See Martineau, K. (2023) "What is generative AI?" IBM Blog, 20 April 2023, at https://research.ibm.com/blog/what-is-generative-AI (last accessed 23 March 2026).
9 Elon Musk bought X—old "Twitter"—and merged it with its current AI company on 28 March 2025, and he occupies the first position as the richest person worldwide. Larry Ellison, who founded Oracle, and is acquiring TikTok, is the second richest person. See Investopedia (2025) "The 10 Richest People in the World".

Meanwhile, governments worldwide are spending substantial public funds to catch up with this technological evolution.[10] Between 2019 and 2023, the United States spent approximately USD 328 billion in AI-related fields.[11] Within the EU, Belgium, France, Germany, and Spain have each spent about USD 50 million in 2023 alone in AI-related contracts.[12] Based on the exponential growth of AI, we can only expect that these figures will increase even further, and public authorities behind these institutional changes will play a central role in modernizing welfare systems at multiple levels.

For citizens-taxpayers, this evolving AI landscape raises fundamental questions of citizenship and democracy. We know where the "magic" comes from, but do we really know what the real "terms and conditions" of our growing reliance on AI as a community are?

While access to AI tools seems inexpensive, at least from the context of European countries–often requiring a low subscription fee–the broader societal costs remain largely opaque. AI systems depend on vast resources to build their gigantic datacenters (DCs) and to keep them running tirelessly.[13] Moreover, GenAI,[14] in particular, consumes roughly ten times more electricity than conventional digital services.[15]

In 2025, for instance, Google removed its net-zero carbon goal from corporate policy, showing that the pursuit of electricity supply will dictate corporate actions to the detriment of our societal resilience to global warming and climate change.[16] This energy dimension is critical, especially with Europe's ongoing energy crisis.[17] AI DCs are rapidly becoming the major energy consumers in society. Even when they are fully powered by renewable energy, their operations effect grid capacity, energy allocation, distribution, and long-term planning for energy systems.

Within the EU, the energy market is largely harmonized, meaning that AI DCs do not compete for electricity only with other businesses but also directly with households. This competition becomes particularly visible in the Nordic countries, where energy demand peaks during winter as households rely heavily

10 Maslej, N., *et al.* (2025) "The AI Index 2025 Annual Report", p. 353.
11 Liberto, D. (2025) "Which Countries Are Investing Most in AI?", *Investopedia,* 12 August 2025, at https://www.investopedia.com/countries-investing-the-most-in-ai-11752340#:~:text=1-,The%20United%20States,%24109%20billion%20in%202024%20alone (last accessed 23 March 2025).
12 The AI Index 2025 Annual Report, p. 360.
13 van Wynsberghe, A. (2021) "Sustainable AI: AI *for* sustainability and the sustainability *of* AI", p. 214.
14 Martineau, K. (2023) "What is generative AI?" IBM Blog, 20 April 2023, at https://research.ibm.com/blog/what-is-generative-AI (last accessed 23 March 2026).
15 Hunter, L. Y. (2025) "Artificial Intelligence, Data Centers, Energy Capabilities, and International Security: An Exploratory Analysis," *Armed Forces and Society,* see introduction section.
16 Green, S. (2025) "Google quietly removes net-zero carbon goal from website amid rapid power-hungry AI data center buildout — industry-first sustainability pledge moved to background amidst AI energy crisis," Toms Hardware, Tech Industry News, 5 September 2025, at https://www.tomshardware.com/tech-industry/google-quietly-removes-net-zero-carbon-goal-from-website-amid-rapid-power-hungry-ai-data-center-buildout-industry-first-sustainability-pledge-moved-to-background-amidst-ai-energy-crisis (last accessed 23 March 2026).
17 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Action Plan for Affordable Energy, Brussels 26 February 2025, COM(2025) 79 final (Action Plan for Affordable Energy), p. 1.

on heating. In other parts of Europe, the pressure emerges during increasingly intense summer heatwaves, when energy is required to cool buildings and maintain temperatures compatible with safe living and working conditions. In both contexts, the rapid expansion of AI infrastructure adds a new and powerful demand to already constrained energy systems. As a result, the growth of AI DCs raises pressing questions about energy allocation (energy justice), public expenditure, and market competition within the European energy system.

1.2. Problem: The hidden public costs of AI magic in two situations

The AI-driven expansion of DCs raises at least four interrelated structural concerns:

1. *Cost internalization and transparency:* The full economic, environmental, and social costs of constructing and operating AI infrastructure are not fully disclosed by tech companies. The life-cycle impacts of construction materials, land use, and extraction processes remain difficult to trace.[18] Similarly, grid expansions and guaranteed capacity to supply DCs with energy raise the question of who ultimately bears these costs.
2. *Energy allocation priority:* DCs are often located where a stable, continuous electricity supply is guaranteed. However, their presence may alter regional energy allocation, particularly during seasons of high demand, potentially impacting the distribution of energy among households, industry, and essential public services.
3. *Opacity in energy consumption and its related environmental footprint:* Precise figures regarding electricity supplied, price per kilowatt-hour (kWh), and greenhouse gas (GHG) emissions are frequently undisclosed.
4. *Accelerating demand:* The rapid expansion of AI models increases long-term demands, putting pressure on welfare systems and potentially slowing the green transition.

Beyond the problem related to the physical structure of DCs described above, another level of concern is inextricably connected to the progressive use of AI systems in the public sector. Based on the Stanford AI Index Report 2025, when tax authorities use AI systems to automate fiscal control–for example, to scrutinize companies' tax declarations and collection or to assess a company's internal regime in order to deliver an *advance tax ruling*[19]–I interpret the issues raised in that report as applicable to the outlined scenario as follows:

18 Ibrahim, I. A., *et al.* (2026) "The AI Act and its green blind spots: Hidden environmental risks in the AI lifecycle", *ELSEVIER*, Technology in Society 86, p. 7.

19 Advance tax ruling (ATR) could be defined as "a statement provided by the tax authorities, or an independent council, regarding the tax treatment of a taxpayer with respect to his future transactions and on which he is – to a certain extent – entitled to rely." Directorate General for Internal Policies (2015) "'Tax Rulings' in the EU Member States", *European Parliament*, p. 26. The ATR has legally binding effect on the tax authority that issued the decision,

5. *Privacy:* related to confidentiality, anonymity, and security protection of taxpayers' personal data, including issues of consent for data usage and the responsibility of tax authorities for how such data is handled, even by the AI system.[20]
6. *Data governance:* related to the setting up of policies, standards, and procedures that ensure the quality, access, licensing, and handling of taxpayers' data, which are necessary to increase the accuracy of the AI model used by tax authorities.[21]
7. *Fairness and bias:* related to avoiding bias and discrimination in algorithms which influences the outputs, while also ensuring that diverse needs and contextual circumstances of taxpayers are considered in connection with broader societal concerns, such as social equality and environmental protection.[22]
8. *Transparency and explainability:* related to demonstrating how tax decision-making has been adopted (including data sources and algorithmic processes), how the operative system works (deployment, monitoring, and management), and ensuring that the methods behind the outputs are clearly defined to taxpayers and authorities.[23]
9. *Security and safety:* related to cyber threats.

These five layers of concern are directly and indirectly embedded in the use of AI systems to automate decision-making at the level of tax authorities. Taken together, these issues reveal that the actual "terms and conditions" of AI's magic depend on factors that are deeply intertwined with public resources and regulatory choices. From a State aid perspective, where public authorities directly or indirectly support the establishment or operation of DCs–through energy agreements, grid expansion, or other forms of facilitation–or where a tax agency AI system issues a discriminatory tax decision, the question arises as to *whether such measures may constitute State aid*. [24]

thereby ensuring to the company that received it predictability and certainty concerning the tax regime defined in the ATR, in p. 7.

20 Maslej, N. *et al.* (2025) "Artificial Intelligence Index Report 2025", *Stanford University Human-Centered Artificial Intelligence*, p. 166.

21 *Ibid*.

22 *Ibid*.

23 *Ibid*.

24 Prohibition set out in Article 107(1) of the TFEU.

1.3. Aim and transferability

In this report, I examine how AI-related measures, concerning either physical infrastructure–notably DCs–or digital services, may fall within the scope of Article 107(1) of the Treaty on the Functioning of the European Union (TFEU). The central aim is to clarify how EU State aid law may apply to the contemporary AI economy by combining within this analytical framework the EU legal standards governing AI infrastructure and services, the conditions of Article 107(1) TFEU, and their application to concrete case studies. Where a State measure is classified as incompatible State aid, the legal and economic consequences for the beneficiary are significant. In particular, the aid may be abolished, and the beneficiary may be ordered to repay the advantage with interest, retroactively, up to ten years.[25] Beyond these case-specific consequences, State aid also has broader systemic implications, since it may burden public budgets and redirect scarce public resources towards already privileged market actors.

To achieve that aim, I perform five related tasks, which are also transferable contributions. *First*, I map the relevant EU secondary-law framework applicable to AI, covering both physical infrastructure and digital services, to identify the standards and values that are directly binding on Member States and that also inform the interpretation of EU primary law, including Article 107(1) TFEU. *Second,* I explain the cumulative conditions of Article 107(1) TFEU by showing, in general terms, how they may be interpreted in AI-related contexts. *Third,* I develop a methodological approach, through analytical templates, to support the assessment and systematization of AI-related State measures and to identify points of opacity, evidentiary gaps, and legally relevant hidden issues. *Fourth,* I apply the framework (templates) to the concrete cases to assess the likelihood that they may constitute State aid under Article 107(1) TFEU. *Fifth* and final task, I reflect on the broader societal significance of those cases, extending their impact beyond the immediate function of Article 107(1) TFEU to provide answers concerning the real terms and conditions of the AI boom.

Although part of the analysis is grounded in concrete case studies, those five contributions are intended to be transferable beyond the specific countries and measures examined. The structural concerns identified in Section 1.2–relating to the expansion of AI DCs and the governance challenges associated with AI-supported tax decisions–reflect broader features of the contemporary AI economy, particularly where AI development depends on energy-intensive infrastructure, access to publicly regulated grids, or the integration of AI systems into public decision-making. The report offers a reusable analytical perspective for evaluating

25 Article 108(2-3) TFEU, and Articles 13(1-2), 16(2), and 17(1), Council Regulation 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the EU (Regulation 2015/1589 for the application of Article 108 TFEU.

how AI-related measures may interact with the EU State aid prohibition and for uncovering their broader societal effects.

1.4. Methodological considerations

1.4.1. Methodology and scope

To achieve the aim set out in Section 1.3, I rely on doctrinal legal analysis and structured case-study assessment. The doctrinal part concerns the interpretation of Article 107(1) TFEU in light of the relevant EU legal framework applicable to AI-related measures. The case-study part applies that framework to selected examples from EU Member States concerning two categories, AI DCs and AI systems.

The case assessment is based exclusively on information available in open databases and other public sources. Its purpose is to provide an initial State aid risk assessment, that is, a structured indication of whether a measure is likely to constitute State aid within the meaning of Article 107(1) TFEU and may, therefore, raise compliance concerns under that provision. Because I relied on open sources to analyze the cases, I do not claim to establish a definitive legal conclusion on the existence of State aid. Rather, I seek to identify sufficiently documented factual patterns, legal uncertainties, and points of opacity that justify closer scrutiny.

The State aid analysis is limited to the interpretation and application of Article 107(1) TFEU, since this is the point at which a national measure may trigger EU legal consequences, as well as broader societal effects connected to that legal assessment. I do not conduct a compatibility assessment under Article 107(2) and (3) of the TFEU, nor do I offer a general ethical or policy analysis of the EU secondary-law framework governing AI-related matters.

For AI DCs, I examine, in particular, two publicly documented measures, one involving municipal land acquisition and the other electricity-related infrastructure. In both cases, the open record also suggests the possible existence of additional State aid measures connected to the same project and involving other public authorities, regulated utilities, or State-controlled entities. For AI systems used in tax decision-making, I examine one publicly documented case in which AI support is used in the process leading to a human-driven tax decision. I also examine one case concerning an AI system developed by a public authority and later provided as a service to other public authorities, which I assess in light of broader global trends in public-sector AI deployment. Because comparable public material remains limited in AI systems, these cases serve as illustrative examples to support the proposed State aid analysis. Finally, the four cases serve to develop the analytical framework embodied in the template for AI-related cases, which may be applied more broadly as the use of AI becomes more widespread and transparent.

1.4.2. Methodological use of AI & disclosure

Since some cases analyzed in this report concern jurisdictions whose official languages I do not necessarily speak, I used AI-based language systems to help identify relevant information across linguistic barriers (a genuine AI magic). In that respect, ChatGPT Model 5.2 and Google AI Mode were used as search tools to locate potential relevant official materials, cases, and publicly available information from companies and authorities in different languages. In addition, Word Editor, Grammarly, and ChatGPT were also used for language correction and stylistic revision. These tools were used as research and drafting support, not as substitutes for legal analysis or evaluative judgement. The selection of sources, legal interpretation, the structure of the argument, and the final assessment remain my own production and professional responsibility.

1.5. Outline

This report is structured in five sections and one annex. Section 1 is introductory. In Section 2, I analyze the two dimensions of AI, namely as a physical infrastructure and as a system providing a digital service, by presenting their conceptual understandings alongside the relevant EU legal standards. In Section 3, I further explain the interpretation of the cumulative State aid conditions and reflect on how they may be applied to AI-related cases. In Section 4, I apply the framework developed in Annex I to the cases scrutinized, thereby assessing the likelihood that each case may constitute State aid, as well as its societal impact beyond the effects ordinarily addressed by State aid law. In Section 5, I summarize the findings of Sections 2 to 4 and provide final recommendations. In Annex I, I provide the template models and their application to the cases.

2. WHAT IS AI? THE EU FRAMEWORK DEFINING AI INFRASTRUCTURE AND SYSTEMS

2.1. The two dimensions of AI: Infrastructure and service

When discussing AI and understanding what it entails, it is useful to distinguish between its physical infrastructure and its digital services. The physical infrastructure of AI consists primarily of DCs. The size and capacity of the DCs are directly related to their ability to process data and deliver AI services, as it is within these facilities that the hardware supporting AI systems operates. In simple terms, a DC can be understood as a large-scale computing infrastructure responsible for processing vast amounts of data. The performance of a DC is typically measured by its capacity in terms of graphic processing units (GPUs) and computational output per second, commonly expressed in floating-point operations per second (FLOP/s).[26] Generally, the larger and more powerful the DC infrastructure, the greater the AI system's ability to process data quickly and deliver more complex outputs.

By contrast, the digital service refers to what users experience when using the AI system. This includes the outputs generated by AI applications, such as automated analyses or reports. For example, a tax agency AI system may tax audit a company's income tax declaration based on the data provided and conclude whether the company is compliant with the income tax regime of the country in question.[27] It is, therefore, necessary to examine more closely specific aspects of both physical infrastructure (DCs) and AI systems (the AI service) to gain a better understanding of where legal issues may arise.

2.2. Physical infrastructure – DCs

2.2.1. Relevant and related legal definitions

Understanding how the diverse EU legislation framework addresses the physical infrastructure underpinning AI systems is essential, since it establishes legal standards that are relevant not only for compliance with EU law, but also for the State aid analysis undertaken in this report.

At a conceptual level, in terms of legal definition of the physical structure, Regulation on energy statistics, as amended, defines a DC as *a structure or a group of structures used to house, connect and operate computer systems/servers*

26 *Ibid.*, p. 68
27 Rizzo, A. and Hassan, G. (2024) "Addressing the Use of AI by EU Tax Authorities: Towards a Common Framework of Taxpayer Protection", *European Taxation*, 65(1), p. 3.

and associated equipment for data storage, processing and/or distribution, as well as related activities.[28] Under this legal concept, DCs constitute the physical infrastructure that enables the AI system to operate. At the same time, their function is not limited to AI. DCs also underpin cloud services and, more broadly, the computing infrastructure on which an increasingly digitalized society depends.

That concept is complemented by the NIS 2 Directive, which defines DC service as a service that encompasses structures, or groups of structures, dedicated to the centralized accommodation, interconnection and operation of IT and network equipment providing data storage, processing, and transport services together with all the facilities and infrastructures for power distribution and environmental control.[29]

The Energy Efficiency Directive (EED) uses the same DC concept as the Regulation on energy statistics.[30] Moreover, the EED further integrates DCs into the Union's regulatory framework by imposing, in Article 12, reporting and transparency obligations on certain DC operators. Those obligations are operationalized by Commission Delegated Regulation (EU) 2024/1364 on common rating scheme for DCs, which specifies the information and key performance indicators to be communicated to the EU database on DCs.[31] In this respect, EU law does not merely define DCs, but it also regulates their operational sustainability performance.

A more explicit connection between AI and DC infrastructure appears in the European High Performance Computing Joint Regulation (EuroHPC Regulation),[32] through the concept of *AI factory*, defined as follows:

> (…) a centralised or distributed entity that provides an AI supercomputing service infrastructure which is composed of an AI-optimised supercomputer or an AI partition of a supercomputer, an associated data centre, dedicated access and AI-oriented

28 Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics, OJ L 304, 14 November 2008, pp. 1–62 (Regulation 1099/2008 on energy statistics) in Annex A, point 2.6.3.1.16, after the last amendment from 18 January 2024 through the Commission Regulation (EU) 2024/264 amending Regulation (EC) 1099/2008 of the European Parliament and of the Council on energy statistics, as regards the implementation of updates for the annual, monthly and short-term monthly energy statistics, OJ L.

29 Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive), OJ L 333, 27 December 2022. Article 6(31) states: (*…) a service that encompasses structures, or groups of structures, dedicated to the centralized accommodation, interconnection and operation of IT and network equipment providing data storage, processing and transport services together with all the facilities and infrastructures for power distribution and environmental control*.

30 Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast), OJ L 231, 20 September 2023 (Energy Efficiency Directive, or EED), in Article 2(49), EED, defines DCs, making a cross-reference to Annex A, point 2.6.3.1.16, of Commission Regulation 2024/264 on energy statistics.

31 Commission Delegated Regulation (EU) 2024/1364 on the first phase of the establishment of a common Union rating scheme for data centres, OJ L, 2024/1364, 17 May 2024 (Commission Delegated Regulation (EU) 2024/1364 on common rating scheme for DCs), in Article 1.

32 Council Regulation (EU) 2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence, OJ L, 19 June 2024, which is found in the Consolidated Regulation 2021/1173 on establishing the European High Performance Computing Joint Undertaking (EuroHPC Joint Undertaking Regulation).

supercomputing services, and which attracts and pools talent to provide the competences required to use the supercomputers for AI.33

This is significant because it recognizes the associated DC as a constituent element of the infrastructure required for the development and deployment of advanced AI capabilities in the Union.[34]

By contrast, the EU AI Act does not directly regulate DCs as a distinct legal category, as it focuses mostly on the AI system. Nevertheless, the Act is not entirely indifferent to the infrastructure aspect. The Act establishes provisions on standardization for AI systems' *resource performance*, including energy consumption and lifecycle considerations.[35] Moreover, the Act addresses cybersecurity for general-purpose AI models, extending, where appropriate, to the protection of the model's physical infrastructure, which forms part of the DC.[36] These references do not amount to a direct DC regime, but they do show that the physical infrastructure underlying AI systems is indirectly relevant within the AI Act regulatory logic.

The Commission Delegated Regulation on the first phase of the establishment of a common Union rating scheme for DCs classifies fifteen different modalities of operational ways DCs could be used.[37] Despite their relevance to other areas, the Delegated Regulation establishes a framework of sustainability indications and methodology to account for them specifically for DCs.[38] They are: (a) power usage effectiveness; (b) water usage effectiveness; (c) energy reuse factor; and (d) renewable energy factor.[39]

Taken together, these instruments show that the physical infrastructure of AI systems is not governed by a single and clear framework for DCs. Rather, the EU regulates it through overlapping legislative frameworks that determine different functions: conceptual, cybersecurity related, energy-performance related, and even strategic-computing related. This layered regulatory treatment is particularly difficult to grasp, but nonetheless relevant since public support at any AI system structural level may need to be assessed in the light of State aid rules.

33 Article 2(3b), EuroHPC Regulation,

34 European Commission (2024) "Proposal for a Council Regulation amending Regulation (EU) 2021/1173 as regards an EuroHPC initiative for start-ups to boost European leadership in trustworthy Artificial Intelligence", COM(2024) 29 final/2, Brussels 16 February 2024, in section 1.

35 In Article 40(2), Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonized rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828, OJ L, 12 July 2024 (EU AI Act).

36 Article 55(1)(d), EU AI Act.

37 Commission Delegated Regulation (EU) 2024/1364, in Art. 2: (1) 'enterprise data centre', (2) 'colocation data centre', (3) 'co-hosting data centre', (4) 'enterprise data centre operator', (5) 'colocation data centre operator', (6) 'co-hosting data centre operator', (7) 'data centre operator', (8) 'colocation customer', (9) 'co-hosting customer', (10) 'information technology outsourcing', (11) 'data centre total floor area', (12) 'data centre computer room floor area', (13) 'data centre redundancy', (14) 'installed information technology power demand', and (15) 'rated information technology load'.

38 *Ibid.,* Art. 4 and Annex III.

39 *Ibid.*, Annex III.

2.2.2. Operational sustainability factors of DCs

2.2.2.1. Siting

The siting of a DC involves a strategic decision, not only for the undertaking (company) operating the AI system or providing the AI service, but also for the public authorities and local communities of the region concerned. The choice of location shapes the environmental, social, and economic conditions under which the DC will be constructed and operated. Siting is therefore not merely a question of land availability or commercial choice, but a structural consideration. It influences the impact that the DC will have on the energy system, the electricity grid, the local environment, and the broader territorial context in which DCs are established.

Most studies on DC siting conducted in the United States place particular emphasis on electricity demand and pressure on the grid.[40] In Europe, by contrast, although electricity demand and grid remain a central concern, greater attention is also given to the potential for waste-heat recovery, particularly because several European countries rely on district heating and other heat-recovery solutions (e.g., waste-to-energy technologies).[41] While climatic conditions and these operational impacts are examined in more detail later in this report, it is important to emphasize at this stage that the siting of DCs is strongly influenced by local weather conditions and by the technical and infrastructural opportunities available to optimize their operation and performance.

In this sense, siting functions as an upstream sustainability variable, in the sense that it does not in itself exhaust the environmental impact assessment of a DC, but it conditions many of the operational factors that will later define the facility's sustainability profile. Accordingly, siting should be understood as one of the foundational elements of the operational sustainability of DCs, alongside energy consumption and pressure on the electricity grid, cooling systems and water use, waste-heat recovery, and the resources required to build, operate, and maintain the facility.

2.2.2.2. Energy consumption and pressure on the electricity grid

DCs are major electricity consumers and, for that reason, exert considerable pressure on the electricity grid. Their sustainability relevance lies not only in the volume of electricity they consume, but also in the intensity and concentration of that demand in the locations where they are established. Recent studies indicate that DCs accounted for approximately 3% of total electricity consumption in the EU in 2024, with significantly higher shares in Ireland (over 20%), and that this

40 See, for instance, a study that analyzed siting-selection factors of 212 DCs in the U.S. In Choi, S. J. *et al.* (2025) "Unveiling the Secret: Investigating Data Center Siting by Major ICT Companies in the U.S.", *SSNR* (02 December 2025), pp. 1-39.

41 Koronen, C. *et al.* (2020) "Data centres in future European energy systems—energy efficiency, integration and policy", *Energy Efficiency* 13, pp. 129–144, in 134–135.

demand may double by 2030.[42] These figures, however, remain estimates, since the extent of future electricity demand will ultimately depend on the trajectory of the AI boom and the corresponding development of energy supply.[43]

In electricity terms, large DCs are increasingly comparable not to ordinary commercial buildings, but to major industrial facilities, such as electric arc furnace steel mills.[44] Despite this, in some countries large DCs are clustered in the same geographic area, thereby creating local pressures that steel mills, for instance, do not usually generate to the same extent. To illustrate, a hyperscale DC may require 100 MW or more of power capacity.[45] The significance of this development lies not only in the DC's own electricity consumption but also in its potential effects on the surrounding electricity infrastructure and the allocation of grid capacity.[46] It intensifies pressure on local and regional electricity grids, often requiring grid reinforcement and expansion, thereby raising broader questions as to who bears the costs of expanding the grid to deliver electricity, which may itself be scarce.

This is particularly relevant because the use of public funds to finance grid reinforcement or expansion costs may constitute a direct benefit to the DC, insofar as it secures the infrastructure necessary for its operation. In this respect, DCs are not unique: other industries with high electricity demand similarly benefit when the State provides the grid infrastructure required for their activities. From a historical perspective, these are classic trade-offs that governments have long made with large undertakings. However, the rationale traditionally invoked to justify such trade-offs, namely the creation of jobs, does not apply in the same way to the establishment of hyperscale DCs, a point that will be discussed later in this report.

From an EU law perspective, the most common denominator for determining the size of the DC, and the framework to which it is subject, is its installed IT power demand, measured in kW or MW. Although the current regulatory framework does not establish a universal legal taxonomy of small, medium, and large DCs for all purposes, it does rely on two common power-based thresholds: 500 kW and 1 MW.

Article 12 of the Energy Efficiency Directive introduced a transparency framework for certain DCs from 15 May 2024.[47] It requires that EU Member States ensure that owners and operators of DCs with an installed IT power demand of at least 500 kilowatt (kW) publicly disclose a set of energy and sustainability in-

42 Widuto, A. (2025) "AI and the energy sector", *European Parliament Research Service,* Briefing PE 775.859, July 2025, pp. 2-3.
43 Spencer, T. and Singh, S. (2024) "What the data centre and AI boom could mean for the energy sector", *International Energy Agency*, at https://www.iea.org/commentaries/what-the-data-centre-and-ai-boom-could-mean-for-the-energy-sector (last accessed 23 March 2026).
44 *Ibid.*
45 *Ibid.*
46 *Ibid.*
47 Article 12(1), EED.

dicators specified in Annex VII.[48] These indicators cover key operational metrics such as energy consumption, efficiency performance, renewable energy use, and waste heat recovery, subject to the protection of trade and business secrets under Union and national law.[49] Moreover, DCs with a total power capacity of 1 Megawatt (MW) or more must report their *energy consumption* as of 6 February 2024.[50]

Table 1 below provides a legal map of the EU framework governing the energy significance of DCs, by showing how EU law uses power-based thresholds as proxies for a facility's energy relevance and corresponding obligations. The size categories are not legally binding categories under EU law, but rather thresholds linked to energy capacity that trigger transparency and reporting obligations and, in some cases, waste-heat recovery requirements.

48 *Ibid.*
49 *Ibid.,* Annex VII (a-c).
50 Regulation 1099/2008 on energy statistics, after the last amendment from 18 January 2024, in Annex A, section 2.6.3.1. See even Article 2, Commission Regulation 2024/264 on energy statistics, about the date the reporting became mandatory.

Table 1: Legal requirements for DCs based on their power range (kW-MW)

DC Category	Power Range	Main Legal Requirements	Legal Basis
Very small	100-500 kW	N/A	N/A
Small	500 kW to 1 MW	Owners/operators must make publicly available the required information on energy performance and key performance indicators for DCs with installed IT power demand of at least 500 kW.	EED, Art. 12(3) + Commission Delegated Regulation (EU) 2024/1364 on common rating scheme for DCs
Medium	1-2 MW	Same as small category. Member States must encourage operators with installed IT power demand equal to or greater than 1 MW to take into account the best practices of EU Code of Conduct on DC Energy Efficiency. When a DC has a total rated energy input / total energy supply above 1 MW, waste-heat utilization is required, unless not technically or economically feasible.	Same as small category. EED, Art. 12(3) and (4) EED, Art. 26(6)
Large	2-10 MW	Same as medium category.	Same as medium category.
Hyperscale	> 10 MW	Same as medium category.	Same as medium category.

Although the EED is not entirely silent on grid connections, expansions, and reinforcement costs, the relevant provisions concern the integration of new producers of electricity from high-efficiency cogeneration into the grid. By contrast, the EU framework does not establish a comparable harmonized regime specifically addressing the pressure that large DCs place on the electricity grid, including issues of grid congestion, capacity allocation, or the sharing of grid expansion costs linked to DC demand.

In terms of mandatory obligations harmonizing minimum standards on DCs' energy use and efficiency across the EU, the applicable framework remains limited. EU law currently relies primarily on transparency and reporting obligations,[51] complemented by sustainability indicators,[52] rather than on binding minimum performance requirements concerning electricity consumption or energy efficiency as such. More specifically, the framework not only captures the volume of electricity consumed by DCs, but also their broader sustainability performance through indicators connected to energy use, renewable energy, water use, and energy reuse.[53] In this sense, the EU framework already extends beyond electricity consumption in a narrow sense and begins to address whether part of the energy used by DCs can be recovered and reused. This is particularly visible in the waste-heat recovery, to which this analysis turns.

2.2.2.3. Waste-heat recovery

Waste-heat recovery forms part of the logic of the EED and is therefore closely linked to the issue of electricity, since heat is itself a form of energy. However, the EU framework on waste-heat recovery follows a different rationale from the one governing DCs' electricity consumption as such. Whereas the rules on DCs' electricity use focus primarily on transparency, reporting, and sustainability indicators, as discussed in the previous section 2.2.2.2, the rules on waste heat are directed at preventing the loss of usable energy by promoting its recovery and use. In this respect, the question here is not only how much energy a DC consumes, but also whether part of that energy can be captured and reintegrated into the wider energy system.

That logic is reflected most clearly in Article 26(6) EED, which, as stated in Table 1, requires Member States to ensure that DCs with a total rated energy input exceeding 1 MW utilize waste heat or other waste-heat recovery applications, unless they can show that this is not technically and economically feasible, in accordance with the assessment referred to in Article 26(7) EED. The EED, therefore, treats DCs also as a potential source of usable excess heat.[54]

The framework is developed further by requiring an installation-level cost-benefit analysis for newly planned or substantially refurbished DCs above 1 MW. That analysis must assess, among other things, the technical feasibility, cost-efficiency, and impact on energy efficiency and local heat demand, including seasonal variation, of utilizing waste heat to satisfy demand, as well as the possibility of connecting the installation to a district heating network.[55] Moreover, the fra-

51 Art. 12(3) and Annex VII establishing the minimum requirements for monitoring and publishing the energy performance of DCs, EED.
52 Commission Delegated Regulation (EU) 2024/1364, Art. 4 and Annex III.
53 *Ibid.*
54 See even Recitals 85 and 102, EED.
55 Article 26(7)(d), EED.

mework also specifies that the analysis must consider cooling-system solutions capable of removing or capturing waste heat at a useful temperature level with minimal ancillary energy inputs.[56]

The legal relevance of this framework is that it moves beyond a narrow assessment of electricity consumption. It introduces a more systemic approach, under which the sustainability of DC also depends on whether its excess heat can be recovered and integrated into the surrounding energy infrastructure.[57] This is particularly relevant in the European context, where district heating and district cooling play an important role in local energy systems, even though their production by other operators other than DCs follows a different regime.

The waste-heat recovery regime is not absolute. The EED itself allows differentiated treatment in certain situations. Most importantly for the purposes of the present report, Article 26(8)(c) EED permits Member States to exempt DCs from the Article 26(7) cost-benefit analysis where their waste heat is or will be used in a district heating network or directly for space heating, domestic hot water preparation, or other uses in the building, group of buildings, or facilities where the DC is located. The EED also permits exemptions for certain electricity-generation installations under specific conditions laid down in Article 26, thereby confirming that the waste-heat recovery framework is not absolute.

From a State aid perspective, that point is relevant because it confirms that the applicability of the waste-heat framework depends on the concrete technical and locational circumstances of the DC concerned. This, in turn, shows that the legal treatment of infrastructure may vary according to the characteristics of the activity and the context in which it operates. Beyond waste-heat recovery, the operational sustainability of DCs also depends on how their cooling needs are managed, particularly in the light of the energy and water resources required for that purpose.

2.2.2.4. Cooling systems and water use

Cooling systems and water use constitute another important dimension of the operational sustainability of DCs. Since servers and related IT equipment generate substantial heat during operation, effective cooling is indispensable to ensure the continuity, safety, and performance of the DC facility. For that reason, the sustainability profile of DCs depends not only on the volume of electricity it consumes, but also on the technical means by which excess heat is controlled and dissipated.[58]

56 Article 26(7)(d), second subparagraph, EED

57 See, for instance, Paulsson, L. *et al.* (2025) "Power-Hungry Data Centers Are Warming Homes in the Nordics", *Bloomberg*, 14 May 2025, at https://www.bloomberg.com/news/features/2025-05-14/finland-s-data-centers-are-heating-cities-too? (last accessed 23 March 2026).

58 Pouikli, K. and Tsakalogianni, I. (2025) "AI as an Environmental Challenge", *European Energy and Environmental Law Review,* April 2025, pp. 25–37, in p. 29.

In practice, cooling systems may themselves require significant energy inputs and, depending on the technology used, substantial volumes of water. The legal relevance of the issues is therefore twofold: cooling affects both the overall energy efficiency of the DC and the DC's broader environmental footprint.

This dimension is also reflected in the EU framework governing the sustainability of DCs. Under Article 12 of the EED and Annex VII, the reporting regime for DCs expressly includes key performance indicators relating, among other things, to temperature setpoints and water use. The Commission Delegated Regulation (EU) 2024/1364 on a common rating scheme for DCs operationalizes the regime governing more detailed sustainability indicators for cooling systems connected to water use. Most notably, it includes the power usage effectiveness (PUE),[59] which captures the relationship between the total energy consumption of the DC and the energy consumed by its IT equipment, and water usage effectiveness (WUE), which measures water input in relation to IT energy consumption. In this way, the EU framework recognizes that the sustainability assessment of DCs cannot be limited to electricity demand alone but must also take into account the cooling-related resources required to maintain their operation.

The Delegated Regulation also confirms that cooling is not treated as a merely technical or internal design matter.[60] It requires reporting on the average setpoint temperature of IT equipment intake air, the types of refrigerants used in the cooling and air-cooling equipment, and the cooling degree days of the location of the reporting DC.[61] These indicators are significant because they show that the EU framework links cooling performance to both technological choices and locational conditions.[62] In other words, the environmental implications of cooling depend not only on the design of the facility, but also on the climate in which it operates and the specific cooling solutions adopted.

This is particularly relevant in the Nordic context. Colder climatic conditions may reduce cooling demand, thereby making DC operation more energy-efficient than in warmer regions. At the same time, relatively abundant renewable energy sources and water, as well as land space, make the region more naturally attractive than other countries.[63]

59 Annex III(a), EED.

60 Commission Delegated Regulation (EU) 2024/1364 on common rating scheme for DCs, in Recital 11 states: Reporting data centres should ensure that the information and key performance indicators set out in the annexes to this delegated regulation are inserted in the European database on data centres. The information and key performance indicators should be used to provide a basis for transparent and evidence-based planning and decision making by Member States and the Commission, and to assess certain key elements of a sustainable data centre, including how efficiently it uses energy, how much of that energy comes from renewable energy sources, the reuse of any waste heat that it produces, *the effectiveness of cooling and the use of water.* To this end, a first set of data centre sustainability indicators should set out, based on the reported information and key performance indicators. *Emphasis added.*

61 *Ibid,* in Annex II(1), *b, d, j, l-n.*.

62 *Ibid.,* Annex II(1), *l* when it states air temperature, and *n* when it mentions "cooling degrees days for the location of the data canter".

63 Middleton, A. and Rønning, B. (2022), "Development of Data Centres in the Nordic Arctic", Ch. 8 in *Non-state Actors in the Arctic Region,* ed. Sellheim, N. and Menezes, D. R., Springer, pp. 153-178, in 154.

From a legal and policy perspective, this confirms that cooling systems and water use are not secondary or incidental aspects to DC operations, but integral to the EU's operational sustainability framework reporting. Yet the current framework remains primarily one of transparency and measurement–implemented through the reporting and benchmarking obligations–rather than harmonized minimum performance standards.[64] EU law therefore mandates disclosure and monitoring of cooling and water-related indicators, but does not (at this stage) impose an EU-wide binding performance requirement that would, in itself, constrain the choice of cooling technology or set an absolute cap on water consumption. This has specific implications for State aid analysis, where the benchmark is often compliance with (or going beyond) applicable minimum standards. As a result, the absence of EU minimum standards means that the parameters discussed above primarily function as contextual and evidentiary inputs (transparency, monitoring, and environmental footprints), rather than as hard legal constraints delimiting permissible operation. The relevance of these indicators for the assessment of aid will be developed further in the State aid section.

2.2.2.5. Tangible resources and the supply chain of DCs

DCs are sustained by tangible resource- and component-intensive supply chains, spanning construction materials (concrete and steel), cooling equipment (including refrigerants), and, most critically, ICT components and hardware (servers, storage, networking equipment, and accelerators). The EuroHPC Regulation treats these resource dependencies as a governance-relevant constraint for Europe's digital capacity, expressly framing "security of the supply chain" as part of safeguarding the large investments required by supercomputers and related infrastructure.[65]

The EuroHPC's definition illustrates that, in the relevant EU framework, supply stability and lifecycle continuity are treated as legally salient concerns, closely linked to the ability to build, operate, and maintain computer-intensive systems. At the same time, the EU frameworks most relevant to construction and operation of DCs do not (yet) set harmonized, DC-specific material-use standards, such as binding requirements on the share of reused versus virgin materials, mandatory recycled content, quantified embodied-carbon limits for construction or equipment, or lifecycle requirements addressing environmental and social impacts of extraction. Despite this, other EU legislation may still af-

64 *Ibid.,* Annex I(2), *b.*

65 Article 2(26) states: 'security of the supply chain' of a EuroHPC supercomputer means the measures to include in the selection of any supplier of this supercomputer to ensure the availability of components, technologies, systems and knowhow required in the acquisition and operation of this supercomputer; this includes measures for mitigating the risks related to eventual disruptions in the supply of such components, technologies, and systems, including price changes or lower performance or alternative sources of supply; it covers the whole lifetime of the EuroHPC supercomputer. See also, Recitals 16 and 32, EuroHPC Regulation 2021/1173.

fect DC material-use standards, although not within those specific legislations covering DCs.

Servers and data storage products are hardware used inside DCs, and are regulated by the Commission Regulation 2019/424 on ecodesign requirements for servers and data storage products, which sets product-level ecodesign requirements for servers and online data storage products placed on the EU market.[66] ***Critical raw materials and supply security*** may fall under the harmonization of the EU Critical Raw Materials Act if the materials are listed in the Regulation and **the DC service meets the criteria of "strategic projects",** and they may also fall under the EU Directive restricting the use of **certain hazardous substances in electrical and electronic equipment**.[67] ***Products used in the DC*** may fall under the framework of the Ecodesign for Sustainable Products Regulation, and thereby, the products used in the DC covered by the regulation shall meet those sustainability standards.[68] ***End-of-life and hazardous-substances rules for hardware equipment used in DCs*** are regulated from a waste or life-cycle perspective, and therefore are more closely connected to the disposal of hardware from DCs facilities, a standard that could be more relevant in cases of DCs renovation to increase their performance, technology, and standards.[69] Finally, ***batteries commonly used in DCs' backup systems*** are regulated by the EU Battery Regulation since it lays down sustainability, safety, labelling, information, and waste management requirements for batteries placed on the EU market.[70]

Likewise, as discussed in the previous section concerning cooling systems and water use, EU law presently operates primarily through harmonized transparency and reporting obligations rather than EU-wide minimum performance standards. Accordingly, the State aid relevance of these frameworks is limited, as

66 Commission Regulation (EU) 2019/424 of 15 March 2019 laying down ecodesign requirements for servers and data storage products pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 617/2013, OJ L 74, 18 March 2019 (Commission Regulation 2019/424 on ecodesign requirements for servers and data storage products) in Art. 3, Annex II.

67 Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020, OJ L, 3 May 2024, in Arts. 3–4, 6–8, 19, 26–27; and Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast), OJ L 174, 1 July 2011, in Arts. 2, 4, 6–7, and 13.

68 Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC, OJ L, 28 June 2024, in Arts. 1, 5–7, 10–11.

69 Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (recast), OJ L 197, 24 July 2012, in Arts. 3, 8, 10, 12, among others.

70 Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC, OJ L 191, 28 July 2023, in Arts. 7–8, 46–50, and 52

they mainly provide contextual parameters rather than specific legal constraints defining permissible technological choices connected to resources.

2.2.2.6. Labor

As a final dimension of the physical infrastructure of DCs, labor is particularly salient from a sustainability and policy perspective because it goes to the core of the social-benefit narrative that is often invoked to justify hosting large facilities domestically. Traditionally, the siting of industrial installations has involved an implicit trade-off between public support (including a higher tolerance of local externalities) and substantial job creation capable of stimulating the local economy. In the case of DCs, however, this logic is comparatively weak. Once operational, especially in hyperscale settings, DCs tend to rely on small, highly specialized, and often partially outsourced on-site teams. Illustratively, the operation of a 100 MW facility is estimated to require only a few dozen permanent workers, meaning that direct employment creation is limited relative to the pressures discussed in the preceding sections.[71]

For analytical clarity, the employment effects of DCs are therefore best distinguished between direct and indirect employment. Direct employment refers to jobs at the facility itself and is typically divided into (i) construction phase employment (limited to the time of construction), and (ii) operational employment, i.e., the staff required to run and maintain the facility, which is generally low.[72] Indirect employment concerns the jobs created in the supply chain and among contractors supporting construction, maintenance, equipment procurement, and ancillary services.[73] These broader categories can materially increase the headline "jobs created" figures, but they are more difficult to quantify, are spread out, and are highly sensitive to modelling choices, geographical boundaries, and other aspects.

Accordingly, while labor is relevant to the social sustainability assessment of DC deployment, the current EU framework governing AI infrastructure and DC sustainability remains largely silent on labor outcomes in the sense of setting DC-specific employment standards or job-creation requirements. As a result, only the EU general rules governing labor across the Union set out standards on, among others, worker mobility, migration, qualification recognition, health and safety, and working conditions.[74] Consequently, labor considerations may inform the factual and policy context of a measure, but they do not, in themselves, provide a clear legal benchmark for State aid analysis in the way that minimum environmental or technical standards often do.

71 Ryu, A. and Hiatt, S. R. (2025) "Data Center Employment Forecast Analysis", *Zage Business of Energy Initiative, University of California*, 3 December 2025, p. 1.
72 *Ibid.*, p. 8.
73 *Ibid.*
74 For instance, Regulation (EU) No 492/2011 of the European Parliament and of the Council of 5 April 2011 on freedom of movement for workers within the Union, OJ L 141, 27 May 2011, establishing provisions on non-discrimination and access to employment.

2.3. AI system, AI digital service

The EU AI Act defines an AI system as *a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments*.[75] The definition is intentionally broad and technology-neutral, serving as the gateway to the Act's risk-based regulatory framework, under which certain AI practices are prohibited, and certain use cases are regulated as high-risk due to their potential impact on health, safety, and fundamental rights, including discrimination.

The Digital Services Act (DSA), is relevant only to the extent that the AI-enabled service is offered through an online platform that qualifies as an intermediary service under the DSA.[76] When such a requirement is met, the DSA provides a complementary governance layer framed around the protection of fundamental rights in the online environment, including non-discrimination. At baseline, intermediary services must set out and apply transparent terms and conditions, including, where relevant, the use of content moderation tools and algorithmic decision-making.[77] Online platforms that use recommender systems–when the platform decides what to show you next based on a series of factors–must disclose the main parameters of those systems and the options available to users to influence them,[78] thereby ensuring transparency and accountability.

The DSA's most stringent fundamental rights safeguards apply to very large online platforms (VLOPs) and very large online search engines (VLOSEs), which must identify, analyze, and assess systemic risks stemming from the design, functioning, and use of their services. This includes foreseeable negative effects on fundamental rights, and therefore, they must adopt reasonable, proportionate, and effective mitigation measures tailored to those risks identified.[79] Compliance with these safeguards is reinforced through mechanisms intended to enable scrutiny and evidence-gathering, particularly through independent audits of DSA obligations,[80] data-access modalities for vetted researchers to investigate systemic risks,[81] and enhanced transparency reporting duties.[82] In practice, however, the DSA's framework has a limited use for tax authorities. Typically, tax authorities would not use intermediary AI systems, covered by the DSA framework, since they usually use AI to automate the tax administration

75 Article 3(1), EU AI Act.
76 Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market for Digital Services and amending Directive 2000/31/EC (Digital Services Act), OJ L 277, 27 October 2022 (Digital Services Act (DSA), in Art. 3.
77 Article 14, DSA.
78 Article 27, DSA.
79 Articles 35-36, DSA.
80 Article 37, DSA.
81 Article 40, DSA.
82 Article 42, DSA.

work, e.g., the interaction with taxpayers, or in closed authority-controlled portals (given the type of data received from taxpayers).[83]

More specifically, the large language models (LLMs) are a type of GenAI system that can generate text outputs by learning statistical and semantic patterns from language data.[84] In functional terms, LLM–based tools can support language-intensive tax tasks–e.g., summarizing filings, extracting and structuring information, or drafting compliance assessments–depending on the system design and the role assigned to outputs in administrative workflows. However, LLMs represent only one subset of AI used in public administration.[85] Public authorities also rely on machine learning-based automated decision-making (ADM) systems, for example, for risk assessment and a case-selection function that shapes audit and enforcement priorities.[86] Moreover, the range of technical approaches continues to evolve as new models and applications are developed at a high rate.[87] Regardless of the AI model type, the common policy driver is that AI systems are likely to increase administrative efficiency by reducing operational costs through automation of authorities' tasks. At the same time, these efficiency gains are not neutral, as they depend on data quality, deployment design, and governance safeguards, while they may generate discriminatory outputs.

For the State aid analysis developed later, the central issue is not conceptual, but risk oriented. AI outputs are known for replicating or amplifying bias embedded in, inter alia, training data and operational feedback loops, potentially generating discriminatory outcomes.[88] The AI Act addresses these concerns most concretely through requirements on data and data governance, including the examination of possible biases in training, validation, and testing data, as well as the adoption of measures to detect, prevent, and mitigate bias-related risks that can lead to discriminatory outcomes prohibited under EU law.[89] In addition, deployers of high-risk AI systems may be required to conduct a fundamental rights impact assessment before first use, which provides an explicit legal channel to assess and document discrimination-related risks in the specific deployment context.[90] Still, these regulatory layers do not, by themselves, guarantee non-discriminatory outcomes in practice. A growing body of scholars argue that effective bias detection and accountability often depend on robust indepen-

83 OECD (2025) "AI in tax administration", in *Governing with Artificial Intelligence – The State of Play and Way Forward in Core Government Functions,* OECD Publishing, pp. 169–175, Paris, https://doi.org/10.1787/795de142-en, in p. 172.
84 Lareo, X., "Large language models (LLM)", in *European Data Protection Supervisor*, at https://www.edps.europa.eu/data-protection/technology-monitoring/techsonar/large-language-models-llm_en (last accessed 23 March 2026).
85 OECD (2025), "Governing with Artificial Intelligence", p. 172.
86 Hartmann, D., *et al.* (2024) "Addressing the regulatory gap: moving towards an EU AI audit ecosystem beyond the AI Act by including civil society", *Springer AI and Ethics* 5, pp. 3,617–3,638, in p. 3,617.
87 Maslej, N., *et al.* (2025) "The AI Index 2025 Annual Report", p. 237.
88 Hartmann, D., *et al.* (2024) "Addressing the regulatory gap", p. 3,618.
89 Article 10 and Annex XI, Section 1, EU AI Act.
90 *Ibid.,* Article 27.

dent scrutiny, including third-party auditing by researchers and civil society, to overcome harms that internal compliance processes may miss or under-detect.[91]

2.4. Overview of What is AI?

2.4.1. The three overarching dimensions

In subsection 2.1, AI was conceptually divided into two dimensions: the physical infrastructure of AI systems, referred to here as DCs, and the AI service, which is enabled through that physical infrastructure. That subsection (2.1) established the analytical method on which the following sections were developed. In subsection 2.2, the concept of DC was examined, including the different terminologies, references, and legal framings used in multiple EU legislations to describe it. The analysis then addressed the six sustainability parameters of DCs that are, in my view, the most relevant for this report, identifying the EU legal standards that are directly or indirectly applicable, since they may play an important role in the State aid analysis. Finally, subsection 2.3 examined the concept of an AI system as a digital service, together with the limited EU legal standards identified also as potentially relevant to the State aid analysis. The key factors discussed in Section 2 are mapped below to provide a clear overview of the framework analyzed.

2.4.2. Mapping of key findings

- Physical structure – DCs (2.2):
  - Relevant and related legal definitions (subsection 2.2.2.):
    - legal definition of DC
    - legal definition of DC service
    - DC sustainability reporting framework
    - AI factory as an infrastructure
    - operationalization of DC reporting indicators.
  - Operational Sustainability Factors (Operationalization of DC reporting indicators, subsection 2.2.3.):
    - siting (2.2.2.1.): no EU harmonization
    - energy consumption & pressure on the electricity grid (2.2.2.2):
      - > 500 kW: public disclosure of DC energy and sustainability information
      - > 1 MW: the same but EED relevance (waste-heat recovery & related assessment duties)
      - grid pressure: no EU harmonization.
    - waste-heat recovery (2.2.2.3):
      - > 1 MW must be recovered, unless it is not technically or economically feasible.

91 Hartmann, D., *et al.* (2024) "Addressing the regulatory gap", p. 3,618.

        - » Newly planned or substantially refurbished DC > 1 MW: cost-benefit analysis assessing the feasibility & efficiency of waste-heat recovery and possible connections to district heating or cooling networks. Exemptions listed.
    - cooling systems and water use (2.2.2.4):
        - » report obligations: indicators related to cooling systems, set-point temperatures, refrigerants, and water use
        - » power usage effectiveness (PUE) and water usage effectiveness (WUE) as sustainability metrics for assessing the operational sustainability of DCs.
    - tangible resources and the supply chain of DCs (2.2.2.5):
        - » material use or supply-chain standards: only indirect EU harmonization.
    - labor (2.2.2.6):
        - » specific job-creating standards: only indirect EU harmonization.
- AI system, AI digital service (Section 2.3):
    - legal definition of AI as a system
    - risk-based structure of the AI Act
    - bias and data-governance obligations for high-risk AI
    - fundamental rights impact assessment for certain high-risk uses
    - DAS baseline transparency obligations
    - transparency of recommender systems
    - systemic-risk obligation for VLOPs and VLOSEs
    - independent oversight and transparency mechanism under the DSA.

3. THE EU STATE AID FRAMEWORK

3.1. An integrated system of values

This section first explains why State aid law must be interpreted in light of the wider EU legal framework, then sets out the four cumulative conditions of Article 107(1) TFEU and finally returns to what that approach means in practice for AI-related measures. In essence, EU State aid law controls when public authorities give economic advantage to selected businesses in ways that may distort competition and trade within the internal market.[92] This subsection, therefore, explains why Article 107(1) TFEU should not be read in isolation from broader EU Treaty values and harmonized legislation.[93]

Throughout Section 2, the discussion focused on legal standards concerning either reporting obligation, aimed at transparency and accountability, or minimum thresholds that must be ensured across the Member States. Although those rules pursue specific regulatory purposes, they remain relevant to the interpretation of State aid law where AI-related national measures interact with those same legal concerns. Article 107(1) TFEU should therefore not be interpreted as though those standards were irrelevant to it. They form part of the broader legal context in which that provision must be interpreted. This follows from the integrated character of the EU legal order, which is not compartmentalized into sealed-off branches of law.[94]

In practical terms, this means that commitments relating to equality, social protection, non-discrimination, environmental and consumer protection, and personal data protection cannot be treated as wholly external to the interpretation of Article 107(1) TFEU. That follows from the Treaties themselves, which require consistency across Union policies and activities and lay down cross-cutting obligations that are not confined to a single field of law.[95]

More concretely, the interpreter of Article 107(1) TFEU may need to consider values expressed elsewhere in the Treaties and harmonized EU legislation. This is especially relevant where State aid analysis requires the assessment of

92 Article 107(1) TFEU.

93 This subsection 3.1. is based on the theoretical framework developed in this author's doctoral thesis, in which I analyzed the legal scholarship and the CJEU's interpretation of the integration principle laid down in Article 11 TFEU, and how it affects the interpretation of Article 107(1) TFEU. See Pedroso, J. (2024) *Environmental Taxes from the EU State Aid Perspective,* GUPEA, pp. 59–65.

94 Article 7 TFEU states: "The Union shall ensure consistency between its policies and activities (…)".

95 Articles 7–17 TFEU contain such cross-cutting obligations. Article 8 TFEU states: "In all its activities, the Union shall aim to eliminate inequalities, (…)". Article 9 TFEU states: "(…), the Union shall take into account requirements linked to the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion, and a high level of education, training and protection of human health". Article 10 TFEU states: "(…), the Union shall aim to combat discrimination (…)". Article 11 TFEU states: "Environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, (…)." Article 12 TFEU states: "Consumer protection requirements shall be taken into account in defining and implementing other Union policies and activities". Article 16(1) TFEU states: "Everyone has the right to the protection of personal data concerning them." All of these concerns are challenged by the ongoing AI boom.

legal and factual differentiations between undertakings in light of broader regulatory objectives. That does not mean that such values automatically replace the logic of competition and internal market protection underlying Article 107(1) TFEU, nor that they automatically prevent a measure from being classified as aid. Rather, they form part of the legal context within which that provision must be interpreted.

What, then, does "take into account" wider Union values mean in practice? That question is easier to answer after explaining how Article 107(1) TFEU operates in the following subsection 3.2.

3.2. Prohibition on State aid – any aid

This report focuses on the prohibition set out in Article 107(1) TFEU and its relevance for AI-related infrastructure and systems. From an EU legal perspective, even major technological shifts, including the rapid development of AI, remain subject to the State aid rules. It is therefore useful to begin with the wording of Article 107(1) TFEU:

> Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market.

Two formulations in the text are particularly important: *any aid* and *any form whatsoever*. In practice, this means that the legal analysis does not start from the legal form of the measure, but from whether it cumulatively satisfies the conditions laid down in Article 107(1) TFEU.[96] From a broader tax law perspective, the State aid rule safeguards that taxpayers' money is not used to prioritize certain businesses due to subjective purposes.

For a measure to qualify as State aid, it must therefore satisfy all four conditions:

1. granted by a Member State or through State resources;
2. distorts or threatens to distort competition;
3. favours a certain *undertaking* or the production of certain goods;
4. affects trade between Member States.

One preliminary point should be clear: Article 107(1) TFEU is not about State economic support to individuals (physical persons) as such. It is concerned with measures that may affect competition and trade, and thereby, the functioning of the internal market, by selectively granting an advantage to *undertakings* (i.e., entities engaged in economic activity), even when the advantage is indirect or

96 Joined cases C-20/15 and C-21/15 P, *Commission v World Duty-Free Group SA and others,* para. 53.

ancillary. This broad framing reflects the Treaty language (*any aid* and *in any form whatsoever*).[97] This does not mean, however, that every public measure benefiting undertakings constitutes State aid, but when they meet those four cumulative conditions. Thus, economic benefits open to all undertakings on equal terms are usually not caught by Article 107(1) TFEU, nor directly granted to citizens as non-business taxpayers, although they may benefit from a State aid measure caught up by that rule.[98]

The notion of *undertakings* has a wide scope in EU law. It covers any entity engaged in an economic activity, regardless of its legal form, profit-making status, or public or private character.[99] What matters is the nature of the activity: when goods or services are offered on a market, the entity may qualify as an undertaking,[100] whereas a public authority acting in the exercise of sovereign powers normally does *not*.[101] By contrast, a public-controlled or state-owned entity may still qualify as an undertaking when it supplies goods or services on a market under conditions comparable to those of private operators.[102]

Illustrating this, if a tax agency issues an administrative tax decision using an AI system, that activity normally remains an exercise of public authority and is not, as such, the provision of a market service. Consequently, it would not be an *undertaking*. However, the assessment may change if a company fully owned or controlled by the State develops, with the cooperation of the national tax agency, an AI-based tool, and thereby makes it available in a way that resembles a digital service similarly offered by other companies in the market. Whether that situation constitutes State aid would still require a case-specific assessment of the four conditions listed above, which are addressed in the following subsections.

97 Case C-30/59 *De Gezamenlijke in Limburg* v. *High Authority of the European Coal and Steel Community*, p. 19, the EU Court of Justice states: "The concept of aid is nevertheless wider than that of a subsidy because it embraces not only positive benefits, such as subsidies themselves, but also interventions which, in various forms, mitigate the charges which are normally included in the budget of an undertaking and which, without, therefore, being subsidies in the strict meaning of the word, are similar in character and have the same effect."

98 For example, in Sweden, there is a State aid measure known as *growth support*, under which qualified businesses may apply for a refund of employer contributions. The beneficiary of the measure is the company receiving the refund. At the same time, the individuals hired by that company also benefit, insofar as the measure reduces the employer's labor costs and thereby facilitates their recruitment. In that sense, the individuals are the indirect beneficiaries, whereas the companies are the direct beneficiaries. See to this effect, the Swedish Tax Agency official page, "Rules on Growth Support ("växa-stöd")", at https://www.skatteverket.se/servicelankar/otherlanguages/englishengelska/businessesandemployers/startingandrunningaswedishbusiness/declaringtaxesbusinesses/filingapayereturn/growthsupport/rulesongrowthsupportvaxastod.4.1df9c71e181083ce6f62b99.html (last accessed 23 March 2026).

99 Case C-41/90 *Höfner and Elser v Macroton GmbH,* para. 21.

100 Commission Notice on the notion of State aid, in para. 7.

101 Case C-364/92, *SAT Fluggesellschaft v Eurocontrol,* para. 30

102 Case C-49/07 *Motosykletistiki Omospondia Ellados NPID (MOTOE) v Elliniko Dimosio*, paras. 22.

3.2.1. Granted by a Member State or through State resources

The first condition in Article 107(1) TFEU has two limbs: the measure must be *granted by a Member State* or *through State resources.* The first limb concerns attribution to the State; the second concerns the involvement of public resources. Although the two limbs often overlap in practice, they should remain analytically distinct.[103] Put simply, the questions are *whether a public authority influenced the decision granting the advantage and whether that advantage involves public resources.*

The first limb is not interpreted narrowly. It covers advantages attributable to public authorities at the national, regional, or local level,[104] and may also extend to measures implemented through a private entity where the decision can still be attributed to the State.[105] What matters, therefore, is not only who formally grants the advantage, but whether public authorities are sufficiently connected to the decision behind it.

For example, a fully state-owned electricity company may satisfy this limb where it grants a private operator contractual terms that are not available to other businesses. The same may apply where public land, infrastructure, or network connections are made available on unusually favorable terms.

The second limb concerns whether the measure involves State resources. That is, whether the advantage is financed through resources under public control or entails a burden on the public budget. Two common channels are particularly relevant.

First, there may be a direct transfer of public funds, such as an investment grant or operational support. In the AI context, one example would be a scheme under which a Member State pays DC operators for achieving defined reductions in greenhouse gas emissions.

Second, State resources may be involved through foregone revenue, typically where tax benefits depart from the normal tax system and are available only to certain beneficiaries. A five-year property tax deferral for a DC project is a simple example, since revenue that would normally be connected is postponed.

A similar issue may arise where a public-controlled or state-owned electricity supplier offers a DC preferential prices not available to other operators. In such a case, the agreement may reduce the supplier's revenue and thereby involve State resources.

103 Case C-233/16 *Asociación Nacional de Grandes Empresas de Distribución (ANGED) v Generalitat de Catalunya,* para. 62.
104 Case C-78/76 *Firma Steinike und Weinlig, Hamburg, v Germany*, para. 21, p. 611.
105 Case C-482/99 *French Republic v Commission,* para. 23, 34, 54-55.

3.2.2. Favouring certain undertakings or the production of certain goods

The third condition in Article 107(1) TFEU is that the measure must *favour certain undertakings or the production of certain goods*. In practice, this condition is commonly analyzed through two connected ideas: (i) advantage, which is about the economic benefit, "*how*?", and (ii) selectivity, which is about the beneficiaries who received the economic benefit, "*who?*".

The advantage must have an economic nature. This means the measure improves the beneficiary's financial position compared with what would have occurred under normal market conditions or in the normal tax regime imposition. The advantage can be granted in any form, but for illustrative purposes, it may take the form of direct payments, preferential prices, guarantees, loans, tax reductions, exemptions, etc.[106] The key question is whether the terms to receive the advantage deviate from the normal market conditions or from the reference tax regime.[107] Put simply, subsidies and tax measures are assessed differently because, in the former, the economic benefit is usually visible from the outset, whereas in the latter, the benefit often becomes visible only after identifying the reference tax regime from which the measure departs.

In relation to subsidies and equivalent forms of aid, the existence of an advantage is commonly assessed by reference to the market economy operator principle, namely, whether the undertaking received an economic benefit that it would not have obtained under *normal market conditions*.[108] *Normal market conditions* mean the terms that would normally be available on the market, without public intervention, between comparable undertakings.

Examples are straightforward. A grant reduces investment or operating costs, or a guarantee reduces financing costs by shifting risk to the State. In such cases, selectivity is usually even simpler because the advantage in question has a clear recipient or specific project.[109] In an AI-related context, examples may include an investment grant to build or expand a specific AI DC or an operational support covering part of a facility's electricity or cooling-related costs. Where such support is targeted at a particular undertaking, sector, region, or technology, it will normally be selective. For the case studies analyzed later in this report, the practical question is therefore whether the measure, whatever its form, confers an economic advantage that is selectively available to certain AI DC operators or service providers.

106 Commission Notice on the notion of State aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union (Commission Notice on the notion of State aid), para. 68.
107 Case C-124/10 P *Commission v Électricité de France, and others,* para. 78–79 for subsidies and alike, and case C-143/99, *Adria Wien Pipeline GmbH*, paras. 41-42 for tax measures.
108 Case C-124/10 P *France v Commission,* paras. 69–70.
109 For instance, the discussion in case Case C-124/10 P *France v Commission* does not even mention selectivity because it is clear who was the beneficiary.

By contrast, tax measures require a more structured analysis because the advantage is often granted indirectly–through a reduction in the tax burden–rather than through a visible transfer of funds. For the purposes of this report, the essence can be expressed as follows: a tax measure is selective where it derogates from the *normal tax system* by benefiting certain undertakings, while others in a comparable legal and factual situation remain subject to the ordinary tax regime.[110] In other words, the *normal tax system* is the reference tax regime that normally applies, and the question is whether the contested measure departs from that baseline regime in favor of certain undertakings.

In practice, the analysis therefore focuses on whether the measure constitutes a deviation from the general framework (for example, a special regime for a category of beneficiaries), and whether that deviation can be explained by the internal logic of the tax system itself. Only narrowly constructed justifications are accepted, and in practice, such cases are exceptional.[111]

AI-related examples are more common in the infrastructure context. Selectivity issues may arise, for example, where only DCs above a certain size receive a tax benefit, or where electricity taxes and grid fees are reduced only for hyperscale computing facilities. This distinction matters because both subsidies and tax advantages can satisfy that State aid condition. However, the difference matters for how the selective advantage condition is identified and proved: subsidies typically reveal the advantage directly (a payment or a guarantee benefit), while tax measures require a deeper analysis of the tax system, including the delineation of the extent of the system that supports that analysis. For the case studies analyzed later in this report, the practical question is whether the measure, whatever its form, confers an economic advantage that is selectively available to certain AI DC operators or service providers.

3.2.3. Distort competition and affect trade

The final two conditions in Article 107(1) TFEU require that the measure *distorts or threatens to distort competition* and *affects trade between Member States.* For the purposes of this report, these conditions can be presented together because both depend on the market in which the beneficiary operates and the circumstances of competition within it.[112]

To assess whether competition and trade may be affected, one must identify the market in which the beneficiary operates and the undertakings with which

110 Based on the view established since C-143/99, *Adria Wien Pipeline GmbH*, paras. 41-42 and, then further developed throughout several cases.

111 See a systematic analysis and input in this regard in Pedroso, J. (2024) *Environmental Taxes from the EU State Aid Perspective*, pp. 221–227.

112 Case C-730/79, *Philip Morris v Commission,* para. 9. Note that the relevant market is a broader concept of competition rules. The Commission even dedicated a notice specifically on this notion, the Commission Notice on the definition of relevant market for the purposes of Community competition law, OJ C 372, 9 December 1997, pp. 5–13.

it competes, including potentially across borders. The threshold is relatively low: what must be shown is not an actual market distortion or a quantified cross-border effect, but a plausible effect on competition and trade within the internal market.

The condition concerning competition distortion is generally satisfied where the measure strengthens the beneficiary's position compared with other undertakings.[113] The burden of proof to satisfy this condition is weak. It is therefore not necessary to demonstrate an actual distortion of competition, but only a real possibility that the measure strengthens the beneficiary's position in the internal market. It simply requires an analysis of the relevant market and showing the possibility (real one, not fictitious) that the measure affects competition dynamics within the internal market.[114] This is particularly relevant in AI-related sectors, where entry may depend on costly infrastructure, access to electricity, and specialized hardware, and where some markets are still emerging.

The condition concerning the effects on *trade between Member States* is also interpreted broadly and not as linguistically straightforward as the previous one. It is usually sufficient that the beneficiary operates in a sector where cross-border trade exists or could exist.[115] Likewise, it is not necessary to prove that trade between Member States has already been affected in a concrete case, only that the measure is likely to have such an effect.

In practical terms, the question is whether undertakings from other Member States could plausibly enter and compete in the relevant market.[116] In the DC context, this is particularly relevant because a selective economic advantage may influence the undertaking's choice of which Member State will host the facility.

In this report, these two conditions will therefore be discussed and assessed in an essentially functional way: if the measure confers a selective advantage on an undertaking activity in AI-related infrastructure or services in markets that are open–or realistically open–to cross-border competition, it will generally be considered capable of affecting both competition and trade.

3.3. What does this "take into account" mean in practice?

The central claim advanced here is that wider Union values directly matter for the classification analysis under Article 107(1) TFEU. More specifically, they form part of the legal context in which that provision must be interpreted and may affect the assessment of whether a differentiation embedded in a national measure is legally coherent, and thus whether the measure remains general or instead constitutes State aid.

113 Case C-730/79, *Philip Morris v Commission,* para. 11.
114 In case C-280/00, *Altmark Trans,* para. 79.
115 Commission Notice on the notion of State aid, para. 196.
116 Case C-730/79, *Philip Morris v Commission,* para. 9.

In that exercise, the question is not only whether the measure confers an economic advantage through State resources, but also whether the legal and factual structure of the measure reveals a differentiation that is disconnected from other relevant values of the Union legal order. Where an EU Member State adopts a measure focused exclusively on the economic benefits it may bring to the State and, as a result, grants favorable treatment to certain comparable undertakings without an adequate legal foundation, the measure is likely to fall within the prohibition laid down in Article 107(1) TFEU.[117]

This is particularly relevant in AI-related contexts. Hosting a DC may appear economically attractive because it can generate revenue, investment, employment, and infrastructure development for the host State. At the same time, as explained in Section 2, DC may also generate environmental and social externalities. If those externalities are ignored in the design of the measure, the resulting differentiation may reflect a narrowly economic logic disconnected from other values protected by Union law.

The legal relevance of those values must be framed carefully. The fact that a measure pursues environmental, social, or other public-interest objectives does not, in itself, prevent it from being classified as State aid under Article 107(1) TFEU. Nor does mere compliance with minimum regulatory standards suffice to justify differentiated treatment between comparable undertakings.

By contrast, where a measure is genuinely designed around cross-cutting Union values, and those objectives form part of its internal logic, that internal logic may be relevant to showing that the measure remains general rather than State aid. A general measure is one that applies across the board on the basis of objective criteria, rather than favoring certain undertakings. In that case, the measure would fall outside Article 107(1) TFEU.

Although compatibility falls outside the scope of this report, a measure classified as State aid is not necessarily prohibited in absolute terms, since it may still be assessed under the separate compatibility framework laid down in Articles 107(2) and (3) and 108 TFEU.[118]

Here, "taking into account" other Union values does not mean replacing the State aid test with a broad policy-balancing exercise. Rather, Article 107(1) TFEU should not be interpreted in artificial isolation from the wider Union legal framework, nor should national measures be designed in that way. In AI-related cases, this is especially important because the same measure may affect not only competition and trade but also environmental and social sustainability concerns, including personal data protection. For that reason, Member States seeking to

117 This is a result of the selective advantage condition analysis I carried out in my thesis, where I systematically analyzed several State aid rulings, extracting general parameters for the interpretation of these conditions and analyzing the effects of integration of environmental protection into that condition. In Pedroso, J. (2024) *Environmental Taxes from the EU State Aid Perspective,* pp. 153-250.

118 As explained in the section methodology and scope, the compatibility assessment is left out of the scope of this report.

reduce the risk of State aid intervention should design such measures with those cross-cutting values in mind and make the relevant trade-offs transparent.

Finally, as explained at the beginning of this report, classification as State aid entails significant legal risk for beneficiary undertakings. In practical terms, that matters because aid granted unlawfully may later have to be recovered from the beneficiaries. At this stage, therefore, the analysis determines whether the measure remains general, i.e., within the Member State's discretion, or instead falls within the EU State aid control framework. In the following Section 4, I analyze concrete cases of AI DCs and AI tax decisions using uniform templates in Annexes I and II to provide an initial State aid risk assessment.

3.4. Summary of the State aid conditions

In summary, public support for AI-related infrastructure or AI systems may constitute State aid under Article 107(1) TFEU where it is attributable to the State and financed through State resources, it selectively grants advantages to certain undertakings and is capable of distorting competition and affecting trade within the EU market. In AI-related cases, that assessment should be carried out in light of the wider EU legal framework, since regulatory concerns linked to DCs and AI systems–particularly sustainability, non-discrimination, and data-governance standards–may be relevant to determining whether the measure is genuinely general or instead, constitutes a State aid under Article 107(1) TFEU.

4. Cases

4.1. Template

In Section 4, the analysis moves from the legal framework to its application in concrete factual settings. Each case is assessed through a uniform template that maps the relevant State measure and enables a structured assessment against the cumulative conditions in Article 107(1) TFEU. Where key variables are not disclosed in open sources, these are flagged as *uncertainties*. Each case also includes a cross-check against the EU Commission's State aid registers to verify whether the measure appears to have been notified and assessed under State aid rules.

The templates are structured around five indicators: (1) module, (2) field, (3) why, (4) how, and (5) evidence. The "modules" reflect the five core steps of the analysis: (1) case snapshot, (2) measure inventory, (3) assessment of the State aid conditions, (4) initial risk assessment, and (5) EU Commission notification cross-check. Together, these modules provide a standardized way to map the relevant public measures, assess them under Article 107(1) TFEU, and situate them within (or outside) the EU State aid control framework based on the information available.

4.2. AI infrastructure (DCs) cases

4.2.1. Gävle (Sweden) & Microsoft – municipal land sale

4.2.1.1. Background

This case concerns the sale of municipal land by Gävle kommun to Microsoft Sweden in connection with Microsoft's planned establishment in the Gävle-Sandviken region.[119] The relevant municipal documents describe the project as a DC establishment in Gävle, structured as a land transfer in two parts corresponding to the properties Skogmur 3:1 and Skogmur 4:1.[120] The technical parameters and DC capacity of the facility in IT load (MW) or the overall DC capacity are not disclosed in the relevant materials, which limits the extent to which the scale of the infrastructure can be assessed using open sources.[121] The public record in Sweden indicates that notification concerning DC energy performance must

119 The municipality of Sandviken also struck a deal in parallel with Gävle. Sandvikens kommun "Så etableras datacenterindustrin i Gävle-Sandviken", last updated 09 January 2024, at https://sandviken.se/naringslivocharbete/naringslivetisandviken/etableringavdatacenterigavlesandviken/saetablerasdatacenterindustrinigavlesandviken (last accessed 23 March 2026).

120 Gävle kommun "Etablering av datacenter i Gävle-Sanvdiken", 30 October 2025, at https://www.gavle.se/kommun-och-politik/samarbeten-projekt-och-arbetssatt/etablering-av-datacenter (last accessed 23 March 2026).

121 Regulation 1099/2008 on energy statistics, after the last amendment from 18 January 2024, in Annex A, section 2.6.3.1. See even Article 2, Commission Regulation 2024/264 on energy statistics, about the date the reporting became mandatory.

first be submitted to the Swedish Energy Agency by 27 April 2026, after which the reporting must be completed in the EU database by 15 May 2026, covering the full year 2025.[122]

The core measure analyzed in this report (see Annex III.1) is the sale of 66 hectares of municipal land for SEK 140 million (about EUR 13 million).[123] According to the case file, 24 hectares were already covered by an industrial detailed development plan ("Skogmur 3:1 mfl"), while 42 hectares were under ongoing detailed planning within Skogmur 4:1.[124] The municipal board (kommunstyrelsen) approved the sale based on an external valuation.[125]

Following review by the municipality's elected auditors (revisionen), PwC was commissioned to carry out an *ex-post* review of the handling of the land sale. PwC's mandate was to assess whether there were legal grounds for a deeper audit scrutiny of the matter and of the municipal board's handling, including compliance with relevant municipal rules and legal constraints (with State aid considerations briefly addressed as part of the legal framework discussed in the *PwC report 1*).[126]

4.2.1.2. Timeline – key milestones documented in diverse sources

On **22 August 2018**, the municipal board president (kommunstyrelsens ordförande) decided, on the basis of delegation, to enter into an *agreement of intent* with Microsoft;[127] the agreement later became a central point of review in the auditors' file, including whether the delegation was handled as an urgent decision. Such an action is later discussed as a possible urgent delegation. On **20 September 2018**, an external valuation of the relevant properties was presented, estimating the value of the total area at SEK 140 million (approximately **EUR 13 million**).[128] On **10 December 2018**, the municipality adopted revised land allocation guidelines;[129] in later audit discussions, questions were raised about the timing of their applicability. Just one day later, on **11 December 2018**, the municipal board approved the land sale at the valued price and decided that

122 Swedish Energy Agency (2026) "Data centre energy performance reporting", at https://www.energimyndigheten.se/en/climate/climate/data-centre-energy-performance-reporting/#:~:text=How%20Is%20the%20Data%20Made,%E2%88%92 (last accessed 23 March 2026).
123 Conversion based on 23 March 2026 values.
124 Gävle kommunstyrelse (2018) "§259 Markförsäljning", Protokoll, 11 December 2018, at https://meetingsplus.gavle.se/committees/kommunstyrelsen/mote-2018-12-11 (last accessed 23 March 2026).
125 *Ibid.*
126 Note that this statement is a conclusion drawn based on the existence of the report, namely Westergaard-Nielsen, M. (2019) "Förstudie avseende avyttring av fastigheterna Skogmur 3:1 & 4:1 Gävle kommun", PWC, 17 December 2019, pp. 1-8, (PWC Report 1), and what is stated in the assessement of Gunilla Beckman Ljung, chief accountant of the municipality of Gävle, in Beckman Ljung, G. (2020) "Förstudie avseende avyttring av mark till Microsoft", Gävle kommunstyrelse, Dnr 20REK2, 19 March 2020, at https://meetingsplus.gavle.se/welcome-sv/namnder-styrelser/kommunfullmaktige/mote-2021-03-29/agenda/revisionsrapport-forstudie-avyttring-av-mark-till-microsoftpdf (last accessed 23 March 2026), p. 1.
127 Gävle kommunstyrelse (2018) "3 Intentionsavtal, del av Ersbo", Kallelsen 11 December 2018, at https://meetingsplus.gavle.se/committees/kommunstyrelsen/mote-2018-12-11 (last accessed 23 March 2026).
128 *Ibid.*, p. 7.
129 Westergaard-Nielsen, M. (2020) "Uppföljande granskning rörande förstudie avseende avyttring av fastigheterna Skogmur 3:1 & 4:1 Gävle kommun", PWC, August 2020, pp. 1–6 (PwC Report 2), in pp. 4–5.

the transaction would be carried out in two parts (Skogmur 3:1 and Skogmur 4:1).[130] On **08 February 2019**, the parties signed the final purchase contract for **Skogmur 3:1 (contract 1**), and subsequent purchase-letter steps were recorded for the last time on **25 March 2019**. The corresponding contract documentation for **Skogmur 4:1** (**contract 2)** was not available to PwC for review, but the municipality's later files indicate that the purchase-letter process for the second contract concluded on **19 November 2019**.[131] The revenue from the transactions increased the municipality's 2019 results exponentially.[132]

4.2.1.3. Audit and follow-up – PwC reports ex post

PwC Report 1 (**17 December 2019)** identifies several procedural and documentation issues relevant to assessing whether the transaction was demonstrably market-conforming, including gaps in the documentation trail, the handling of the chair's delegation decision, the absence of certain safeguards reflected in the municipality's land allocation guidelines, and the lack of access to contract 2.[133] **PwC Report 2** (**27 August 2020**) clarifies aspects of the earlier critique in light of uncertainty over which version of the guidelines should be treated as applicable, while maintaining the overall direction of the observations of Report 1.[134] Finally, in the municipality's written response (**25 September 2020)**, the sector manager explains why the previous guidelines were applicable on 11 December 2018 (when the board approved the sale), and outlines the municipality's account delegation, valuation, construction permitting, competence, and risk-handling.[135]

4.2.1.4. State aid assessment

The land sale to Microsoft raises a solid State aid question under Article 107(1) TFEU because it involves a transfer of municipal assets in a context where the decisive issue is whether the transaction was carried out on market-conforming terms. Given that the sale took place in 2018-2019, and in light of the EU legislation discussed in Section 2, the EU standards were not in force at the time of the measure and, therefore, cannot serve as a legal benchmark for this State aid analysis. Nevertheless, those instruments remain relevant for assessing Microsoft's ongoing compliance with applicable requirements for DC operations.

The *imputability to the State* is satisfied, regardless of the discussion concerning whether the **municipality board** had discretion to do so, because it has ***de facto* carried out the sales through a decision** approving them and later on

130 Gävle kommunstyrelse (2018) "§259 Markförsäljning".
131 PWC Report 1 (2019), p. 7.
132 Beckman Ljung, G. (2020) "Förstudie avseende avyttring av mark till Microsoft", p. 1.
133 PWC Report 1 (2019), p. 6–8.
134 PwC Report 2 (2020), in pp. 4–5.
135 Åleskog, H. (2020) "Begäran om yttrande avseende revisionens förstudie – avyttring av mark till Microsoft", Gävle kommun, Dnr 20KS356-6, 25 September 2020, pp. 1–7, at https://meetingsplus.gavle.se/welcome-sv/namnder-styrelser/kommunstyrelsen/mote-2020-10-06/agenda/yttrande-avseende-revisionens-forstudie-avyttring-av-mark-till-microsoftpdf (last accessed 23 March 2026).

through the two contract signatures and payments, thereby **the sales were *granted by a Member State***.

The connected *State resources* element depends on whether both pieces of land were sold below market value or on otherwise non-commercial terms, which would imply a transfer of economic value from Gävle to Microsoft. As a result, this part of the analysis depends on whether the selective advantage condition is met. The lack of transparency in different parts of this case suggests that the sale transaction was carried out in a closed market, given that the confidentiality/secrecy clause was able to cover the sale approval decision within the secrecy period, i.e., the **confidentiality period** started on **23 August 2018** and ended on **21 December 2018** (**120 days**), but the **sale decision** was taken on **10 December 2018**. As a result of this fact alone, the selectivity is clear in the sense that only Microsoft could have benefited from this deal.[136]

The faults in other procedural and contractual terms also corroborates this view. The agreement of intent did not follow the typical routines of the municipality, nor did the chair provide an explicit written motivation at the time to handle the case as an urgent matter. While the municipality maintains that the price reflected an independent valuation, the PwC report points out that the valuation lacked the documentation and methodology required to assess that it substantially reflected the market value.[137] Without publicity, alternative evaluations, and a clear methodology of the evaluation process, the substantial validity of the valuation presented is low, and the likelihood that it was below market price is suspiciously high. Moreover, PwC pointed out deviations from the municipality's land allocation guidelines, including the absence of usual conditions, and the new guidelines approval one day before the decision of sale was approved raises red flags about the sales procedure. Finally, the municipality's non-disclosure of contract 2 to PwC's audit increases the sense that this deal was done in a closed market and that the price was likely below the market price, although from the municipality's perspective, it represented 44% of the revenues raised in 2019.[138] Based on these considerations, I concluded in my assessment that **the sale represented a high risk of fulfilling the conditions *through State resources* and *selective advantage***.

Regarding the competition distortion and effects on trade, the threshold is low: it is sufficient that the measure is capable of affecting market conditions and cross-border trade. Microsoft operates in markets for cloud, data processing, and related AI services that are not confined to local markets, but globally, including within the EU market. If the land sale reduced establishment costs or reduced constraints for the establishment process compared with what a comparable operator would face under an open market trade–i.e., where other

136 PWC Report 1 (2019), p. 6.
137 *Ibid.*, p. 4.
138 PwC Report 2 (2020), p. 2.

competitors would also be allowed to buy the land and establish their DC in Gävle–the measure would be capable of strengthening Microsoft's competitive position in relation to others. In this sense, Microsoft likely reduced its service costs through the land purchase privileged conditions, closed market, and likely lower price. In a sector characterized by cross-border supply of digital services, this is generally sufficient to satisfy the competition and trade condition once a selective advantage effect is plausible, which is the case.

4.2.1.5. Societal impact considerations – actual "terms and conditions"

Overall, this case supports an initial risk assessment of **high likelihood that the cumulative conditions in Article 107(1) TFEU could be met**. The municipality's later written response provides counter-explanations to several issues identified in the PwC material and should be treated as relevant context.[139] However, the response is, in my view, an *ex post* defense that would have been largely unnecessary had the sales process been conducted more transparently and in a verifiable manner from the outset, particularly regarding the openness of the process and robustness of the market benchmark.

The parallel land sale in Sandviken is far less extensively documented in the open record. For that reason, and because it constitutes an autonomous municipal measure, I excluded it from this case assessment, although it gives a context for these societal impact considerations.[140] Microsoft's third Swedish site in Staffanstorp, which is also outside the scope of this report, shows a pattern alongside the Sandviken and Gävle case, namely, that multiple municipalities seek to attract hyperscale facilities to generate hyperscale revenues. This raises broader governance questions. While the sales of immense public land areas might generate a substantial revenue for the municipality, land ownership has a permanent character, and its impact on the future of the region is uncertain, especially when a sound and thorough risk assessment has not been conducted concerning the diverse impact of the facility in the region.

The municipality's response document described local benefits, including a claim that the establishment generated around 300-400 jobs on site (September 2020), while noting that some workers were experts from abroad, thereby making it extremely unclear what the actual job benefits are for the local community.[141] It also further linked the DC establishment to electricity and grid infrastructure commitments in the region. It states that Vattenfall, through an agreement with Microsoft, would reinforce the regional grid to provide additional redundancy to Microsoft, presenting this as beneficial not only to that company but also to other companies in the region and to the attractiveness of new establishments.

139 Åleskog, H. (2020) "Begäran om yttrande avseende revisionens förstudie – avyttring av mark till Microsoft", pp. 1–7.
140 Sandvikens kommun "Så etableras datacenterindustrin i Gävle-Sandviken".
141 Åleskog, H. (2020) "Begäran om yttrande avseende revisionens förstudie – avyttring av mark till Microsoft", p. 6.

The narrative is that enhanced grid redundancy allows Microsoft to move away from conventional reliance on diesel generators for backup power and instead rely on a robust grid, framed as a "flagship" solution and linked to Microsoft's stated objective of a fossil-free DC.[142]

The municipality's argument also illustrates how Microsoft's establishment in the country receives systemic support to make Sweden more attractive to tech giants, based on the fact that Vattenfall–a fully Swedish State-owned company–struck a deal with Microsoft to supply 100% of renewable energy to its Swedish DCs, reinforce and expand the grid to secure capacity, and delivery reliability, with electricity prices sealed.[143] Microsoft is a multinational with a yearly revenue of USD 281.7 billion,[144] which would not need, from an economic perspective, a price reduction and privileged conditions to buy a property anywhere, nor benefits from an electricity producer and distributor to operate, the latter of which could also be another case of State aid with the same beneficiary but a different actor and measure.

Finally, from a societal perspective, my view is that help to a multinational of that magnitude is perverse. While small and medium businesses struggle to operate in normal market conditions and make enough revenue to go around, a multibillion-dollar multinational receives privileged and secret deals. Meanwhile, the regional and national context suggests that electricity security is becoming a key issue in society. Swedish authorities of the Gävle region have explicitly noted an increased risk of power shortage during the coldest winter days, which affects societal resilience.[145] However, the most affected during colder winters are low-income individuals who face high energy prices and still have to heat their homes, cook their food, and wash their clothes.

142 *Ibid.*

143 Vattenfall, "Vattenfall och Microsoft samarbetar för hållbara datacenter i Sverige," 29 May 2019, at https://group.vattenfall.com/se/nyheter-och-press/pressmeddelanden/2019/vattenfall-och-microsoft-samarbetar-for-hallbara-datacenter-i-sverige (last accessed 23 March 2026); Vattenfall "Gävle – Sandviken", Projekt, at https://www.vattenfalleldistribution.se/var-verksamhet/projekt/samrad/ort/gavle-sandviken/ (last accessed 23 March 2026);

Smith, E. (2021) "How Microsoft's new datacenter region in Sweden incorporates the company's sustainability commitments," Microsoft EMEA, published 16 November 2021, available at: https://news.microsoft.com/source/emea/features/how-microsofts-new-datacenter-region-in-sweden-incorporates-the-companys-sustainability-commitments/#:~:text=Rainwater%20harvesting,to%20support%20onsite%20datacenter%20facilities (last accessed 02 October 2025).

144 Microsoft (2025) "Annual Report 2025", at https://www.microsoft.com/investor/reports/ar25/index.html (last accessed 23 March 2026).

145 Länsstyrelsen Gävleborg "Energiförsörjning i länet", at https://www.lansstyrelsen.se/gavleborg/samhalle/sakerhet-och-beredskap/energiforsorjning-i-lanet.html (last accessed 23 March 2026).

4.2.2. Meta's DC, Odense, Denmark – grid connection and transmission infrastructure

4.2.2.1. Background

This case study focuses primarily on the grid connection and transmission infrastructure dimensions of Meta's Odense DC, including Energinet's role in the connection of the site and the related expansion of the switching station.[146] Energinet is a state-owned public company under Danish law.[147] The Danish Act on Energinet provides that Energinet is a self-standing public enterprise, owned by the Ministry of Climate, Energy and Utilities, and that the overarching electricity and gas infrastructure it manages must remain in public ownership.[148]

Energinet entered into an agreement with Meta concerning the establishment of a new high-voltage substation and two new electricity connections for Meta's Odense DC project.[149] At the same time, the project also involved Energinet's adjacent switching station and the relocation of part of an existing 150 kV cable into the DC private land.[150]

Finally, based on the open record, it is not possible to confirm whether Meta has submitted the required report for its Odense DC energy consumption. Although Denmark has implemented the reporting regime for DCs of at least 500 kW, the EU framework keeps individual facility-level submissions confidential and makes public information available mainly in aggregated form.[151]

4.2.2.2. Timeline

The existing Odense DC seems to have been built as a result of the company's application to the Municipality of Odense for the environmental impact assessment from **August 2015.152** By **12 October 2020**, the existing site comprised three data halls with offices, backup power installations and Energinet's switching station, although construction had not yet been fully completed,**153** Cassin Network initiated the VVM process for an expansion of the existing DC. According to the application, the expansion would add two further data halls and associated facilities on an adjoining purchased area of about 39 ha, bringing the total project area to about 89,9 ha.[154] The same application also included,

146 Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", COWI/hsly v. 1.0, 12 October 2020, pp. 1-6, at https://odense.viewer.dkplan.niras.dk/media/3450105/Ansoegningsskema-–-Miljoekonsekvensvurdering-VVM.pdf, in p. 1 (Environmental Impact Assessment).
147 Bekendtgørelse af lov om Energinet, LBK nr. 271 of 09 March 2023 (Energinet Act), at §1.
148 *Ibid.*, §1(1)(2).
149 Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", p. 1.
150 *Ibid.*
151 Bekendtgørelse om indberetning og offentliggørelse af oplysninger vedrørende datacentres energimæssige ydeevne, Lovtidende A, Nr. 926, 9 July 2024 (Executive Order on reporting and publication of information regarding the energy performance of data centers).
152 Based on Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", p. 1.
153 COWI "Udvidelse af Datacenter i Odense", Ansøgning om Miljøkonsekvensvurdering (VVM), 12 October 2020, pp. 1–2, at https://odense.viewer.dkplan.niras.dk/media/3450102/Ansoegning-om-miljoekonsekvensvurdering-12-oktober-2020.pdf, and Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", p. 1.
154 *Ibid.*

after agreement with Energinet, an expected necessary expansion of Energinet's switching station and relocation of a 150 kV cable within the DC private land, because the projects were described as interdependent.[155] In a later public announcement dated **10 December 2021**, Meta stated that it would add two more buildings at the Odense DC site, bringing the total building area to nearly 200,000 m2, with construction scheduled to begin in **April 2022**.[156] This later announcement appears to correspond to the broader expansion package stated in the October 2020 environmental impact assessment application.

4.2.2.3. State aid assessment

As to the first condition under Article 107(1) TFEU, namely *granted by a Member State or through State resources*, the available records indicate that Energinet played a direct role in the decision chain concerning the connection of Meta's Odense DC to the transmission grid. Energinet states in its 2016 annual report that it entered into an agreement with Facebook on the establishment of a new high-voltage substation and two new electricity connections for the Odense project.[157] In the environmental assessment application, Cassin Network ApS (owned by Meta group) and Energinet are identified as owners of the relevant project areas, which further confirms Energinet's involvement in the infrastructure arrangement.[158]

Under Danish law, Energinet is a self-standing public enterprise, under the authority of the Minister for Climate, Energy and Utilities, and is regulated by the Energinet Act. The Act lays down how Energinet is to be governed, including the exercise of supervisory power over its activities.[159] As a result, Energinet is a public entity regulated by public law and belongs to the public sphere.[160] Against this background, Energinet's legal and factual circumstances meet the limb *granted by a Member State.*

The Act also stipulates that Energinet's electricity and gas infrastructure must remain in public ownership. Yet, the expansion of Energinet's switching station from 1.3 ha to 2.2 ha and the 150 kV cable relocation took place on the private Odense DC land.[161] However, without further information on whether the ownership of the cable and switching station remained Energinet through contractual terms, and on how Danish law governing immovable property regulates

155 Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", p. 1.
156 Meta, "Data Centers", "Hey Odense!", 10 December 2021, at https://datacenters.atmeta.com/2021/12/hej-odense/ (last accessed 23 March 2026).
157 Energinet (2017) "Sustainable Energy Together Annual Report 2016", pp. 1–137, at https://en.energinet.dk/media/4qedmaim/annual-report-2016.pdf, in pp. 20 and 41.
158 Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", pp. 1-2; COWI "Udvidelse af Datacenter i Odense", Ansøgning om Miljøkonsekvensvurdering (VVM), pp. 1–2.
159 Energinet Act, §§1, 5, 20
160 See, even Energinet, "About Us", Webpage, at https://en.energinet.dk/about-us/.
161 Based on Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", pp. 1-2; COWI "Udvidelse af Datacenter i Odense", pp. 1–2.

public infrastructure located on private lands, this assessment remains limited. Even so, there is still a possibility that, depending on how such cables and switching stations are in fact used, State resources were involved (used) in this arrangement.

Moreover, as identified in Annex III.2, it is also unknown whether Meta's Odense DC actually paid for the relevant electricity-grid connection and transmission infrastructure, whether the wider grid and related public infrastructure used to supply electricity were fully paid for by Meta, and whether the price charged by Energinet to Meta reflected Energinet's ordinary pricing practices or whether cost reductions were granted.[162] Without further information on the contractual terms, the allocation of connection and infrastructure costs, and the pricing logic underlying that arrangement, it is impossible to assess whether the measure substantially involved State resources under those circumstances. Despite this, given the lack of transparency and information, these circumstances may fulfil the limb *through State resources*.

Moving on to the *selective advantage* analysis, a possible *advantage* would have been incurred if Meta had not paid for the grid connection and related transmission infrastructure or if the costs were set below Energinet's ordinary pricing practice, or even below the conditions normally applicable to comparable users, thereby reducing Meta's infrastructure costs. On the current public record, however, this remains unverified, since available material confirms the existence of the infrastructure arrangement but does not disclose the Odense-specific economic terms.[163]

To determine *selectivity*, it would be necessary to establish the terms actually granted to Meta and compare them with those applied to Apple and Google, and also to other large-scale electricity consumers operating in other sectors. This follows from the fact that, from the perspective of electricity consumption and grid costs, the sector in which the consumer operates is not in itself decisive.[164] At the same time, extending the comparison to other large-scale consumers would make it possible to assess whether any public support was in practice and systematically granted specifically to global tech companies, even though, from the perspective of grid use and connection costs, the sector is irrelevant. Yet, without access to the actual charges, cost-allocation terms, capacity conditions, and any possible derogations applied in the Odense case, this State aid assessment cannot be carried out based on legal and factual circumstances, given the lack of documentation providing such data. Therefore, based on the current public record, the existence of a selective advantage remains unproven (hidden) because the

162 *Ibid.* and also, based on the information contained in Energinet (2017) "Sustainable Energy Together Annual Report 2016", p. 41.
163 Energinet (2018) "New Paths to the Energy of the Future Annual Report 2017", Short Version, pp. 1–32, at https://en.energinet.dk/media/fd0jw1co/annuel-report2017_web.pdf, in pp. 21 & 23.
164 Based on case C-143/99, *Adria Wien Pipeline GmbH*, para. 52.

documentation necessary to compare Meta's actual terms with those applicable to comparable large-scale electricity consumers is not publicly available.

As to the last two conditions under Article 107(1) TFEU, namely *competition distortion* and *effects on trade*, the available record suggests that they could potentially be met if a non-standard economic advantage were granted. Meta describes the Odense site as part of its global infrastructure, which supports the view that any reduction in transmission-connection or related infrastructure costs would be capable of strengthening the beneficiary's position relative to competing DC or hyperscale operators.[165] The cross-border dimension is likewise apparent. Meta's own material presents the Odense site as part of its wider global infrastructure, while Energinet's 2017 annual report quotes Meta as describing Odense as its newest European DC, chosen, *inter alia,* because of access to the highly interconnected Nordic grid and clean energy options across Scandinavia.[166] Taken together, these elements indicate that, if a selective advantage were proven, it would likely be capable of distorting competition and affecting trade between Member States.

4.2.2.4. Societal impact considerations – actual "terms and conditions"

Once again, the Odense-Meta case shows what the Gävle-Microsoft case already made evident. The establishment of hyperscale DCs in EU countries is not transparent enough to verify basic transactional data, which makes their State aid assessment more speculative than properly grounded in factual circumstances. Like the Gävle-Microsoft case, the Odense case also involved other potentially relevant State aid measures beyond the transmission-infrastructure measure analyzed here. I briefly refer to them only to provide broader contextual insight into the measure examined, which is necessary for reflecting on the societal impact of the Odense DC.

Publicly available materials indicate that surplus heat from the DC is delivered into the district-heating system operated by Fjernvarme Fyn, a company owned by Odense municipality and Nordfyn municipality.[167] The open record suggests that Fjernvarme Fyn bore the investment costs of the waste-heat recovery system, while Meta delivered the surplus heat free of charge.[168] To be clear, such a trade-off would not in itself neutralize a possible State aid effect if the relevant costs were in fact borne by Fjernvarme Fyn in exchange for free-of-charge heat. At the same time, municipal land transactions also occurred in this case, but they constitute a separate measure between the municipality and Meta and, the-

165 Meta, "Meta's Odense Data Centre", at https://datacenters.atmeta.com/wp-content/uploads/2025/02/Metas-Odense-Data-Center.pdf (last accessed 23 March 2026).
166 Energinet (2018) "New Paths to the Energy of the Future Annual Report 2017", pp. 21 & 23.
167 Fjernvarme Fyn, "Overblik", at https://www.fjernvarmefyn.dk/om-os/overblik/ (last accessed 23 March 2026).
168 Nguyen, C. (2020) "Utilizing Facebook Data Center Surplus heat for District heating in Odense – Denmark", Fjernvarme Fyn, pp. 1–12, at https://www.ca-eed.eu/wp-content/uploads/2021/10/2_IS6.6_Facebook_DK_Chan-Nguyen.pdf, in p. 10.

refore, require a distinct State aid investigation.[169] Notwithstanding their separate character, these measures may also point to hidden forms of State aid, on top of the one investigated in this report.

Another difficulty is that Energinet's reports present the establishment of Meta, Google, and Apple DCs in a manner that suggests a broader political interest in making Denmark a hub for multinational tech companies for DC establishment. Given the lack of transparency and evidence concerning Energinet's contractual terms with Meta, it seems plausible that the Danish authorities may have engaged in trade-offs with such companies, possibly granting certain benefits in exchange for broader economic or infrastructural gains (as is also apparent in the Gävle-Microsoft case). However, whatever trade-offs may have been made by the Danish authorities, whether in relation to Meta or Google and Apple, such measures do not fall outside the scope of State aid scrutiny (at least not if the Commission decides to investigate them).

Finally, considering that the companies under scrutiny are precisely those major tech companies that already control a significant share of the global data and possess enormous financial resources, any State aid granted to them is likely to have even harder negative effects on smaller tech companies. Such multibillion-dollar firms already enjoy substantial market power. Measures of this kind, therefore, not only reinforce their market position, but also intensify the pervasive influence that these companies already exercise over economies and welfare systems.

4.3. AI service – tax decision

4.3.1. Preliminary considerations – illustrative case (analogous analysis)

At this stage, the analysis of a potential State aid case arising from a tax decision is illustrative, since I could not identify a case in which the use of an AI system itself led to a potential State aid measure. As a result, I selected a well-known case showing how discrimination and unequal treatment may arise from AI services used by tax authorities.[170] As a matter of legal classification, the case does not concern the tax treatment of an economic activity and, therefore, falls outside Article 107(1) TFEU scope. Even so, placing it within the analytical template remains useful because it helps reveal more precisely where a State aid analysis would become relevant, where it remains uncertain, and where other legal frameworks are more appropriate. Section 4.3, thus, offers an analogous discussion of how AI services may be used in tax authorities' control work and how such

169 Odense Kommune (2017) "Tietgenbyen kan blive større", Nyhed, 23 March 2017, at https://www.odense.dk/presse/pressemeddelelser/pressemeddelelser-2017/tietgenbyen-kan-blive-stoerre (last accessed 23 March 2026).

170 OECD (2025) "AI in tax administration", in *Governing with Artificial Intelligence – The State of Play and Way Forward in Core Government Functions,* OECD Publishing, pp. 169–175, in p. 174 (Box 5.6).

systems may shape the position of those targeted by them, ultimately being capable of influencing a State aid outcome.

4.3.2. Background

A particularly important comparative example of AI services used in tax administration control work is the Dutch childcare-benefit scandal. The case concerned the administration of childcare allowance by the tax and customs administration benefits authority. The Dutch parliamentary inquiry expressly framed the affair as a profound failure in the execution of childcare benefits and concluded that fundamental rule-of-law principles had been violated.[171]

The operation of the system becomes clearer when one follows the path of the ordinary administrative procedure. Each month, before childcare or housing benefits were formally granted and paid, the information contained in draft decisions was fed into a risk-classification model. This practice operated between 2013 and the end of 2019. The model did not itself issue the final legal decision. Rather, it ranked cases according to the perceived risk of error or fraud and selected the highest-risk files for later manual assessment.[172] In practical terms, this meant delay, escalation, and closer scrutiny before payment. The model, therefore, did not function merely as a technical aid external to the decision-making process. It shaped the route through which certain individuals became subject to intensified administrative control.

The scale of that intervention was significant. According to the 2022 governmental analysis, from 2014 to 2019, approximately 79,000 individuals were manually scrutinized following selection by the model.[173] The same analysis also shows that the model's scores were used beyond the first screening stage and circulated to other enforcement teams.[174] What began as a scoring mechanism at the front end of administration thus became part of a broader chain of supervision and control.

4.3.3. Analogous legal reflections

The legal importance of the Dutch case does not lie in its classification as State aid, since the persons affected were private individuals rather than undertakings. Instead, its relevance lies in showing that the process through which an administrative decision is prepared may materially shape the substance of the outcome. Even where the final decision formally remains with a human official, an AI model may still form part of the operative administrative measure where it structu-

171 Tweede Kamer der Staten-Generaal (2020) "Ongekend onrecht", pp. 1–132, at https://www.tweedekamer.nl/sites/default/files/atoms/files/20201217_eindverslag_parlementaire_ondervragingscommissie_kinderopvangtoeslag.pdf, (Parliamentary inquiry report), pp. 1, 7, 20–22.

172 Netherlands' Government Analysis (2022) "Bijlage 1. Analyse risicoclassificatiemodel Toeslagen", pp. 6–11, at https://open.overheid.nl/documenten/ronl-b22dd5fe816be8cd53277f5ff727108fed946232/pdf, (Annex I Analysis risk classification model Toeslagen), in p. 6.

173 *Ibid.*, p. 7.

174 *Ibid.*, p. 10.

res the path to that decision by determining which files are delayed, escalated, manually scrutinized, or exposed to the legal consequences.[175]

This point matters directly for an analogous State aid analysis of AI-assisted tax control concerning companies. If an AI system is capable of structuring administrative attention, enforcement intensity, or the order in which cases are examined,[176] then the system may also influence which taxpayers are more likely to receive a favorable or unfavorable practical outcome (procedural and material tax treatment). In that sense, the legal relevance of the model does not depend only on whether it formally issues the final act, but on whether it materially shapes the exercise of public power and the resulting tax position of those subject to it. As a result, the Dutch case helps clarify why, in a company context, AI-supported screening and prioritization could not automatically be treated as neutral preparatory steps. Depending on how the model operates, such systems may contribute to differentiated treatment, such as the discriminatory treatment seen in the Dutch case, that may constitute a non-intentional, yet still legally relevant State aid case under Article 107(1) TFEU.

4.3.4. Societal impact considerations – a clear sight of potential impact

The Dutch case is also relevant because it illustrates, in concrete terms, how AI-assisted tax administration may deepen existing vulnerabilities. A model that classifies, filters, and escalates cases before any final decision is taken can already alter taxpayers' access to payments, the timing of administrative action, and the intensity of State scrutiny. The broader significance of this example, therefore, is not limited to discrimination or data protection, but also includes how AI systems may restructure the practical distribution of administrative burdens and protections.

When State aid is granted, even as an unintended effect of the decision-making process, the consequences are not merely technical or administrative. As the Dutch case so clearly demonstrates, an AI system can shape how public power is exercised long before a formal decision is issued. In one setting, such systems may intensify scrutiny, delay, and increase administrative burdens for certain groups, while in others, they may produce the opposite effect. That possibility alone should be treated as a matter of serious concern. Where business taxation is involved, such differentiated treatment may directly affect the functioning of the internal market and may also have wider environmental and social implications, especially where tax structures interact with welfare systems and the distribution of public resources.

175 *Ibid.*, pp. 6 & 10.
176 OECD (2025) "AI in tax administration", in p. 173.

The problem is therefore not limited to discrimination or procedural opacity. AI systems may also alter the predictability, consistency, and legal certainty of the fiscal systems governing corporate taxation. This is particularly serious in the State aid context, since an unlawful aid measure may trigger recovery of the aid, with retroactive effect of up to ten years.[177] The legal and financial consequences for companies are therefore concrete and substantial: what appears, from a national perspective, to be a lawful tax arrangement confirmed by a tax authority decision, may in reality constitute an unlawful aid scheme under EU State aid law. For that reason, the possibility that AI-shaped tax decision-making may generate unlawful State aid is no longer speculative enough to be dismissed; it is a real legal risk that demands careful oversight.

4.4. AI service – Provision of a market service between public authorities

4.4.1. Background

This subsection does not examine a concrete dispute, but a plausible State aid scenario emerging from the increasing use of AI in tax administration. Since it is based on a hypothetical assumption, I do not apply the template to it, as it lacks the factual elements required for that analysis. Assume that a national tax authority of a Member State devotes substantial public resources to developing an AI system capable of screening corporate taxation and handling personal data in compliance with EU and national laws for audit selection, risk classification, anomaly detection, or other fiscal-control purposes. Provided that the system remains purely internal to the authority's sovereign task of tax enforcement, the activity is easier to characterize as part of the exercise of public powers rather than as an economic activity. This legal assessment changes once the same system is supplied, licensed, or made available to other public authorities in return for payment or on economically relevant terms.

At that point, the system should no longer be viewed merely as an internal administrative tool. It is more accurately described as a digital service or software solution capable of being offered on a market. Under EU VAT law, electronically supplied services include services delivered over the internet or an electronic network whose nature renders their supply essentially automated, involving minimal human intervention, and the indicative list includes the supply of software and software updates.[178] Although the VAT classification is not decisive for State aid purposes, it nonetheless shows how broader EU law classifies digital services. This market-facing characterization is reinforced by the AI Act's technolo-

177 Regulation 2015/1589 for the application of Article 108 TFEU, Arts. 16(1) and 17(1).
178 Council Implementing Regulation (EU) No 282/2011 of 15 March 2011 laying down implementing measures for Directive 2006/112/EC on the common system of value added tax (recast), OJ L 77, 23 March 2011, in Art. 7(1);

gy-neutral approach, which treats AI systems as deployable systems capable of being placed on the market, put into service, and used across a range of sectors, including public administration.[179]

4.4.2. State aid preliminary reflections – an undertaking?

For the State aid law, the central question is whether the public authority is acting as an *undertaking*, in the sense that the external supply of that digital service constitutes an economic activity consisting of supplying services on a given market. The fact that a supplier is a public authority does not, in itself, prevent the activity from being classified as economic. In the Höfner and Elser case, the CJEU made clear that a public employment office could constitute an undertaking where it carried out an activity consisting of offering services on a market, emphasizing that the public character of the body did not alter the economic nature of the activity.[180] The Court later confirmed, in the Compass-Datenbank ruling, that the State itself or a State entity may act as an undertaking, although in that case the specific activity at issue was held to remain inseparable from the exercise of public powers.[181]

Applied to the present hypothetical case, this distinction is decisive. If the AI system remains purely internal to the tax authority's sovereign task of tax enforcement, the stronger view is that it forms part of the exercise of public powers. If, however, that same system is supplied, licensed, or otherwise made available to other public authorities in a field where comparable digital compliance or risk-screening solutions are or could be offered by private operators, the activity moves beyond internal administration and into the sphere of economic activity. At that point, the relevant legal question is no longer only whether the system serves a public purpose, but whether the authority, through the external supply of that system, is acting as an undertaking under EU law.

This assessment presupposes that the external supply of the system is functionally distinct from the authority's sovereign tax-enforcement tasks and takes place in a field where comparable digital compliance or risk-screening solutions are, or could be, offered by market operators. Only in that case, the question of *undertaking* arises. Once the activity is capable of being classified as economic, the analysis moves from the preliminary question of undertaking to the ordinary conditions of Article 107(1) TFEU.

179 EU AI Act, Recital 119, Art. 3(3), (4), (45) and Annex III(5)(a).
180 Case C-41/90 *Klaus Höfner and Fritz Elser v Macroton GmbH,* para. 23
181 Case C-138/11 *Compass-Datenbank GmbH v Republik Österreich*, paras. 38–40.

4.4.3. State aid analysis

The measure at stake is a system developed with public resources for sovereign tax-enforcement purposes that is subsequently supplied, licensed, or made available to other public authorities in a field where comparable digital compliance or risk-screening solutions are, or could be, offered by private operators. In such a case, the public authority may move from the exercise of public powers into the sphere of economic activity, and the external supply of the system must then be assessed under Article 107(1) TFEU.

The first condition, *granted by a Member State or through State resources,* would be straightforward. The development of the AI system is *financed with public revenues* and institutional infrastructures belonging to and financially maintained by the State. If the system is then made available externally on favorable terms, the resulting market intervention would be *attributable to the Member State.* Moreover, if the system's value is not limited to software code as such, but also includes training, operational know-how, access to institutional data environments, and the benefits of long-term testing with sovereign administration, this too can represent *State resources* since each circumstance has an embedded value.

The second condition, *which favors certain undertakings or the production of certain goods*, on the other hand, is far less straightforward and more analytically demanding. In this case, the relevant benchmark would be the market for comparable digital compliance, audit-support, or risk-screening solutions. The question would be whether the AI system is supplied on terms that depart from the normal market conditions, thereby conferring an *advantage*. In this sense, the analysis of this case follows a similar rationale to that discussed in the DC cases in Gävle and Odense. If a tax authority were to provide such a system to other authorities below market price, without full cost accountability for recovery, or under licensing conditions that private firms could not match, the measure could confer an economic advantage.[182] The same could be true if publicly funded development costs were not properly reflected in the price of the service, thereby allowing the authority to enter the market with a structurally privileged position.[183] In this sense, the AI system would not simply be an administrative tool, but a publicly backed market offer. When it comes to the *selectivity* effect of that condition, it depends on how the service is supplied and to whom. Perhaps the most plausible possibility is that the very structure of the arrangement, in supplying the service to other authorities through an exclusion of other ordinary market competitors, is thereby qualifying as a closed-market deal that does not conform to market conditions.

182 Joined Cases C-341/06 P and C-343/06 P *Chronopost SA and La Poste v Union française l'express (UFEX) and Others*, paras. 39–40.
183 *Ibid.*, paras. 40–41.

The last two conditions, *distortion of competition and effect on trade*, would likely be satisfied where the relevant market includes actual or potential cross-border providers of comparable digital services. As noted elsewhere in this report, AI services form part not only of the Union's digital economy, but also a wider global market in which suppliers compete across borders through scalable software-based solutions. The more difficult question in the present hypothetical case is whether a system developed internally to screen and risk-assess tax situations closely linked to the legal logic of a particular Member State should instead be regarded as essentially local in character. That possibility should not be dismissed too quickly, but neither should it be overstated. From the perspective of State aid law, a measure escapes Article 107(1) TFEU only where its impact is genuinely and foreseeably confined to a purely local sphere.[184]

By contrast, where undertakings from other Member States could, in principle, develop, adapt, or supply comparable solutions, the possibility of an effect on trade cannot be excluded merely because the service is designed for one domestic tax system. The assessment, therefore, turns less on whether the tax logic is nationally specific and more on whether the market for supplying the digital service is, in practice, open to cross-border competition, which, in my view, it seems to be. In short, once an AI system created within tax administration is externally supplied in a competitive market, the State aid inquiry shifts from the internal legality of tax control to the market-conformity of the service itself.

4.4.4. Societal impact considerations

The societal relevance of this scenario lies in the fact that it sits at the intersection of digitalization of public administration, the "marketization" of public functions, and fiscal governance. As discussed in Section 2, AI systems are not merely technical artifacts, but legally significant arrangements involving data, infrastructure, decision-support mechanisms, and operational standards. When such systems are developed within public administration, they are enabled through public resources. If they subsequently enter a market as services supplied to other authorities, the boundary between sovereign administration and economic activity becomes blurred. That shift is not merely technical. It raises broader questions about competitive neutrality and the proper limits of State participation in emerging digital markets, particularly at a time when some countries, such as the United States, expressly adopt a market-operator position in this digital race. It should also not be ignored that the progressive use of AI systems may eventually reach a level at which automated service provision replaces parts of the human workforce, all through the use of taxpayers' money, even though the system itself is ultimately meant to serve those taxpayers.

184 Commission Notice on the notion of State aid, para. 196.

From another perspective, neutrality in decision-making performs a societal function by securing a minimum level of fairness within the system.[185] Tax authorities occupy a uniquely sensitive institutional position because they operate with extensive information powers, large datasets, and strong coercive capacities with restrictive economic effects.[186] An AI system developed in such an environment may therefore carry structural advantages that private operators cannot replicate, not because they are less innovative, but because they do not enjoy the same access to public data, infrastructure, or institutional testing grounds. If such an advantage is then transferred into a market service, the public authority may effectively transform sovereign capacity into competitive capacity. The societal and ethically grounded concern is, therefore, not only that competition may be distorted, but that the State may reshape an emerging market through an unequal privileged position.

In addition, there is the question of representativeness in the design of the system, the quality and origin of its data, the way it is governed, and the institutional setting in which it is deployed. Indigenous communities, for example, have historically been oppressed, including through bias in legal systems and through underrepresentation in legislative, administrative, and judicial bodies.[187] The same logic applies to other historically marginalized groups. In such cases, AI systems are also likely to reproduce or reinforce those underlying biases.

The emergence of AI-driven tax services within public administration, therefore, raises broader societal questions that go beyond efficiency, innovation, or administrative modernization. It concerns the conditions under which public power is transformed into market power, the extent to which digital systems may quietly reproduce historical inequalities, and the risk that the State, while pursuing legitimate fiscal objectives, may simultaneously reshape competitive conditions in adjacent digital markets. In that sense, the societal impact and the State aid relevance of such systems are not separate issues. Rather, they are two expressions of the same underlying concern: how technological systems may relocate power, resources, and opportunities through forms of differentiation that are not always visible but are nonetheless legally and socially significant.

185 Galle, B. (2008) "Tax Fairness", *Washington and Lee Law Review*, 18, pp. 1,323–1,379, in p. 1,373.
186 OECD (2025) "AI in tax administration", p. 169.
187 Fryber, S. A., *et al.* (2023) "Omission as a modern form of bias against Native Peoples: Implications for policies and practices", *Social Issues and Policy Review*, 18, pp. 148–170.

4.5. Overview of findings – legal assessment of State aid measures and comparative synthesis

The cases examined in this Section 4 show that AI-related State aid may arise through both the physical infrastructure of AI and AI services, but that its legal assessment is often constrained by serious deficits in transparency and publicly accessible evidence. In the DC cases, the potential aid measures were connected to physical infrastructure and establishment conditions, such as municipal land transactions, electricity-grid connection and reinforcement, and related public infrastructure arrangements. By contrast, in AI service cases, the possible State aid relevance emerged either through the decision-making process itself, where AI-supported screening may shape differentiated tax treatment, or through the external supply of AI systems as a market service by public authorities. Taken together, these cases show that the State aid relevance of AI is not limited to one type of measure but may materialize through both circumstances of AI development and deployment.

At a substantial level, the DC cases suggest that a single project may benefit from several potential State aid measures involving different public actors, such as privileged municipal land transactions, electricity-related arrangements, and public infrastructure for waste-heat recovery. This pattern confirms the methodological relevance of the templates used in Annex I, even if those templates will likely require further refinement once fuller factual records become publicly available. The AI services cases add a complementary insight: the deployment of AI in decision-making may materially shape outcomes even where a human still takes the final decision, while the external supply of AI systems by public authorities may itself raise a separate State aid issue where public resources are transformed into a market-facing service.

The lack of transparency in the available public record makes the practical application of Article 107(1) TFEU limited and, in many instances, preliminary. However, opacity does not remove the possibility of State aid. On the contrary, it may conceal departures from normal market conditions and make selective advantages more difficult to verify. The cases, therefore, make clear that the main difficulty is not identifying potentially relevant State aid measures, but obtaining sufficient evidence to assess them properly.

In any event, the societal effects are enormous. Taxation affects not only the socioeconomic position of individuals and the competitive position of companies within the internal market, but also the way in which economic models integrate other values, including environmental protection and social equality.

5. FINAL REMARKS

5.1. Broader implications

The discussion in Section 2 showed that AI cannot be understood only as a digital service visible to the user. It also depends on a material infrastructure consisting of DCs, electricity grid capacity, cooling systems, water use, and even waste-heating arrangements. AI development, therefore, is not immaterial. It is deeply dependent on scarce natural resources, public infrastructure, regulatory choices, and also the substantive use of private and public capital. This makes the legal assessment of AI-related measures particularly important, since the growth of AI is directly connected to broader questions of environmental sustainability, energy security, and redistributive justice. Moreover, Section 2 provides a legal framework of minimum standards that legally bind Member States, but more importantly, the EU Commission, EU Courts, and even national courts when interpreting State measures as possible State aid.

The discussion in Section 3 concerning the Article 107(1) TFEU framework for AI is capable of capturing these developments, provided that the analysis is adapted to the specific features of AI infrastructure and AI services. The four cumulative conditions remain the same, but their interpretation requires attention to the concrete forms through which public support may arise in this field, and to the legal standards set by EU secondary legislation that should be integrated into them. In the context of AI infrastructure, this may occur through municipal land transactions, favorable electricity prices, electricity supply and grid arrangements, among other public infrastructure reinforcements financed with taxpayers' money. In the context of AI services, the relevance of State aid law may arise either where AI systems shape differentiated tax treatment through decision-making processes, or where AI systems developed with public resources by public authorities are later supplied on the market as digital services.

Section 4 further showed that the practical difficulty lies less in the legal test itself and more in the opacity surrounding AI measures. Key information remains inaccessible in the open record for both circumstances analyzed (AI physical infrastructure and AI system), thereby making this kind of surveillance limited. Notwithstanding that, the templates developed in Annex I also support the analysis of the State aid assessment into concrete cases. It is important to further develop the methodology of those templates so that they capture circumstances that are relevant to assess the effects of the measures under Article 107(1) TFEU.

These findings point to a broader implication: the AI boom should become a more explicit and critical part of the Commission's State aid agenda. This is especially important in a global context where States increasingly compete to attract hyperscale DCs and to position themselves strategically in the digital economy.

In such circumstances, the risk is not only that public authorities support innovation, but that they do so through opaque advantages granted to undertakings that already possess enormous market power and financial resources. EU harmonization through secondary law, while necessary, is not yet sufficient on its own to address this problem. Where multibillion-dollar technology companies receive hidden and privileged State support, the consequences extend beyond competition law in a narrow sense. They affect environmental sustainability, energy justice (distribution of energy supply in times of shortage), democratic accountability, the ability of smaller market actors to compete under normal market conditions, and even social equality for groups historically oppressed (such as indigenous communities).

5.2. Final recommendation

Under Article 108(1) TFEU, the Commission may request that Member States provide information concerning measures with a specific subject. In this sense, my first recommendation is that the European Commission request that member States provide detailed information concerning the establishment, upgrade, and expansion of DCs above 500kW, including whether the project involved the transfer of public land, electricity price reduction, and supply insurances, electricity-grid arrangements, waste-heat recovery and cooling-related infrastructures, tax measures, or other forms of public support. The detailed information should contain the actual terms and conditions under which the measure was granted, thereby disclosing pricing logic, cost allocation, contractual structure, duration, methodology for valuations, and comparative benchmarks. When doing such an exchange of information, the Commission should also pay greater attention to the cumulative structure of support surrounding AI projects by multiple public actors. In this sense, it should employ an integrated review of combined measures. Finally, if the Union is serious about maintaining the level playing field of the internal market, safeguarding public resources, and ensuring that digitalization serves broader societal goals, such as environmental protection and social equality through redistributive justice, then AI-related State aid can no longer remain hidden behind the language of innovation, efficiency, modernization, and digital economy.

6. ANNEX I.A – TEMPLATE AI DC

MODULE	FIELD	EVIDENCE
1. Case snapshot **Why:** Baseline + comparability. **How:** Extract decision-relevant facts; flag unknowns.	Project/operator/ownership, Location, Timeline, Scale in MW/IT load, Service model.	Operator/authority publications; announcements; registry extracts; reputable press, reports or articles.
2. Measure inventory **Why:** Maps "any aid, in any form" and captures the most State aid-relevant channels for DCs. **How:** Separate bundled support into distinct measures, record missing data explicitly.	2.1. Measures (split A/B/C): grant/loan/guarantee, tax benefit, land, infrastructure, grid upgrades, capacity reservation, electricity price arrangements/ tariffs 2.2. Authorities/actors 2.3. Legal basis 2.4. Value (if available) 2.5. Duration (if set out) 2.6. Conditions & commitments (reporting, monitoring, expansion clauses, claw back, etc.) 2.7. Transparency flag: High/Medium/Low + list missing variables (kWh, price/kWh, MW reserved, upgrade costs, emissions, etc.)	Statutes; decisions, regulator publications, procurement notices; utility tariffs; parliamentary/congress docs; reputable press, reports or articles.
3. State aid conditions		
3.1. State imputability & resources **Why:** Screens the first S.A. condition. **How:** Identify decision chain, assess public control/influence, identify resource use.	3.1.1. Who decided? 3.1.2. Is it attributable to the State? 3.1.3. Does it involve State resources/forgone revenue/below-market terms/Union resources?	Statutes, government/regulator/actor publications; official statements, and reputable media.
3.2. Advantage & selectivity **Why:** Screens the selective advantage condition **How:** Find normal market conditions (non-tax) or reference tax regime + derogations (tax).	3.2.1. What is the advantage? (cost/risk reduced)? - What are the normal market conditions? - What is the reference tax regime? 3.2.2. Why selective (who qualifies/excluded)?	Statutes, government/regulator/actor publications; official statements, and reputable press, reports or articles.
3.3. Competition distortion & affected trade **Why:** Screens the last two conditions **How:** Benchmark the relevant market and its circumstances (how open is the market, etc.).	3.3.1. Is it likely strengthening the beneficiary's position compared with competitors? 3.3.2. Is there a cross-border market presence or potential?	Sector reports; market descriptions; operator footprint; geographic considerations, etc.
4. Risk assessment **Why:** Make the output explicit; a compliance-risk screen. **How:** Base conclusion on 3.1–3.3 + transparency flag; state conditionality clearly.	4.1. Likelihood that conditions of Article 107(1) are met: High/Medium/Low 4.2. Main driver(s) of risk (tax benefit, grid upgrades, electricity price, land, financing) 4.3. Key uncertainty/ies due to data gaps	Structured assessment + sources.
5. Notification cross-check **Why:** Separates what is "likely aid" from "notified aid". **How:** Check the EU Commission State aid register and search for the cases. Record outcome in a standardized way.	5.1. Search terms used: (beneficiary, country, measure, SA number if found) 5.2. Result: 5.2.1 If found: status (closed or ongoing) + outcome (S.A., general) + link to the S.A. decision & a short note 5.2.2. Not found: N/A.	Only the Commission State aid register and case database and its press-releases.

6.1. ANNEX I.B – TEMPLATE AI SERVICE IN TAX DECISIONS

MODULE	FIELD	EVIDENCE
1. Case snapshot **Why:** Baseline + clarify what "tax decision" is at stake > selectivity relevance. **How:** Describe what is decided, who is affected, and how automated it is + flag unknowns.	1.1. Tax authority/jurisdiction: (national, regional, municipal). 1.2. Tax area: (income tax, VAT, property tax, electricity excise/fees, grid fees, customs, etc.). 1.3. Decision function: (audit selection, risk scoring, automated tax assessments or conclusions). 1.4. Decision impact: (differential treatment; derogation from the ordinary regime; exclusion from control or taxation; reduced likelihood of enforcement; or other effects capable of conferring economic advantage).	Operator/authority publications; parliamentary questions; audit office reports; reputable press, reports or articles.
2. Measure description **Why:** Translates "AI use in tax decisions" into a measure that can be screened for State aid relevance. **How:** Treat AI-use decision audits operational targeting rules as State measure; split distinct phases or rulesets into A/B/C.	2.1. Deployment decision: (decision to adopt and use AI in tax imposition; including the legal basis for its use; internal build versus external supplier; procurement structure; and governance structure). 2.2. Operational rules shaping outcomes: (training data or data sources; proxies or variables used; confidence thresholds; sector or taxpayer categories targets; override/review procedures; feedback loops or restraining). 2.3. Authority: (agency, authority or other public bodies involved). 2.4. Conditions and constraints: (any human oversight, transparency and auditability of the system, appeal safeguards, period evaluation). 2.5. Transparency flags: (High/Medium/Low + missing variables, e.g., targeting criteria, thresholds, error rates, affected sectors, oversight rules). 2.6. Effect on the tax position.	Statutes, decisions, policy guidance, authority reports, parliamentary or congress documents; reputable press, reports or articles.
3. State aid conditions		
3.1. State imputability & resources **Why:** Screens the first S.A. condition. **How:** Assess public control/influence, identify resource use.	3.1.1. Who decided? 3.1.2. Is it attributable to the State? 3.1.3. Does it involve State resources/forgone revenue/selective non-enforcement/below-market terms/Union resources?	Statutes, government/regulator/actor publications; official statements, and reputable media.
3.2. Advantage & selectivity **Why:** Screens the selective advantage condition **How:** Find normal market conditions (non-tax) or reference tax regime + derogations (tax).	3.2.1. What is the advantage? (Reduced tax liability; reduced audit exposure; reduced penalty risk; faster refunds; lower compliance costs; delayed enforcement; or conversely heightened burden). 3.2.2. Why selective? (Sector; taxpayer category, geography, size, legal form, behavioral proxy, or model-defined risk group compared with similarly situated taxpayers under the ordinary regime).	Statutes, government/regulator/actor publications; official statements, and reputable media.
3.3. Competition distortion & affected trade **Why:** Screens the last two conditions **How:** Benchmark the relevant market and its circumstances (how open is the market, etc.).	3.3.1. Is it likely to strengthen the beneficiary's position compared with competitors? 3.3.2. Is there a cross-border market presence or potential? 3.3.3. Is the affected taxpayer group economically active in a liberalized or cross-border market?	Sector reports; market descriptions; operator footprint; geographic considerations, etc.

4. Risk assessment **Why:** Make the output explicit; a compliance-risk screen. **How:** Base conclusion on 3.1–3.3 + transparency flag; state conditionality clearly.	4.1. Likelihood that conditions of Article 107(1) are met: High/Medium/Low 4.2. Main driver(s) of risk: (selective under-enforcement, discriminatory targeting, derogation from the ordinary tax regime, privileged access to favorable treatment, or opacity preventing verification of equal treatment) 4.3. Key uncertainty/ies due to data gaps	Structured assessment + sources.
5. Notification cross-check **Why:** Separates what is "likely aid" from "notified aid". **How:** Check the EU Commission State aid register and search for the cases. Record outcome in a standardized way.	5.1. Search terms used: (beneficiary, country, measure, SA number if found) 5.2. Result: 5.2.1 If found: status (closed or ongoing) + outcome (S.A., general) + link to the S.A. decision & a short note	Only the Commission State aid register and case database and its press-releases.

ANNEX I.C – CASES

Where information required by the case template is not available or cannot be determined from open databases and public sources, the following labels are used:

K = known.

N/A = not applicable to the measure or case.

N/D = not disclosed in open sources, although it likely exists.

U = unknown, unclear, or indeterminable based on available information.

N/V = not verifiable in open, although the information is claimed in public materials, but cannot be independently corroborated.

I = inductive as a natural legal consequence of certain acts.

1) GÄVLE MICROSOFT DC – SALE OF MUNICIPAL LAND

MODULE	FIELD	EVIDENCE
1. Case Snapshot	**1.1. Project/operator/ownership:** Microsoft Sweden **(K)** **1.2. Location:** Gävle region, project area 60 ha. **(K)** **1.3. Timeline:** December 2018 – decision to sell, February 2019 – contract, 2019 – payment from Microsoft to Gävle. **(K)** **1.4. Scale in MW/IT load: (U)** **1.5. Service model:** Cloud & AI infrastructure **(K)**	**1.1.** Gävle kommun (webpage),[188] Gävle kommunstyrelse (Protocol of the meeting)[189] **1.3.** Mathias Westergaard-Nielsen (PWC report 1, ex post, 2019)[190] and Gunilla Beckman Ljung (Gävle Kommun, ex post, Missiv)[191] **1.4.** Swedish Energy Agency (2026) "Data centre energy performance reporting". **1.5.** Gävle Kommun (webpage).
2. Measure inventory	**2.1. Measure type:** Sale of municipal (public) land to Microsoft (66 ha) **(K)** **2.2. Authorities/actors:** Gävle kommunstyrelse and Microsoft. **(B)** **2.3. Legal basis:** kommunallagen, law 2014:899, Gävle's land allocation guidelines (the guidelines) **2.4. Value (if available):** SEK 140 million (EUR 13 million). **(N)** **2.5. Duration:** permanent. **(I)** **2.6. Conditions & commitments:** **(1)** exclusivity to negotiate the purchase of the area during validity of contract (120 days) **(N/V)**; **(2)** confidentiality/secrecy during the letter of intent framework **(N/V)**, **(3)** evaluation without methodology, showing a formal compliance, but not material **(N/V),** **(4)** lack of conditions to build the DC within 1 year, otherwise the purchase reverts – another deviation from the guidelines **(N/V)**, **(5)** lack of risk analysis concerning the impact of an electricity-intensive facility. **(N/V)** **2.7. Transparency flag:** Medium, see 2.6. + missing 1.4 **(I)**	**2.1.** Gävle kommun (webpage), Gävle kommunstyrelse (Protocol of the meeting) **2.2.** *Ibid.* **2.3.** PWC report 1 (ex post, 2019), Gävle Kommun (ex post, Missiv) **2.4.** Gävle kommun (webpage), Gävle kommunstyrelse (Protocol of the meeting) **2.5.** Legal consequences of land ownership change. **2.6. (1) (2) (3) (4)** PWC report 1 (ex post, 2019, p. 7), PWC Report 2 (ex post, 2020, p. 5),[192] and Åleskog (2020).[193] **2.7.** (I)
3. State aid conditions		

188 Gävle kommun "Etablering av datacenter i Gävle-Sandviken".
189 Gävle kommunstyrelse (2018) "§259 Markförsäljning".
190 Westergaard-Nielsen, M. (2019) "Förstudie avseende avyttring av fastigheterna Skogmur 3:1 & 4:1 Gävle kommun", p. 1.
191 Beckman Ljung, G. (2020) "Förstudie avseende avyttring av mark till Microsoft", p. 1.
192 Westergaard-Nielsen, M. (2020) "Uppföljande granskning rörande förstudie avseende avyttring av fastigheterna Skogmur 3:1 & 4:1 Gävle kommun", pp. 1–6.
193 Åleskog, H. (2020) "Begäran om yttrande avseende revisionens förstudie – avyttring av mark till Microsoft", pp. 1–7.

3.1. State imputability & resources	**3.1.1. Who decided?** Kommunstyrelsen, but there is a legal discussion concerning whether they had actual power to decide on the sale (it is argued Kommunfullmäktige should have done it). **3.1.2. Is it attributable to the State?** Yes, to the municipality of Gävle. However, it is questionable if it was lawful. **3.1.3. Does it involve State resources/forgone revenue/below-market terms/Union resources?** The PWC reports mention that one independent evaluation of the two properties sold by the municipality was carried out and the value of the sales followed that evaluation. However, the evaluation lacked methodology, and the process to approve the sale deviated from the guidelines, which is the framework applicable.	**3.1.1.** Gävle kommunstyrelse (Protocol of the meeting) **3.1.2.** PWC report 1 (ex post, 2019, p. 7) and PWC Report 2 (ex post, 2020, p. 5) **3.1.3.** *Ibid.*
3.2. Advantage & selectivity	**3.2.1. What is the advantage?** Possibility through only one evaluation that the land was sold below market price, thereby reducing the sum Gävle should have received. Deviated from Gävle's land allocation guidelines concerning speculation safeguards (one year to build the DC), it was sealed along the process (120 days) showing that it was not carried out in an open market. **3.2.2. Why selective (who qualifies/is excluded)?** In practice, the sale seems to have been only available to Microsoft (see 2.6).	**3.2.1.** PWC report 1 (ex post, 2019, p. 7) **3.2.2.** PWC report 1 (ex post, 2019, p. 7)
3.3. Competition distortion & affected trade	**3.3.1. Is it likely to strengthen the beneficiary's position compared with competitors?** Potentially yes, if it reduced Microsoft's establishment costs without putting the usual demands on the timeframe of construction, thereby strengthening Microsoft's competitive position. **3.3.2. Is there a cross-border market presence or potential?** Yes, Microsoft and other AI companies operate in Europe providing AI-related computing capacity, data processing and cloud services.	**3.2.1.** PWC report (ex post, 2019, p. 7) **3.2.2.** PWC report (ex post, 2019, p. 7)
4. Risk assessment	**4.1. Likelihood that conditions of Article 107(1) are met:** Medium to high. **4.2. Main driver(s) of risk:** formal evaluation of the property to check the box, in substance it lacked methodology or another evaluation as reference. **4.3. Key uncertainty(ies) due to data gaps:** See 2.6. (1) to (5)	Key sources: PWC report 1, ex post, 2019 Gunilla Beckman Ljung (Gävle Kommun, ex post, Missiv) PWC report 2, ex post, 2020
5. EU Com. notification cross-check	**5.1. Search terms used:** Microsoft + Sweden **5.2. Result:** The search showed 21 results, but nothing related to Microsoft DCs in Sweden. **5.2.1. If found:** N/A.	N/A

2) Meta's DC, Odense, Denmark

MODULE	FIELD	EVIDENCE
1. Case Snapshot	**1.1. Project/operator:** Meta's Odense DC, operated through Cassin Networks ApS (intra-group co.) & Energinet (state-owned) as an indirect actor **(K)** **1.2. Location:** Odense, Denmark. **(K)** **1.3. Timeline:** **(1) August 2015:** decision allowing a DC with 3 data halls and associated facilities on about 50,9 ha of land, with about 105,000m^2 of built area by 12 October 2020, when parts of the facility were in operation, but construction was still not completed. **(K)** **(2) October 2020:** application for expansion onto about 39 ha of adjoining land, bringing the total project area to about 89,9 ha; expansion by two new data halls and associated buildings, adding about 91,000m^2, which equals to a built area of about 200,000m^2; related expansion of Energinet switching station from about 1.3 ha to 2.2. ha and relocating 150kV cable into the Meta's DC land. **(K)** **(3) December 2021/2022 construction phase:** Meta announced construction of two new buildings, adding 90,000m^2 of built area; this appears to correspond to the expansion described in the 2020 EIA application. **1.4. Scale in MW/IT load:** Meta only disclosed an overall figure of 723.8 MW for supported renewable energy projects across its European DCs operations, which is not specific for the Odense DC. **(N/D)** **1.5. Service model:** data hosting services and digital infrastructure. **(K)**	**1.1.** Meta's Odense DC[194] and Environmental Impact Assessment (2020)[195] **1.2.** *Ibid. +* COWI on behalf of Cassin Network (2020)[196] **1.3.** (1) (2) (3) Environmental Impact Assessment (2020, p. 1); (3) Ministry of Foreign Affairs of Denmark Announcement (2021).[197] **1.4.** Meta's Odense DC and Executive Order on reporting and publication of information regarding the energy performance of data centers. **1.5.** Cassin Networks ApS (2022)[198]

194 Meta, "Meta's Odense Data Centre".
195 Lysgaard Søe, H. (2020) "Ansøgningsskema - Miljøkonsekvensvurdering (VVM)", p. 1.
196 COWI "Udvidelse af Datacenter i Odense", Ansøgning om Miljøkonsekvensvurdering (VVM), pp. 1–2.
197 Ministry of Foreign Affairs of Denmark Announcement (2021) "Meta announces expansion of data center in Odense", Cases, at https://investindk.com/cases/meta-announces-expansion-of-data-center-in-odense-making-it-the-largest-in-the-world (last accessed 23 March 2026).
198 Cassin Networks ApS (2022) "Annual Report for 1 january – 31 december 2022", CVR No 36 96 75 52, pp. 1-24, at https://regnskaber.cvrapi.dk/25576963/amNsb3VkczovLzAzLzU3L2E4LzlmLzgxLzdkNzUtNGU1YS05N2Q0LWJkNzVlNzk4ZmY0MQ.pdf, in p. 6.

2. Measure inventory	**2.1. Measure type:** new high-voltage substation and two new electricity connections, including Energinet's switching/high voltage station linked to the DC site and related relocation of the existing 150 kV cable within the site. Energinet expansion from 1.3 ha to 2.2 ha and relocation of an existing 150kV cable, both into DC private land. **(K)** **2.2. Authorities/actors:** same as 1.1. **(K)** **2.3. Legal basis:** voluntary environmental assessment impact (VVM) procedure under Environmental Assessment Act 18(2); Energinet transmission-connection based on contextual factors. **(K)** **2.4. Value (if available): (U)** **2.5. Duration:** permanent/long-term infrastructure **(I)** **2.6. Conditions & commitments:** (1) Energinet public reporting indicates, at a general level, that transmission-grid substations for Apple, Facebook and Google DCs connections were paid by these companies/customers, but this could not be verified. **(N/V)** (2) Heat recovery from the servers 165,000 MW hours of free surplus heat delivered to approximately 9,000 households in the region. **(N/V)** **2.7. Transparency flag:** Low-Medium because of 2.4 and 2.6.	**2.1.** Environmental Impact Assessment (2020, p. 1) **2.2.** Energinet's Sustainable Energy Together (2017)[199] **2.3.** Environmental Impact Assessment (2020, p. 1), Energinet's Sustainable Energy Together (2017, p. 41) and Energinet's New Paths to the Energy of the Future Annual Report 2017 (2018)[200] **2.4. N/A** **2.5. (I)** **2.6.** **(1)** Energinet's New Paths to the Energy of the Future Annual Report 2017 (2018, pp. 23) (2) Meta's Odense Data Centre[201] **2.7. (I)**
3. State aid conditions		
3.1. State imputability & resources	**3.1.1. Who decided?** Energinet agreed with Facebook/Meta/Cassin Networks ApS on a new high-voltage substation and two new electricity connections; Cassin Networks ApS and Energinet are listed as project owners in the later VVM file. **3.1.2. Is it attributable to the State?** Yes. Energinet is a state-owned company, and is owned by the Danish Ministry of Climate, Energy and Utilities. **3.1.3. Does it involve State resources/forgone revenue/below-market terms/Union resources?** (U).	**3.1.1.** Energinet's Sustainable Energy Together (2017, p. 41); Environmental Impact Assessment (2020, p. 2) **3.1.2.** Act on Energinet (§§1, 5-7, and 20) and Energinet "About Us"[202] **3.1.3.** (U)

199 Energinet (2017) "Sustainable Energy Together Annual Report 2016", in p. 41.
200 Energinet (2018) "New Paths to the Energy of the Future Annual Report 2017", in pp. 21 & 23.
201 Meta "Meta's Odense Data Centre", p. 2.
202 Energinet, "About Us", Webpage, at https://en.energinet.dk/about-us/.

3.2. Advantage & selectivity	**3.2.1. What is the advantage?** A possible advantage would arise if the charges imposed on Meta/Facebook/Cassin Networks ApS for the grid connection and related transmission infrastructure were set below Energinet's ordinary pricing practice or below the conditions normally applicable to comparable users, thereby reducing the beneficiary's costs. On the current record, this remains unknown/ unverified. **3.2.2. Why selective (who qualifies/is excluded)?** To determine selectivity, it would be necessary to establish the terms actually granted to Meta/ Facebook/Cassin Networks ApS and compare them with those imposed on Apple and other comparable large-scale energy consumers seeking transmission-grid connections. Such a comparison would show whether any advantage was granted selectively or not.	**3.2.1.** (U) **3.2.2.** (U) + Energinet's Sustainable Energy Together Annual Report 2016 (2017, p. 41).
3.3. Competition distortion & affected trade	**3.3.1. Is it likely to strengthen the beneficiary's position compared with competitors?** Yes, likely. Meta describes the Odense site as part of its global infrastructure. Any non-standard cost reduction in transmission connection or related infrastructure would therefore be capable of strengthening the beneficiary's position relative to competing DC operators. **3.3.2. Is there a cross-border market presence or potential?** Yes. Since the project is part of Meta's global infrastructure, and Energinet quotes Meta as calling Odense its newest European DC, chosen because of access to the highly interconnected Nordic grid and clean energy options across Scandinavia, this shows a clear cross-border dimension and European market orientation.	**3.2.1.** Meta's Odense Data Centre (p. 2) **3.2.2.** Energinet's New Paths to the Energy of the Future Annual Report 2017 (2018, pp. 21).
4. Risk assessment	**4.1. Likelihood that conditions of Article 107(1) are met:** Medium risk **4.2. Main driver(s) of risk:** unknown costs, lack of comparability references, and thereby uncertain use of State resources. **4.3. Key uncertainty(ies) due to data gaps:** the same as 4.2.	Key sources: Environmental Impact Assessment (2020) Energinet's New Paths to the Energy of the Future Annual Report 2017 (2018) Energinet's Sustainable Energy Together (2017)
5. EU Com. notification cross-check	**5.1. Search terms used:** Odense + Denmark **5.2. Result:** The search showed 55 results, but nothing related to Odense's Meta DC. **5.2.1. If found:** N/A.	N/A

3) Dutch – childcare tax decision

MODULE	FIELD	EVIDENCE
1. Case Snapshot	**1.1. Tax authority/jurisdiction:** *Belastingdienst/Toeslagen* (Dutch tax administration, Tax and Customs Administration/Benefits), Netherlands, national level. **(K)** **1.2. Tax area:** Childcare benefits, regulated by Wet kinderopvang (Childcare Act), and Algemene wet inkomensafhankelijke regelingen (Awir, General Act on Income-Dependent Schemes). **(K)** **1.3. Decision function:** automated risk classification (for anti-fraud) and case selection for manual review, followed by human decisions on benefit entitlement, suspension, reduction, and recovery. **(K)** **1.4. Decision impact:** (1) heightened enforcement exposure; **(K)** (2) selection for discriminatory (nationality-based) scrutiny; **(K)** (3) downstream risk of delay, loss of entitlement, and recovery of the benefits considered wrongfully paid. **(K)**	1.1. Parliamentary inquiry report (2020), p. 7.[203] 1.2. Childcare Act[204] and Awir.[205] 1.3. AP Presentation Report (2020), p. 2[206]; and Annex I Analysis risk classification model Toeslagen (2022), p. 3.[207] 1.4. Parliamentary inquiry report (2020), pp. 7–8, 22; Awir, Art. 26; Appel Judgement 201900753/1/A2[208]

203 Tweede Kamer der Staten-Generaal (2020) "Ongekend onrecht".
204 Wet kinderopvang, at https://wetten.overheid.nl/BWBR0017017/2026-01-01 (Childcare Act).
205 Algemene wet inkomensafhankelijke regelingen, at https://wetten.overheid.nl/BWBR0018472/2026-01-01 (Awir, General Act on Income-Dependent Schemes), Arts. 16 and 26.
206 Wolfsen, A. (202) "De verwerking van de nationaliteit van aanvragers van kinderopvangtoeslag", 17 July 2020, pp. 1–4, at https://autoriteitpersoonsgegevens.nl/uploads/imported/toespraak_aleid_wolfsen_onderzoek_kinderopvangtoeslag.pdf, in p. 2.
207 Netherlands' Government Analysis (2022) "Bijlage 1. Analyse risicoclassificatiemodel Toeslagen".
208 Appeal judgement 201900753/1/A2, Belastingdienst/Toeslagen.

2. Measure description	**2.1. Deployment decision:** the authority used a risk classification model to screen benefit applications, to carry out changes before payment, and to select higher-risk cases (fraud) for manual assessment. **(K)** **2.2. Operational rules shaping outcomes:** (1) Data sources and workflow: all information from draft decisions on childcare and housing benefits was fed into the model before payment; **(K)** (2) Variables: nationality-based variables; **(K)** (3) Thresholds/confidence scores: the model produced risk score, and higher-risk cases were selected for manual treatment (no disclosure of specific threshold or weighting formula); **(U)** (4) Override/review procedures: the model did not make a final decision itself, but the cases selected by the model were scrutinized by an authority. **(K)** **2.3. Authority:** (1) the primary authority was Belastingdienst/Toeslagen. **(K)** Oversight and (administrative & judicial) review of the authority's decision: (2) Autoriteit Persoonsgegevens (investigated the processing of nationality); **(K)** (3) the Parliamentary Inquiry Committee (examined what ministers & officials knew about the harsh anti-fraud approach); **(K)** and (4) the Raad van State **(K).** **2.4. Conditions and constraints:** (1) human oversight for the cases selected by the model for manual assessment and final decision; **(K)** (2) transparency and auditability of the system was high – scrutiny identified the issues in the model; **(K)** (3) appeal & judicial safeguards were also in place; **(K)** (4) periodic evaluation. **(N/D)** **2.5. Transparency flags:** Low. Although several aspects confirm the basic operation of the model, key variables remain–full indicator set, thresholds, weighting logic, validation metric, error rates, procurement structure, and oversight rules–remained undisclosed. **2.6. Effect on the tax position:** The impact was particularly serious because the allowances constitute an important part of disposable income for low-income households, and in the childcare-benefit system the highest benefits, and thus often the highest recoveries, generally fell on parents with lowest incomes.	**2.1.** Annex I Analysis risk classification model Toeslagen (2022), pp. 6–11; AP Presentation Report (2020), p. 2. **2.2.** (1) Annex I Analysis risk classification model Toeslagen (2022), p. 6. (2) *Ibid.*, p. 9, and AP Presentation Report (2020), p. 2; (3) Annex I Analysis risk classification model Toeslagen (2022), p. 6; (4) *Ibid.* **2.3.**; (1) Parliamentary inquiry report (2020), p. 7; (2) AP Presentation Report (2020), p. 1; (3) Parliamentary inquiry report (2020), pp. 1 & 7; (4) Appeal Judgement 201900753/1/A2. **2.4.** (1) Annex I Analysis risk classification model Toeslagen (2022), p. 6; (2) AP Presentation Report (2020), p. 2; (3) Appeal Judgement 201900753/1/A2; (4) Annex I Analysis risk classification model Toeslagen (2022), pp. 6–12. **2.5.** Annex I Analysis risk classification model Toeslagen (2022), pp. 6–11; AP Presentation Report (2020), pp. 1–4. **2.6.** AP Presentation Report (2020), p. 1; and Dienst Toeslagen status letter (2024), p. 1.[209]
3. State aid conditions	N/A – concerns individuals' benefits	N/A.
4. Risk assessment	**4.1. Likelihood that conditions of Article 107(1) are met:** Zero. **4.2. Main driver(s) of risk:** Private individuals are affected by the measure – no economic activity involved. **4.3. Key uncertainty(ies) due to data gaps:** Model methods to deliver the risk assessment outputs.	N/A.
5. Notification cross-check	**5.1. Search terms used:** N/A **5.2. Result:** N/A **5.2.1 If found:** N/A	Only the Commission State aid register and case database and its press-releases.

209 Staatssecretaris van Financiën Toeslagen & Douane (2024) "Stand van zaken Dienst Toeslagen", pp. 1–21, at https://open.overheid.nl/documenten/746abf92-db5d-4a18-b745-73367d1309d2/file, p. 1.

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