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INFORMATIVE NOTE

TECHNOLOGY, MEDIA AND TELECOMMUNICATIONS

The AI act: A new regulatory model for data centres?

Introduction

The European Artificial Intelligence Regulation (AI Act)[1] establishes a regulatory framework to ensure the ethical and safe use of AI, including the protection of the environment. However, the current framework does not yet comprehensively address the environmental impact of the intensive use of AI[2], particularly in the context of data centres[3].

Impact for data centres

The growing demand for computing resources driven by AI has increased the need for efficient and resilient data centres. However, the exponential increase in energy consumption and use of natural resources presents regulatory and sustainability challenges.

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Regulatory trends and operational challenges

- **Sustainability and energy efficiency**: According to a McKinsey study[4], data centre energy consumption could triple by 2030. Implementing solutions such as liquid cooling, renewable energy and waste heat recovery is therefore a necessity.

Pedro Lomba
Nádia da Costa Ribeiro
Ana Rita Mano

Technology, Media and Telecommunications team

1 Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024

2 The AI Act applies to various types of operators, including suppliers, users and distributors of AI systems. The obligations vary according to the type of operator, and are stricter for suppliers (Articles 25, 29 and 30 of the AI Act).

3 According to Article 2 of Delegated Regulation (EU) 2024/1364, it should be understood that: 'enterprise data centre' means a data centre that is operated by an enterprise, and of which the sole purpose is to deliver and manage the information technology needs of the enterprise.

4 Mckinsey – The role of power in unlocking the european ai revolution.

Adopting good environmental practices can not only reduce costs, but also give sector operators a competitive edge by aligning with compliance and ESG initiatives.

- **Infrastructure adapted to AI:** Data centres are being redesigned to support specialised hardware and intensive workloads. These workloads refer to the high computational demands of AI applications, such as machine learning and deep learning models, which require large amounts of compute capacity and storage. Tools such as digital twins, which are virtual replicas of physical data centre systems, allow resource consumption to be optimised, improving efficiency and ensuring compliance with regulatory standards.

- **Social and regulatory pressures:** Some countries, such as Ireland, have already imposed restrictions on the development of new data centres in certain regions due to the environmental impact. The AI Act requires transparency and risk management, but still lacks specific provisions to mitigate the environmental impact[5] of this type of infrastructure.

- **Competitiveness and innovation:** Adopting good environmental practices can not only reduce costs, but also give sector operators a competitive edge by aligning with compliance and ESG initiatives.

Industry opportunities and responses

- **Inter-institutional cooperation:** Dialogue between data centre operators and regulators can help implement policies that balance technological innovation and environmental responsibility[6].

- **Modular and scalable infrastructures:** Adopting flexible operational expansion models can optimise resources and reduce environmental impact.

- **Transparency as a competitive advantage:** Adopting good environmental practices and impact reporting can promote public acceptance and sustainable investment.

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5 AI_Climate_and_Regulation_From_Data_Centers_to_the.pdf

6 See the International Energy Agency's proposed approach.

Self-regulation as a complement to the IA law

In the absence of specific rules on sustainability in the AI Act, the sector can choose to promote self-regulatory practices, which can focus on the following points:

SUBJECT	MEASURES
Objectives	o Establish specific practical guidelines for data centre operators that fill gaps in the AI Act. o Promote sustainability and energy efficiency to minimise the environmental impact of AI. o Ensure security and transparency in the handling of data associated with AI systems. o Align operational practices with ethical and legal principles.
Key stakeholders	o Data centre operators. o AI providers and users o National and European regulators. o Business customers and end-users. o Environmental and civil society organisations.
Technical approach to risk management	o Identification of specific risks such as high energy consumption, failure to protect sensitive data and algorithmic bias. o Assessment of environmental impact (carbon footprint, water consumption) and compliance with ethical principles enshrined in the AI Act. o Establishing and implementing risk mitigation plans, including conducting regular audits and defining strategies to reduce environmental impact and cybersecurity risks.
Supervisory and transparency mechanisms	o Annual publication of reports on energy consumption, operational efficiency, use of renewable energy and compliance with environmental standards. o Transparency in the use of AI in data centres, including disclosure of information on the accountability of algorithms o Create public dashboards for continuous monitoring of sustainability and security.
Continuous improvement	o Periodic review of internal standards based on technological advances, stakeholder feedback and market developments o Adapting to emerging technologies in advanced cooling, renewable energy and efficient infrastructure management for AI o Signing of contracts with suppliers with clear clauses defining the need to comply with ethical, technical and environmental aspects.
Support mechanisms	o Implementation of regular training programmes for technicians and operators on ethical AI, cybersecurity, sustainability and efficient management. o Adoption of robust protocols for responding to incidents involving algorithmic failures or breaches in the protection of sensitive data o Creating financial incentives for the adoption of sustainable technologies (e.g. tax credits or subsidies).

The adoption of self-regulatory mechanisms also requires a proper balancing of the inherent challenges and benefits, such as:

SUBJECT	CHALLENGES	ADVANTAGES
Data protection	Ensuring privacy, security and transparency without compromising data confidentiality.	Adopting specific and effective standards in line with the AI Act and promoting best practices.
Regulatory framework	Lack of clarity in regulations can lead to inconsistent interpretations and hinder transparency.	Greater flexibility to adapt to technological and market changes.
Investment	High costs of implementing technologies and complying with regulations.	Incentives for innovation and energy efficiency, reducing environmental impact and improving data security.
Sustainability	High energy consumption, intensive use of water and difficulties in switching to renewable sources.	Facilitates the adoption of sustainable practices, reduces operating costs and avoids inappropriate regulation.
Response capacity	Shortage of specialised human resources and vulnerability to operational failures.	Adoption of voluntary sustainability and privacy targets mitigates risks and ensures compliance with the AI Act.

Conclusion

The convergence of regulation and sustainable innovation will be critical to the future of data centres in the age of artificial intelligence. Anticipating regulatory requirements and adopting sustainable solutions will not only ensure compliance with the applicable regulatory framework, but will also be a competitive strategy and differentiator required to deploy these infrastructures. ■