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ACADEMIC PRESENTATION

From Gridlock to Grid Asset: Data Centres for Digital Sovereignty, Energy Resilience, and Competitiveness

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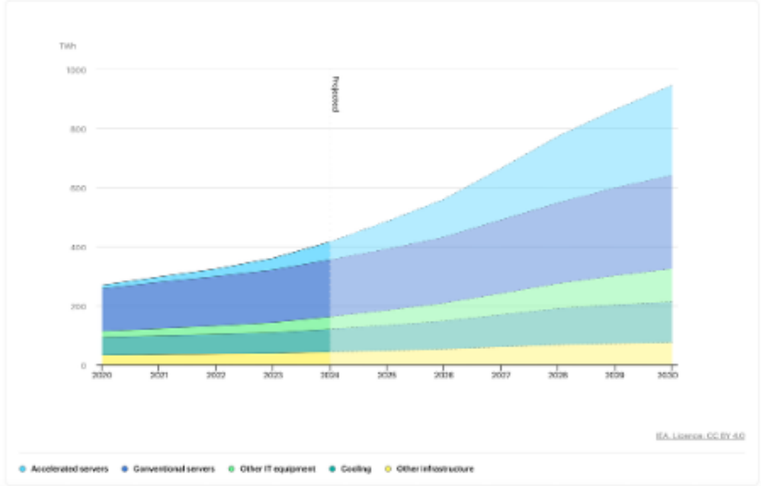
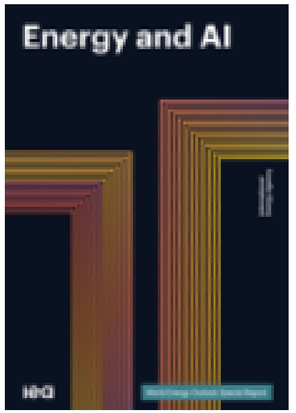
WHY DO WE NEED TO TALK ABOUT DATA CENTRES IN EUROPE?

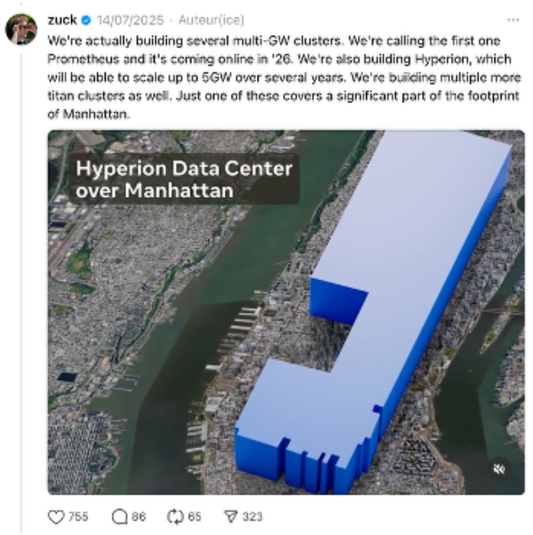
DATA CENTRES AS A HOT TOPIC (AGAIN)



April 2025 – IEA report projects that electricity demand from data centres worldwide is set to double by 2030 to around 945 terawatt-hours (TWh), more than Japan.



July 2025 – Meta announces titan DC projects, Prometheus and Hyperion, scaling up to 5 GW and each covering the size of Manhattan.



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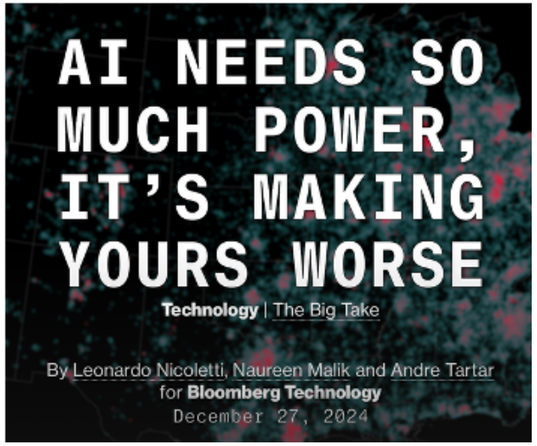
DATA CENTRES PUT STRESS ON ENERGY SYSTEMS AND THE ENVIRONMENT



https://www.bloomberg.com/graphics/2024-ai-power-home-appliances/

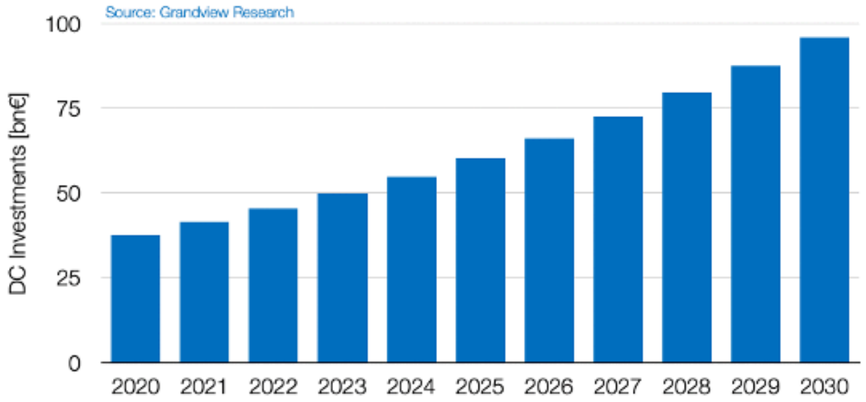
Growing environmental concerns over hyperscale DC projects.

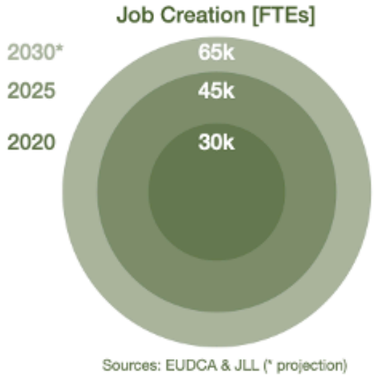
The US shows risks of power outages and distortions in areas close to significant data centre activity + challenges to get sufficient generation capacity to power the data centre industry (PPAs by big tech…)

https://www.nytimes.com/2025/07/14/technology/meta-data-center-water.html

REPORT

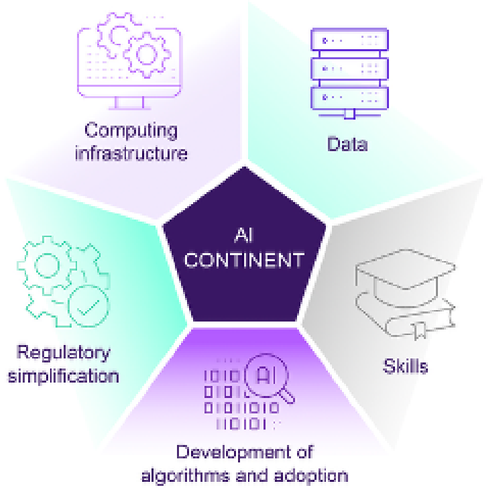
DATA CENTRES AS DRIVERS OF ECONOMIC AND TECHNOLOGICAL COMPETITIVENESS





DCs are an opportunity to drive investments in Europe.

DCs are key to becoming a global leader in AI, as acknowledged by the AI Continent Plan.



DCs are key to ensuring competitiveness in all digital sectors, as acknowledged in the Draghi Report.

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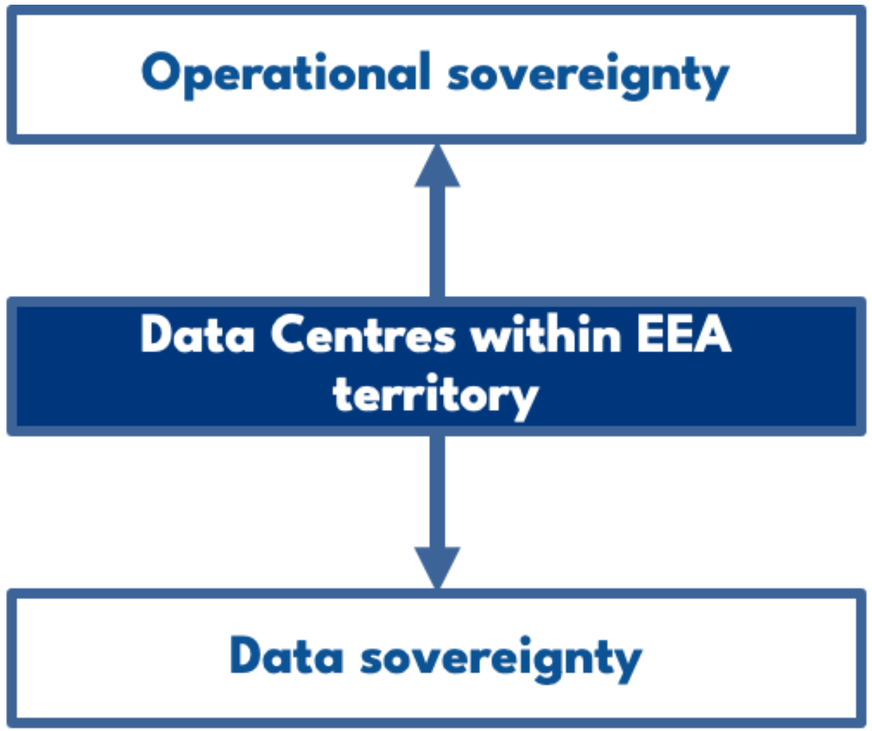
DATA CENTRES AS DRIVERS OF EU DIGITAL SOVEREIGNTY

DCs as “final points of control” of the digital value chain.
Protection against geopolitical risks (dependencies over foreign powers).



One of the conditions to ensure **protection against unlawful extraterritorial access to European data** (see challenges against EU-US data privacy framework + debates over EUCS certification for cloud services).

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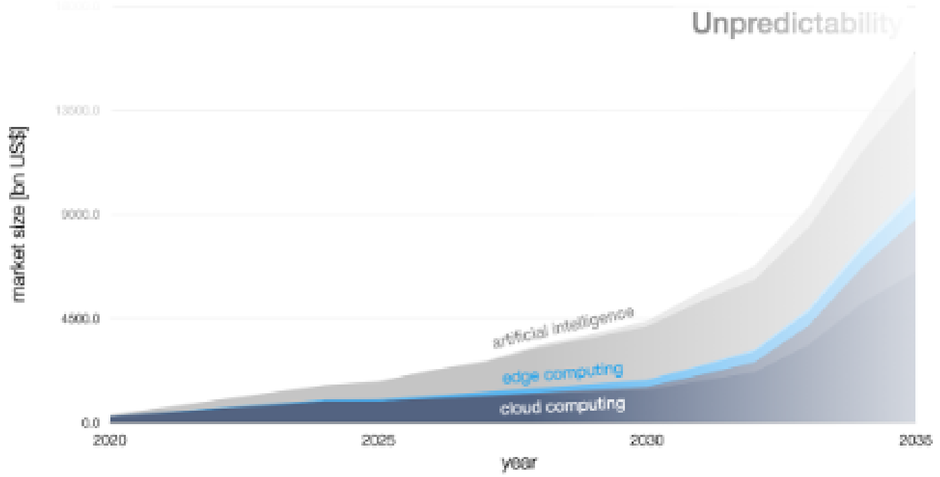
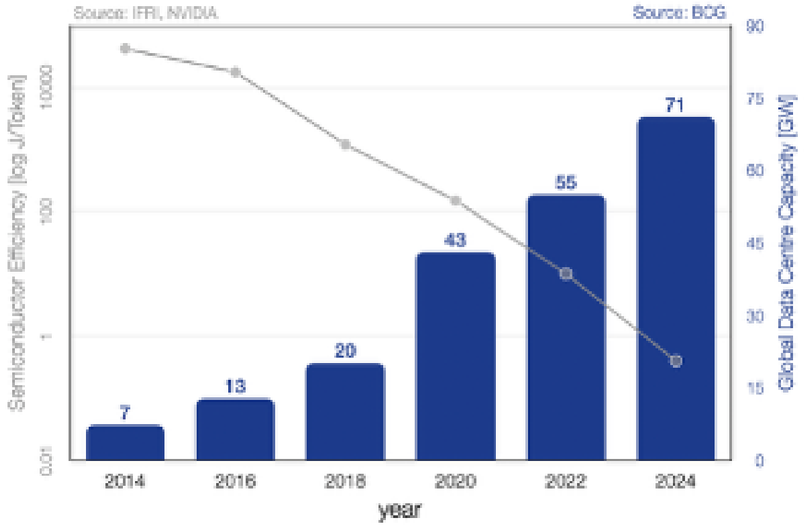
WHAT ARE THE PROBLEMS?

WHAT ARE THE PROBLEMS?

- Tech developments are highly uncertain
- Efficiency gains are slowing
- Efficiency metrics are insufficient
- How to manage grid congestion in European capitals
- How can the EU cope with DC electricity demand?
- How can DCs be assets for electricity systems and not a burden?





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WHAT CAN WE DO ABOUT IT?

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WE COMPARED POLICY AND REGULATORY APPROACHES IN 7 EUROPEAN COUNTRIES

3 FOCUSES

Local situation with respect to DC deployment

Policies and legal responses:

- Regulation of connection rules
- Permitting processes
- Environmental standards

Observable effects of the measures

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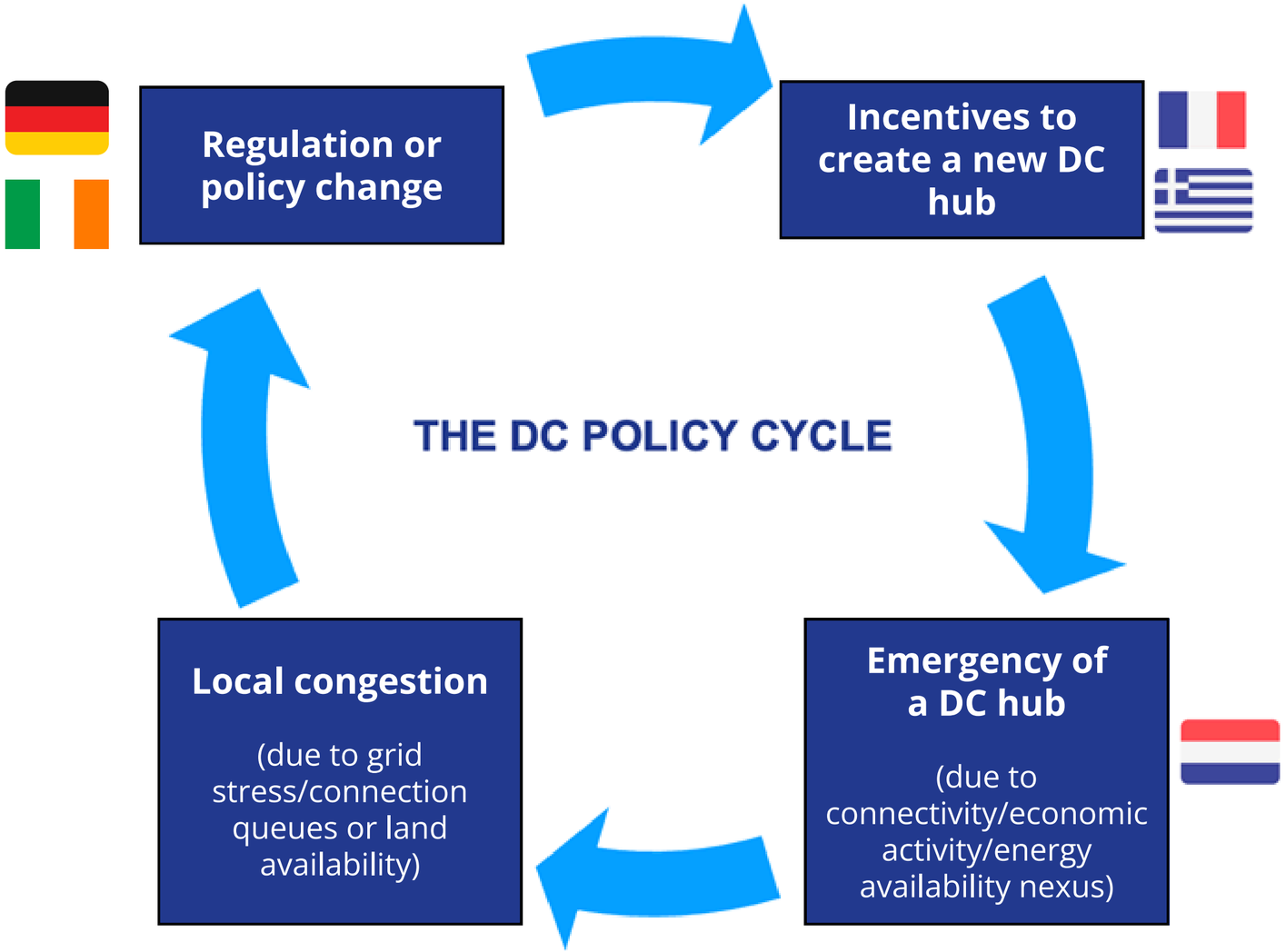
GENERAL FINDINGS



1. **Policy and regulatory measures follow recurrent cycles**; we need to smooth the transitions.

2. **Regulatory priorities diverge across Member States**; we need a harmonised approach.

3. **Streamlining DC deployment must be balanced with broader public interest**; fast-tracking efforts should benefit all socially beneficial projects.

EMERGING CONCERNS

1. **Rise of public contestation (judicial and non-judicial)**, we need to involve the public in early-stage planning and transparent communication about trade-offs, benefits, and mitigation strategies to foster social acceptance.

2. **Debates over carbon accounting methods used by tech companies**, transparency over location-based emissions, alongside market-based approaches, are key to preventing reputational damages and ensuring environmental integrity.

3. **Public concerns about the implantation of DCs in water-scarce regions**, we need to integrate context-specific water stress criteria into DC permitting.

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WE REVIEWED EU LEGISLATION APPLICABLE TO DCS

- CSRD, NIS 2, DORA, Ecodesign, EED, CRA, DC Rating scheme…

- Findings:
  - **Risk of overlapping obligations**
  - **Inconsistent thresholds and definitions**
  - **Simplifying reporting**
  - **Cybersecurity overlap**

- Simplification should be considered as part of the **Omnibus Package on Digital** or the **Cloud and AI Development Act**.

- Specific attention should also be given to the administrative burden for **utilities that operate both regulated infrastructure and market-based digital assets** like DCs.

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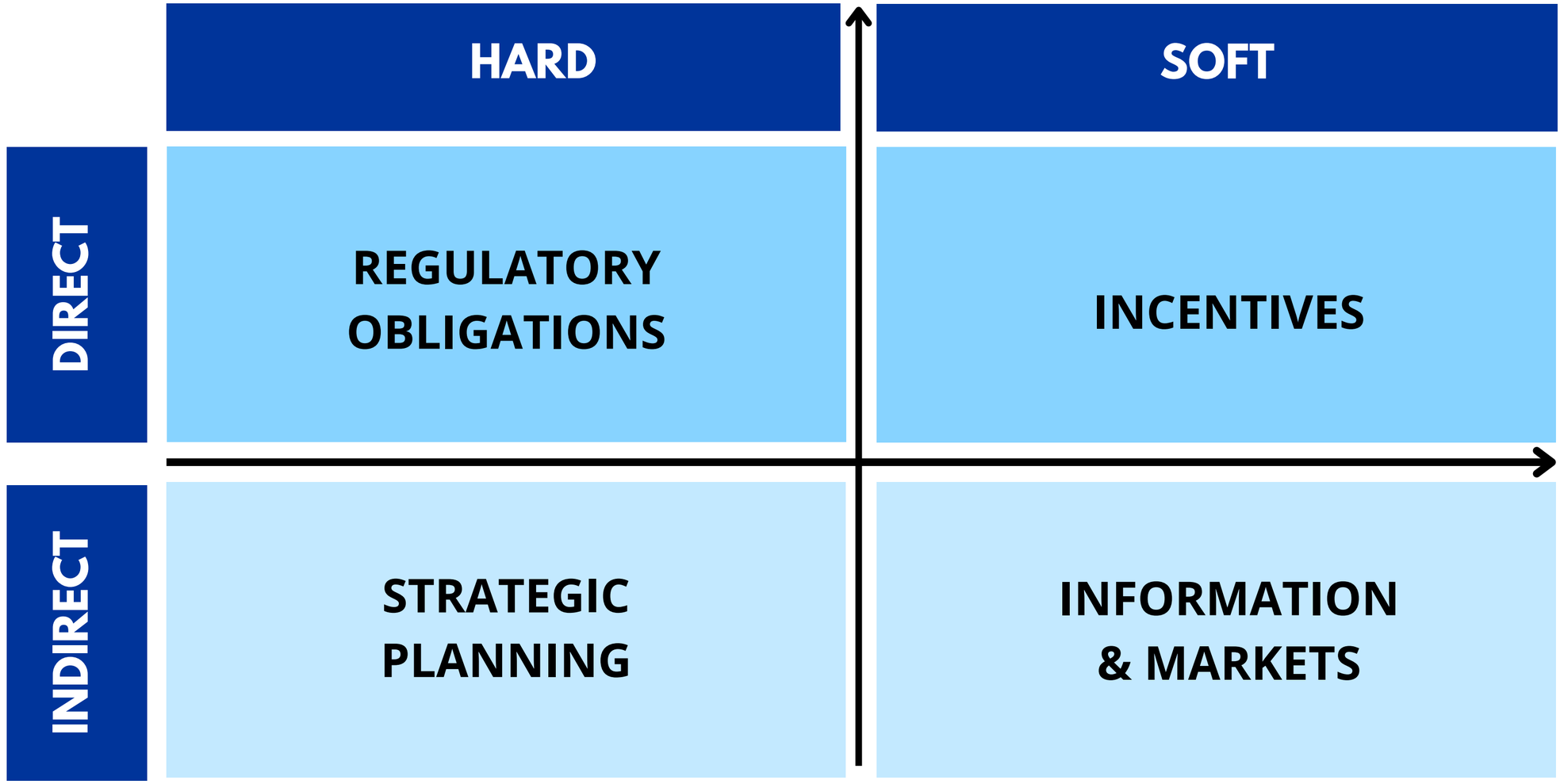
WE DESIGNED A POLICY TOOLKIT



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POLICY RECOMMENDATIONS

POLICY RECOMMENDATIONS (1/6)

Streamline Data Centre Regulation

- National authorities should adopt **simpler permitting processes and harmonised efficiency standards.**
- Fast-track permitting procedures should benefit all projects with high positive social impacts, **including but not limited to qualifying DCs.**
- **Adopt smart and adaptive regulatory frameworks** to evolve with technological developments.

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POLICY RECOMMENDATIONS (2/6)

Update metrics to create a holistic view:

- PUE does not give an appropriate picture of the real efficiency.
- Systemic impact (including flexibility) must be taken into account.

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POLICY RECOMMENDATIONS (3/6)

Create Incentive Mechanisms to Help Make DCs an Asset to Energy Systems

- Provide incentives to **deploy battery storage** at DC sites, to **provide demand response mechanisms**, and to integrate with **renewable energy sources**.

- Through tailored network tariffs, electricity prices, co-investment models, and long-term pricing agreements (PPAs).

- The EU **could unlock 50-60 GW of demand-side flexibility** by 2035.

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POLICY RECOMMENDATIONS (4/6)

Strengthen Strategic Planning for the Integration of DCs in Energy Systems:

- **Accelerate grid expansion as best as possible** to provide more capacity quickly.
- Designate “ready to connect” zones in **areas with low-carbon generation and uncongested grids**.

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POLICY RECOMMENDATIONS (5/6)

Use Market and Informational Signals:

- **Better reporting** on businesses' use of energy, carbon emissions, and contributions to grid flexibility.
- Encourage firms **to adjust their workloads to reduce the impact on the grid**, e.g. through **flexible connection agreements**.
- Encourage **more voluntary participation in markets for ancillary services** and congestion management services.

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POLICY RECOMMENDATIONS (6/6)

Strengthen Cross-Sector and Cross-Border Coordination:

- Encourage a structured dialogue between TSOs, DSOs, and industrial actors (including across national borders) to help resolve technical and regulatory issues.

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