ENTSO-E Webinar - Data Centres and the Power System: expected trends, challenges and opportunities

23 June 2026, 10:00 - 12:00

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CONNECTING EUROPE,
ELECTRIFYING THE FUTURE

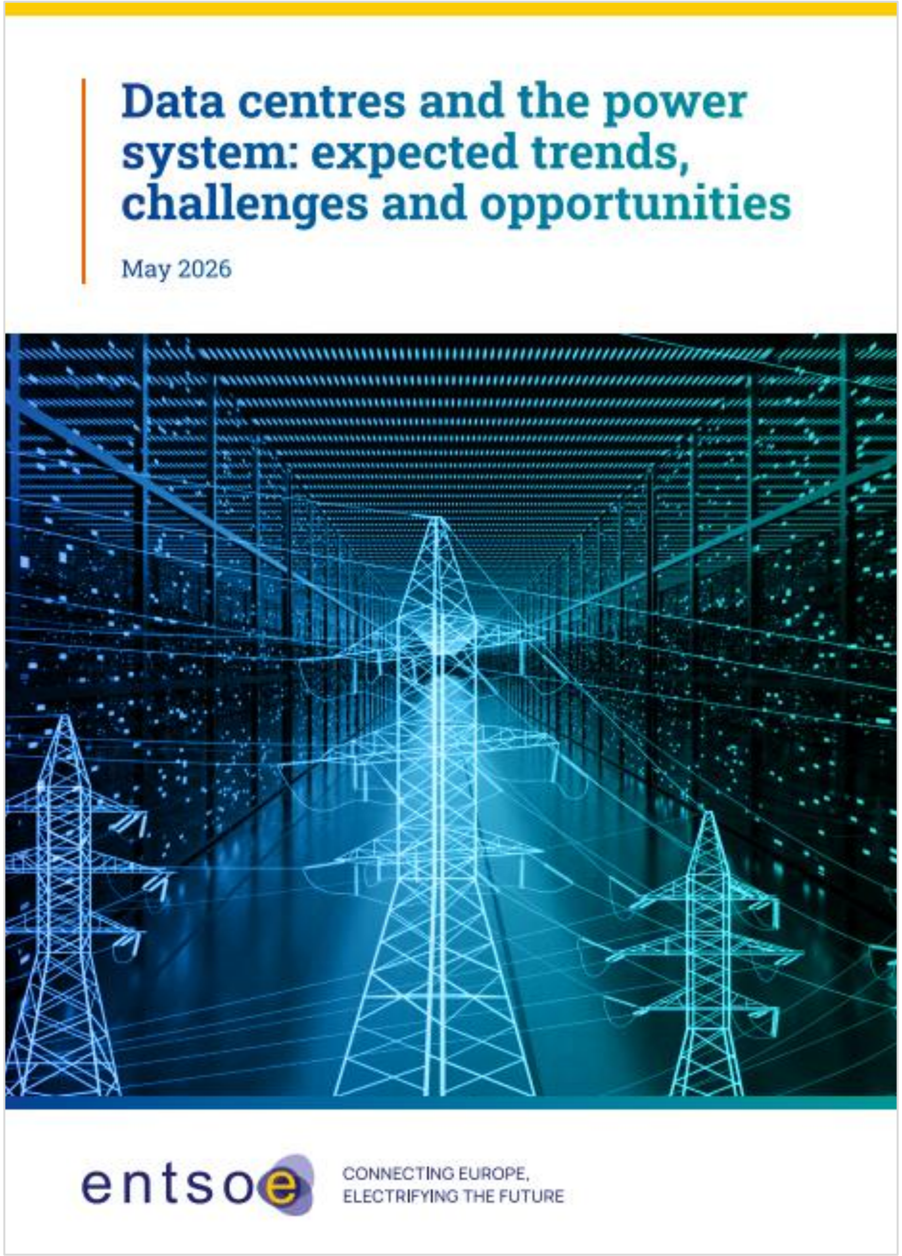
Agenda

10:00 - 10:05	**Opening Statement** • Uroš Salobir (Chair of the Research, Development and Innovation Committee (RDIC), ENTSO-E)
10:05 - 10:15	**European Commission (DG ENER) on policy updates** • Stavros Stamatoukos (Policy Officer, European Commission – DG ENER)
10:15 - 10:55	**ENTSO-E Report on Data Centres and the Power System: expected trends, challenges and opportunities** • Orestis Vantzos (RDIC Working Group Future of Energy Systems, ENTSO-E) • Antonio Iliceto (Co-Convenor of the RDIC Working Group Future of Energy Systems, ENTSO-E)
10:55 - 11:05	**Q&A**
11:05 - 11:15	**European Data Centre Association on the State of European Data Centres 2026** • Chad McCarthy (Technical Committee Chair, European Data Centre Association)
11:15 - 11:55	**Panel discussion on Data Centres and the Power System** • Chad McCarthy (Technical Committee Chair, European Data Centre Association) • Rina Bohle Zeller (Lead EU Energy Policy, Agora Energiewende) • Saif Aldahmor (Senior Power System Engineer, EirGrid) • Stavros Stamatoukos (Policy Officer, European Commission – DG ENER) • Antonio Iliceto (Co-Convenor of the RDIC Working Group Future of Energy Systems, ENTSO-E)
11:55 - 12:00	**Closing remarks** • Elena Fjørtoft (Convenor of the RDIC Working Group Future of Energy Systems, ENTSO-E)

Please note that the webinar will be **recorded** - Questions can be posed via the **Q&A in Teams**

Opening Statement

Uroš Salobir – Chair of the Research, Development and Innovation Committee(RDIC), ENTSO-E



ENTSO-E Report : Data centres and the power system

European Commission (DG ENER) on policy updates

Stavros Stamatoukos (Policy Officer, European Commission – DG ENER)

Strategic Roadmap for Digitalisation and AI in the Energy Sector

Stavros STAMATOUKOS

DG ENER.B4 – Digitalisation, Competitiveness, Research & Innovation

Technology sovereignty package

- The Chips Act 2.0 to strengthen the semiconductor ecosystem and supply chain resilience, and boost domestic demand
- The Cloud and AI Development Act (CADA) to unlock the potential AI and cloud, to transform our industrial ecosystems and improve societal outcomes
- The EU Open Source Strategy to reduce dependencies across the entire technology stack
- A Strategic Roadmap for Digitalisation and AI in Energy to accelerate the rollout of sovereign digital and AI solutions in energy, while keeping risks in check

Strategic Roadmap Digitalisation and AI in energy

Energy for AI

- Sustainable integration of data centres in energy
- Data centre energy efficiency package

AI for energy

- KPIs for smart grids
- Smart meters roll-out
- AI models for energy

Data for energy & AI

- EU framework for simplified cross-border energy data exchange

Securing the energy-AI nexus

Cybersecurity, trust, skills, and global cooperation

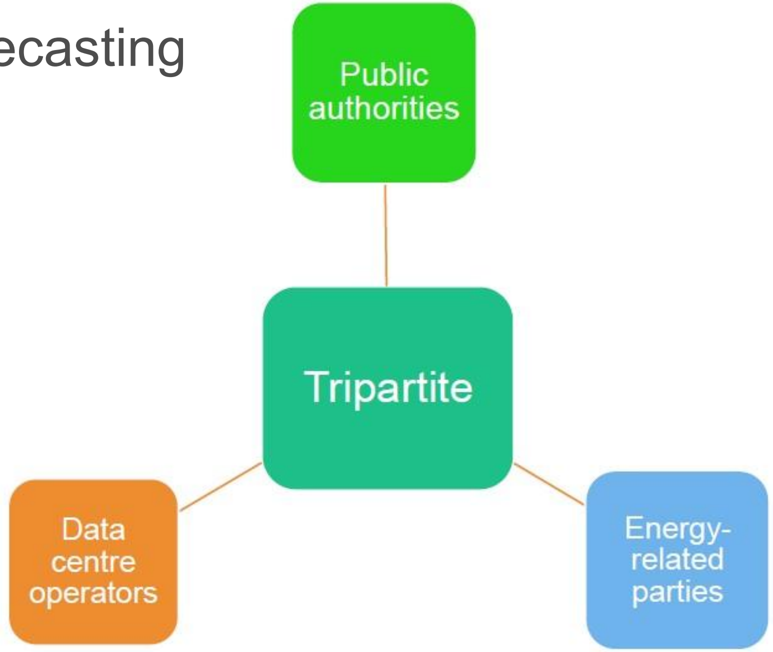
Flagship 1: An EU model tripartite agreement for the sustainable integration of data centres into the energy system (1)

- What it is: **Voluntary multi-stakeholder cooperation framework**
- Phase-1: an EU **model** tripartite agreement (by Oct 2026)
  - Establish the strategic aim, parties, other aspects (e.g. monitoring mechanism, KPIs)
  - List commitments/actions that could be taken by public authorities and industry stakeholders
  - Comprehensive, Ambitious, Flexible
- Phase-2: **signatures** of tripartite agreements (Nov-Dec. 2026)
  - Localised agreements – Tailored localized actions to reflect best the local conditions
  - Strategic use: Support national/regional/local policy setting
  - Project-level use: Support faster rollout of DC projects, improve their visibility

Flagship 1: An EU model tripartite agreement for the sustainable integration of data centres into the energy system (2)

Scope of work:

- Facilitating the addition of new capacities of **clean electricity generation**
- **Improving information exchange** to support better demand forecasting and information use in system planning
- Enabling conditions for **timely grid connections** of data centres
- **Identifying flexibility solutions** for data centres
- Supporting solutions for reusing **waste heat** from data centres
- Enabling other ways of **bringing value** to local economies
- Addressing **energy efficiency and water use**



Flagship 1: An EU model tripartite agreement for the sustainable integration of data centres into the energy system (3)

- **Declaration of Intent signed 3/06**

To cooperate on promoting principles, good practices, procedures and joint activities to advance the sustainable integration of data centres into the EU energy system.

To facilitate the development of an EU model for tripartite agreements, and to support its uptake in Member States or regions by further adapting the model.

- **Declarations of Support**

To support the work undertaken pursuant to the Declaration of Intent. Will endeavour to participate in a local tripartite agreement that will be developed based on the EU model. (Open for further adherents).

Flagship 2: Data Centre Energy Efficiency Package

<u>Three deliverables</u>

- A **report to the European Parliament and Council**, assessing the reported data and discussing ways forward for a more sustainable sector.
- A Delegated Regulation establishing **a common Union rating scheme** for data centres, covering energy efficiency, water efficiency, clean energy use, waste heat reuse, and flexibility
- An **open public consultation** for possible minimum performance standards for data centres in the Union.

<u>Timing</u>: 2026

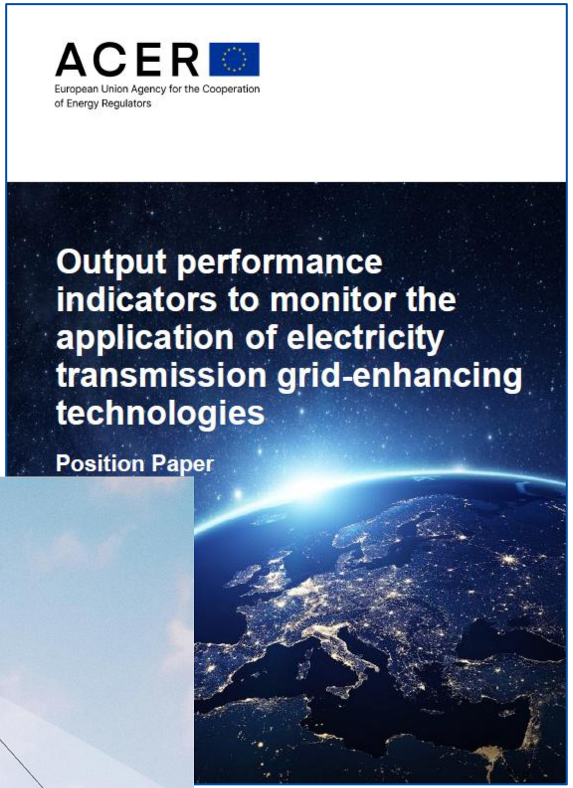
Flagship 3: Development of EU key performance indicators for smart grids and acceleration of smart meters rollout

<u>Legal proposal to future-proof EU electricity bills in the EU</u>

- More efficient use of current grid assets by employing **smart and digital solutions**, for example:
  - *Building on ongoing work, ACER to provide a recommendation to regulatory authorities on the use of smart grid indicators and monitor relevant progress*

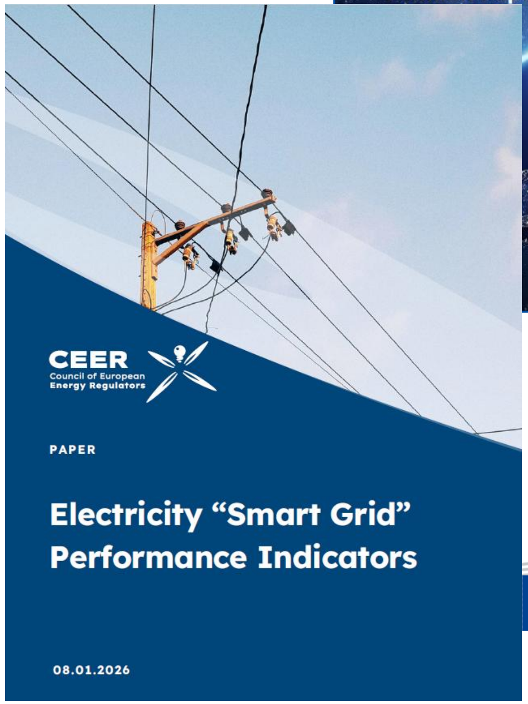
- Provisions to accelerate the rollout of **smart meters** in the EU aiming for minimum coverage in each Member State

- <u>Timing</u>: 2026


ACER
European Union Agency for the Cooperation of Energy Regulators

Output performance indicators to monitor the application of electricity transmission grid-enhancing technologies

Position Paper


CEER
Council of European Energy Regulators

PAPER

Electricity "Smart Grid" Performance Indicators

08.01.2026

Flagship 4: Development of AI models across the energy value chain (1)

- Objective: Build sovereign, secure AI models for the energy sector, trained on European data and developed by EU firms
- Lead use cases:
    - development of AI foundation models for **grid management and planning**
    - digital portals with genAI at national level that accelerate **permit review procedures** for renewable, storage and grid projects; .
- Follow-up use cases: renewables, nuclear safety, buildings etc
- R&I funding: Horizon Europe 2026-27 earmarked about EUR 100 million for smart grids, EUR 75 million for AI technologies and about EUR 190 million for digital solutions in renewables, buildings and energy efficiency.

Flagship 4: Development of AI models across the energy value chain (2)

Community of practice: AI.grids

- Background: a bottom-up initiative aiming to develop AI models for grid management and planning.
- 48 EU organisations led by grid operators, SMEs and research institutes signed a project agreement to collaborate in developing AI models for the management of electricity grids in the EU
- Lead TSOs: RTE (FR), Eles (SI), ESO (BG), IPTO (GR), Swissgrid (CH), TenneT (NL), TenneT (DE), Amprion (DE), 50Hertz (DE), APG (AT), CEPS (CZ), PSE (PL), SEPS (SK).
- The Commission will support the initiative with EUR 30 million in 2026 and EUR 20 million in 2027 through Horizon Europe programme

AI.grids

Building the First Pan-European AI Foundation Model for Power Grid Operations

Flagship 5: Establish an EU framework for simplified cross-border energy data exchange for smart energy services and AI model training

Objective: make cross-border energy data exchange simpler, more efficient and predictable by providing common interfaces, harmonising rules and trust services at EU level.

- **Primary use of energy data**
  - Enhance cross-border data interoperability
  - Support and coordinate MSs in national data hubs
  - Builds on the recent joint report of three expert groups
- **Secondary use of energy data**
  - Facilitate pooling of energy data for research purposes
  - Establish trust frameworks and regulatory sandboxes
  - The upcoming legal proposal will provide a legal framework

Flagship 6: Strengthen safety of AI and the cybersecurity of critical devices

Cybersecurity Act

Guidance on the use of EU funds

Systemic risk assessment

Security of supply framework review

Flagship 7: Track digitalisation progress in the EU and improve energy data availability

Energy Digitalisation Forum

- Monitor the implementation of this Roadmap
- Spot regulatory bottlenecks
- Provide strategic direction towards digitalisation and use of AI in the energy sector in the EU

Better Energy Data initiative

- Map and address gaps in energy data availability,
- Obtain more comprehensive, detailed, interoperable, and timely data
- MAke energy data easily accesible

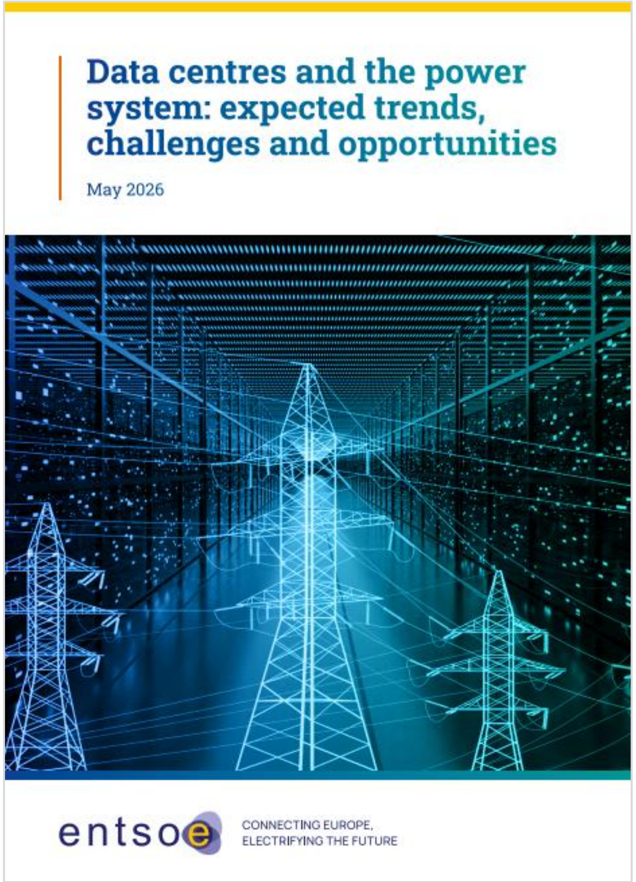
Thank you

European Commission

ENTSO-E Report on Data Centres and the Power System: expected trends, challenges and opportunities

Orestis Vantzos (RDIC Working Group Future of Energy Systems, ENTSO-E)
Antonio Iliceto (Co-Convenor of the RDIC Working Group Future of Energy Systems, ENTSO-E)

ENTSO-E Report on Data Centres and the Power System



1. European Data Centres: Growth, Scale, and Transformation
2. Data Centre Characteristics and Behaviour
3. Risks and Solutions to Grid Security and Stability
4. Challenges for Grid Planning
5. Opportunities for Grid Operation

Data centres: from ordinary load to systemic player

Data centres have shifted from predictable consumers to **systemically relevant loads** that affect **secure grid operation**

SCALE

- **≈10,500 sites · ~12.7 GW of IT power today** in **Europe**
- **Demand growth >50%** by **2030**
- The **EU Cloud & AI Development Act** targets at **tripling capacity** by **2030-2032**

BEHAVIOUR

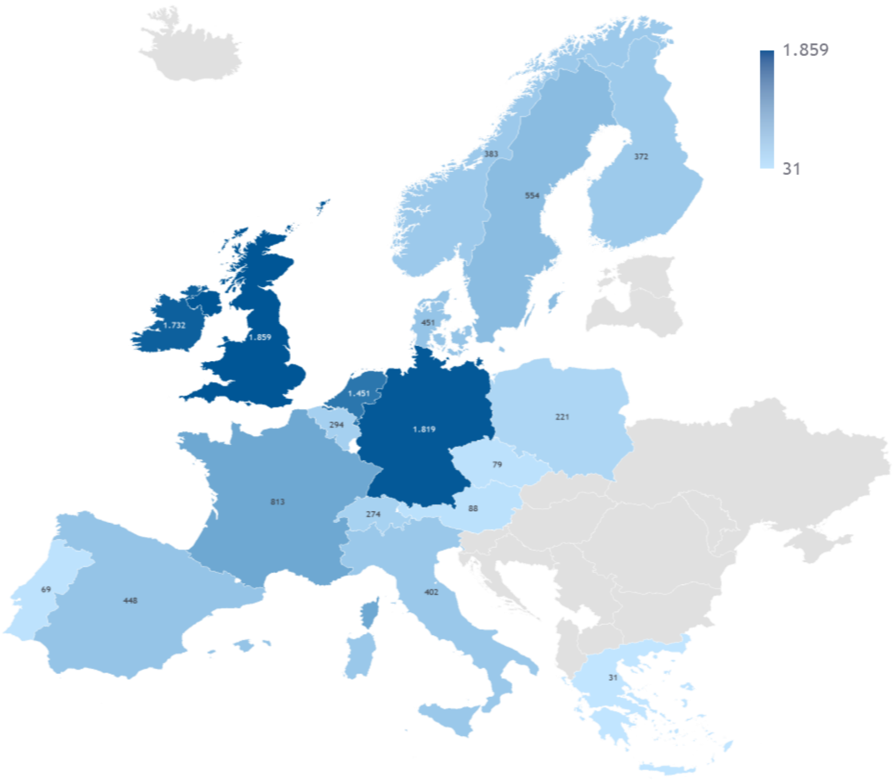
- **Software-driven load** causes **multi-MW swings** in **milliseconds**
- Data centres can **disconnect** and **reconnect abruptly** from the grid **during disturbances**, unlike traditional loads

DUALITY

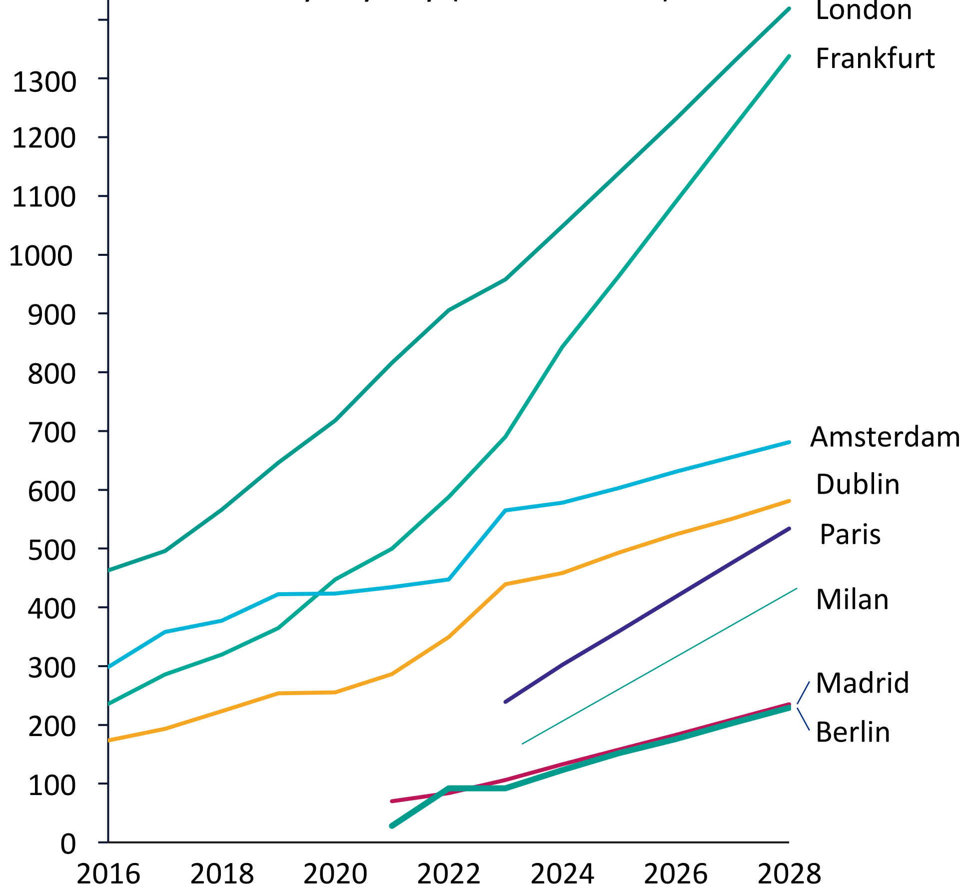
- A **challenge** to **secure grid operation** today
- **Potential** to be a **flexible resource** that can **support the grid**

European data centres footprint

Facilities are spread across many countries but installed **IT capacity** is **concentrated** in **France**, **Germany**, **Ireland**, **Netherlands** and **UK**



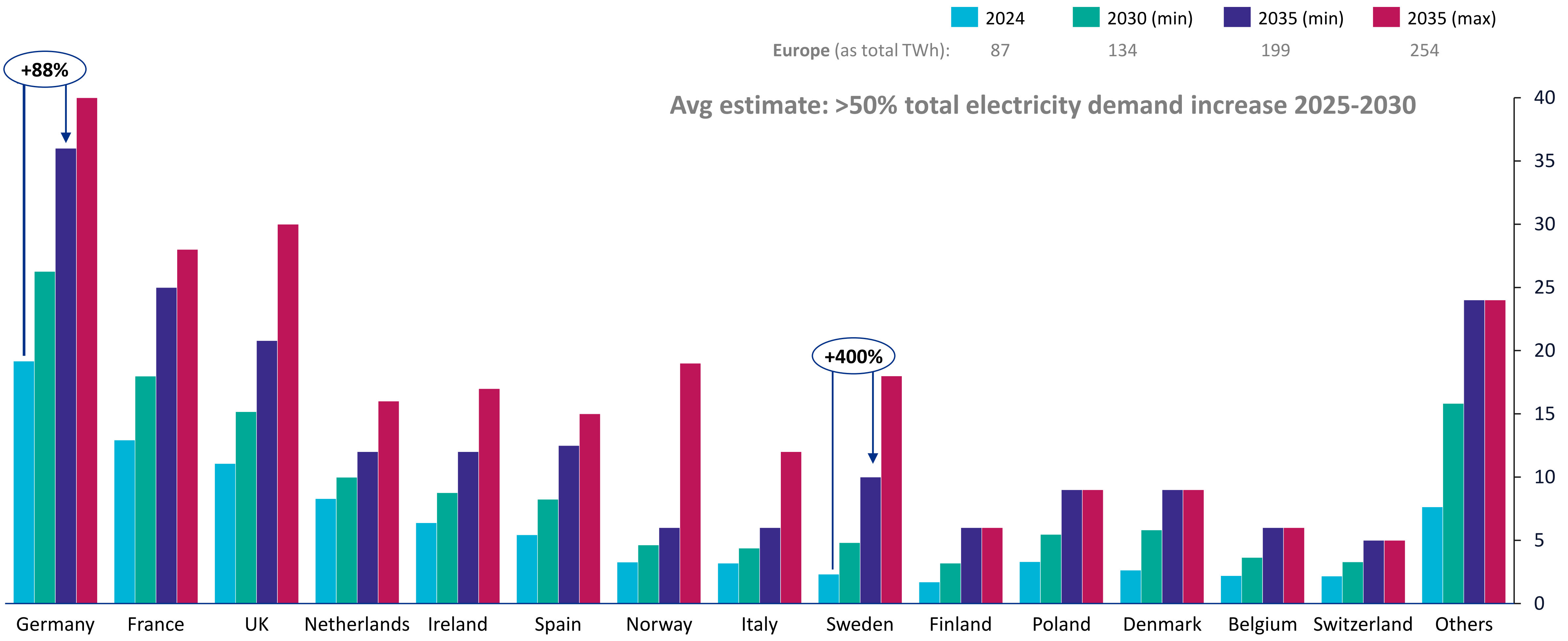
Co-location* IT peak load annual outlook, by key city (installed MW)



*Co-location data centres: Single operator - Multiple tenants

Europe holds a strong potential for data centres deployment driving growth in electricity demand

Total data centres electricity demand by key country (TWh)



Data centres typologies relevant for grid impact

Ownership and **business model** are essential to **determine impact, potential** and **behaviour**

Structural differences decide how much capacity they hold, how large individual sites grow, what share of the grid they occupy

Colocation

- Single operator - Multiple tenants
- Scale (leased to hyperscalers) vs Non-scale use
- **5-100+ MW per site**
- **High growth**
- Split-responsibility (operator controls infrastructure, tenants control workloads) means **limited flexibility potential**

Hyperscale

- Massive single operator campuses
- Cloud, AI and digital services (IaaS/PaaS/SaaS) at scale
- **Potentially >100 MW per site**
- **High growth**
- Load shifting and scheduling is possible, **highest flexibility potential**

Enterprise

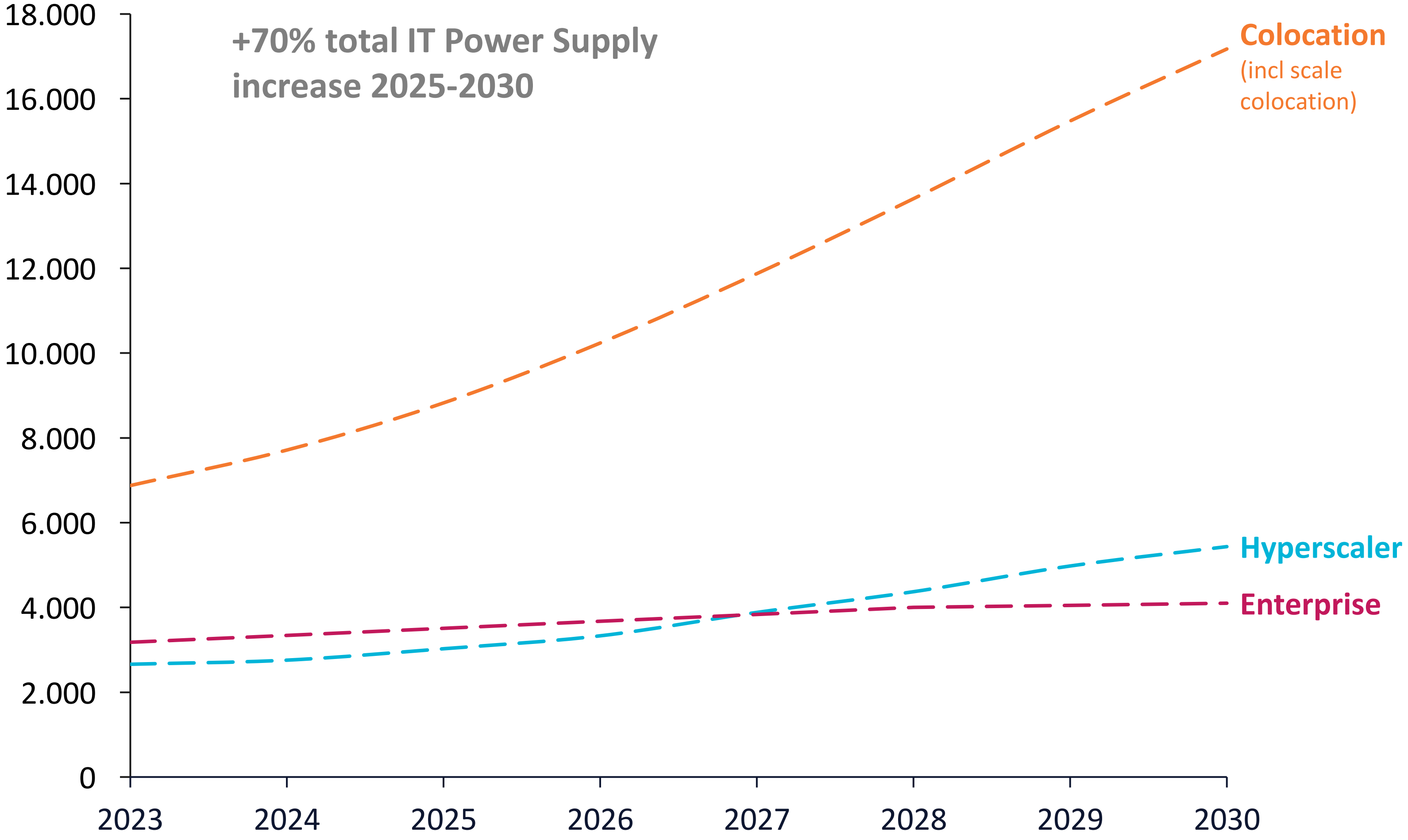
- Owned/operated by a single organisation
- Banks, government agencies, sensitive industries
- **1-5 MW per site**
- **Stagnating**, as work moves to the cloud
- Cost Centres with high-redundancy requirements (Tier II–III)

HPC & Edge

- High-Performance computing clusters, often tied to research or national supercomputing programmes
- Edge data centres, small distributed nodes located close to users
- **Limited impact treated under the Enterprise category**

Scale co-location is driving IT load growth followed by hyperscale

IT Power Supply (MW) in Europe by data centres type



- ~30% of IT Power Supply is of scale colocation type
- Expected to grow at 30% yearly rates
- Retail & wholesale growth at 8%
- By **2030**, **60%** of **colocation capacity leased to hyperscalers**
- The **profile** of **new data centres** is **changing**

Data centres location drivers

Location decisions are **guided** by **multiple factors** but their relative importance is changing

Opportunities for data centres deployment in new regions such as Norway, Sweden and Southern Europe

Infrastructure	Market & Economics	Environment & Climate	Regulatory & Society
Grid Readiness	Energy Cost	Cooling Conditions	Permitting
Connectivity	Tax & Incentives	Sustainability	Data Sovereignty
Land Availability	Customer Proximity	Natural Hazards	Workforce

Historically

- Proximity to clients and communication hubs
- Connectivity and customer access
- Power and land were manageable constraints

Today & Tomorrow

- Cloud scale
- AI demand at GW-scale
- Infrastructure constraints are key especially access to power

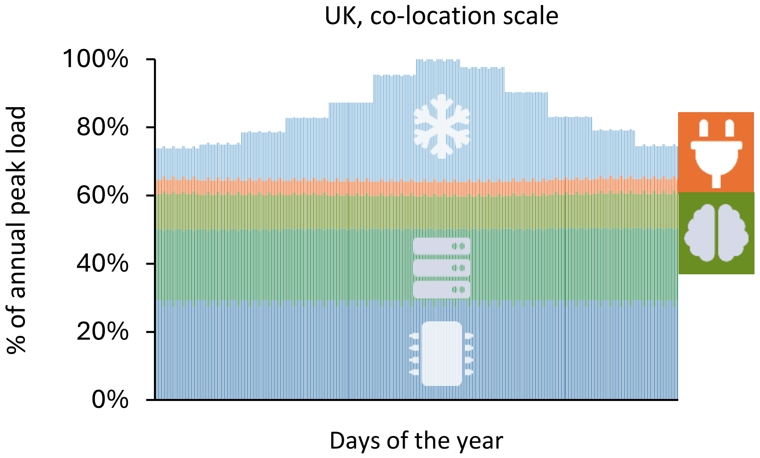
Data centres load categories

Data centres **electricity consumption** is **driven** by **three categories of load** with distinct characteristics

Cooling Load – Substantial, seasonal

Non-IT Load – Small, stable

IT Load – Dominant, variable



N.B. load profiles show variation with load type, seasons and geographical location

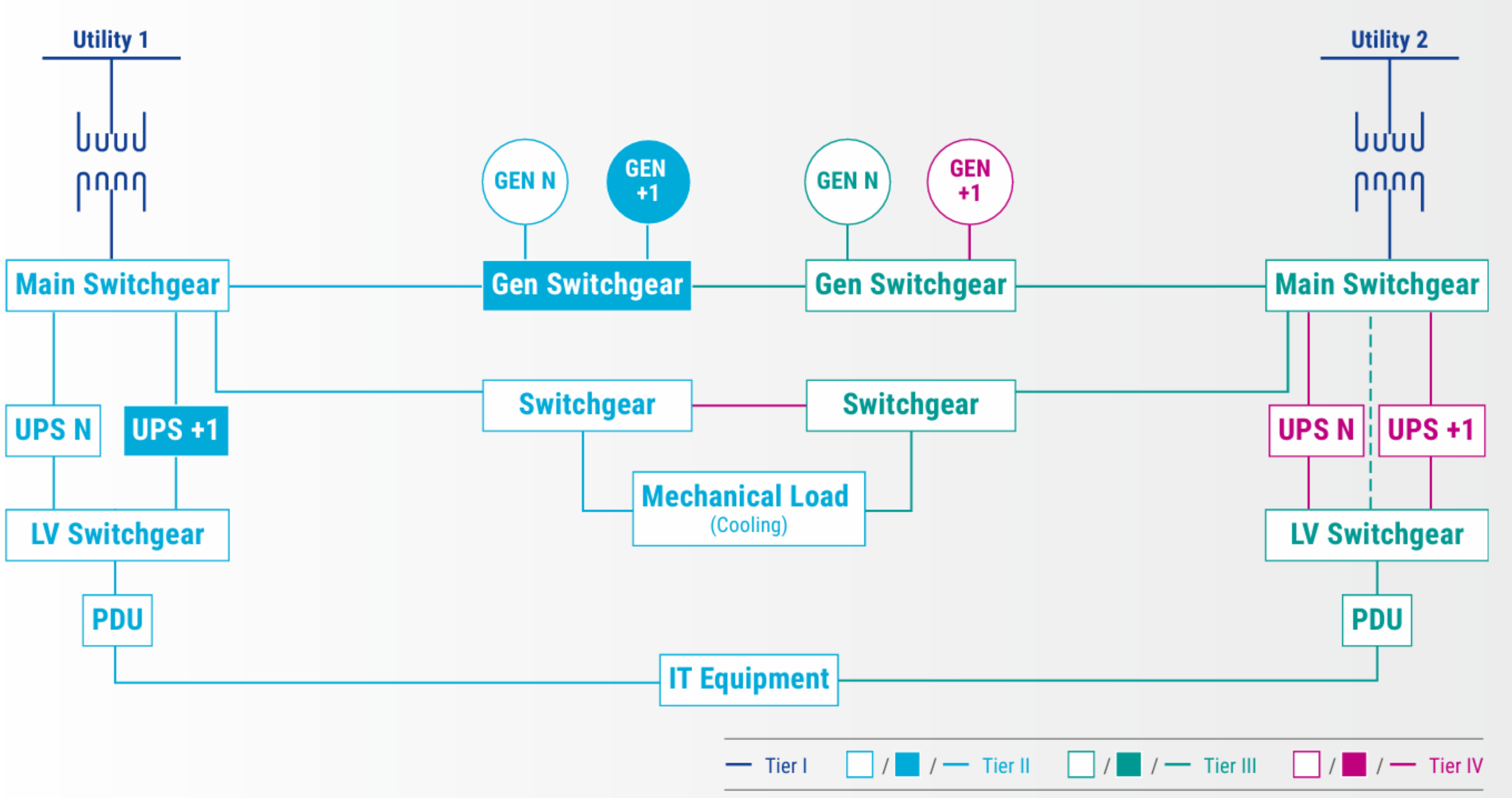
IT Workload Types

- **AI Model Training** – Location-shifting, high flexibility potential
- **Batch Processing & Analytics** – Scheduled, Time-shifting
- **Backup & Disaster Recovery** – Volatile, medium flexibility
- **AI Inference** – Diurnal, latency-sensitive, dominant by 2030
- **Web Services, SaaS & CDN** – Traffic-driven, latency-sensitive, low flexibility
- **Transactional & Real-Time** – Steady, 5σ uptime, lowest flexibility

Data centres power architecture - different from traditional loads

The **topology** and **components** of a data centre **shape** its **operational constraints** and thus its **flexibility potential**

UPS and Automatic Transfer Switch (ATS) are present across all tiers, their design and control logic define data centres behaviour during grid events



IT Load (behind UPS)

Software-driven, multi-MW swings in milliseconds. UPS prioritises IT over grid and disconnects instantly during disturbances

Cooling Load (thermal inertia)

30%+ of total consumption. Thermal buffer allows brief interruptions and can be a potential source of flexibility

Tier System (I-II-III-IV)

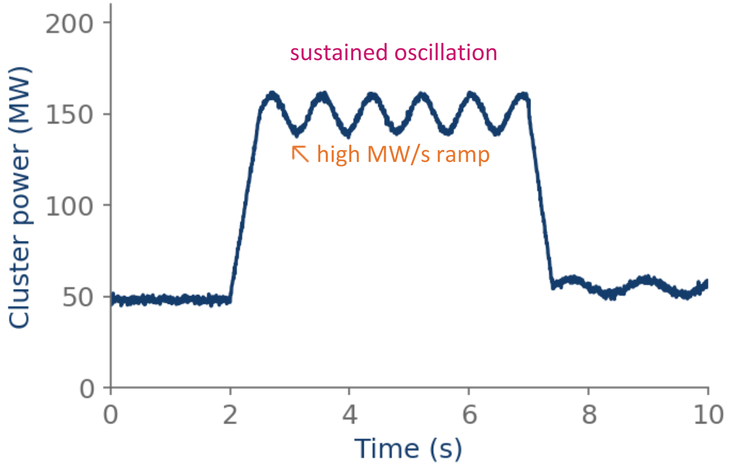
Higher tiers = more redundant paths, UPS, and generators. Large grid-connected data centres typically Tier III–IV with 2N backup. **More redundancy indicates** a **higher potential for advanced features in grid interaction**

A new normal-operation risk: AI loads produce sudden and irregular large load variations

Software-driven load swings are forcing **short term oscillations** and **stress the grid** even without contingencies

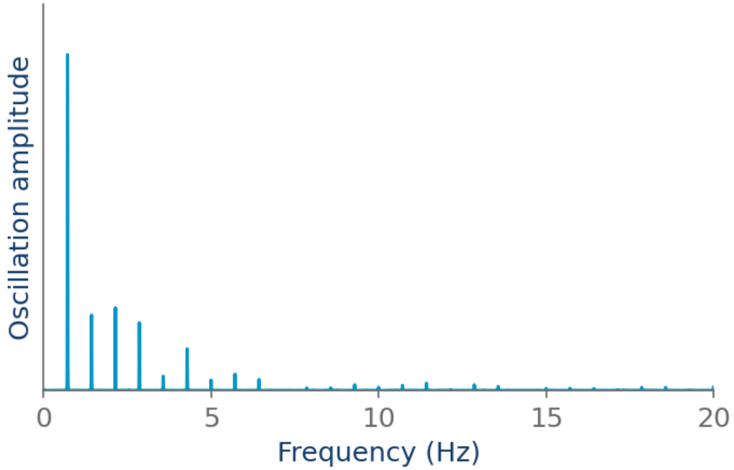
Data centres behaviour during normal operation can present risks and cause incidents, especially relevant for large AI data centres

Time domain: abrupt, high-MW/s ramps



- Large facilities swing many MW within milliseconds
- Steep ramp-up/down stresses frequency & voltage control
- Grows with site size and synchronised workloads

Frequency domain: sustained oscillations



- AI training swings power up/down in steady rhythm
- Such rhythm appears as peaks at certain frequencies
- A matching peak can force a nearby generator to oscillate and damage it over time

Illustrative schematics

Risks during grid disturbances: amplifying rather than absorbing

UPS behaviour turns data centres into **instant load-loss events during faults**

Multiple incidents demonstrate load losses of hundreds of MWs to over 1 GW following ordinary transmission faults

Fault Ride-Through (FRT) behaviour

- **PE UPS* disconnects at first voltage dip**, removing entire IT load instantly
- In double-conversion mode, constant-power draw first worsens the dip before disconnecting
- DRUPS* more sensitive to frequency changes, may disconnect even earlier
- **No dedicated FRT requirements exist today for large loads**

Reconnection behaviour

- After fault clearance, practices are not standardised
- Instant reconnection → **sudden demand shock**
- Prolonged backup (50s+) → **unexpected imbalance**
- Both extremes create grid-relevant events
- **No harmonised framework for reconnection timing** or **ramp rate**

* PE UPS = Power Electronics * DRUPS = Diesel Rotary Uninterruptible Power Supply

Connection requirements as a response

Updating Grid Codes to address data centres behaviour and specific characteristics

ENTSO-E Position Paper on Connection Requirements* recommends codifying some of these measures, marking the transition of data centres from potential risks to a guaranteed grid-safe participants

Ramp Rate Control

- Limit the speed of load changes to prevent outpacing frequency and voltage control systems
- UPS storage and hardware adaptation as solutions

Oscillation Damping

- Ensure power electronics are tuned to suppress rather than excite natural grid frequencies
- Addresses the forced oscillation risk

Fault Ride-Through (FRT) & Reconnection

- Require data centres to remain connected during voltage dips, preventing cascading load losses during grid faults
- Reconnections standards

RoCoF Withstand

- Internal UPS and protection logic must tolerate rapid frequency changes without tripping

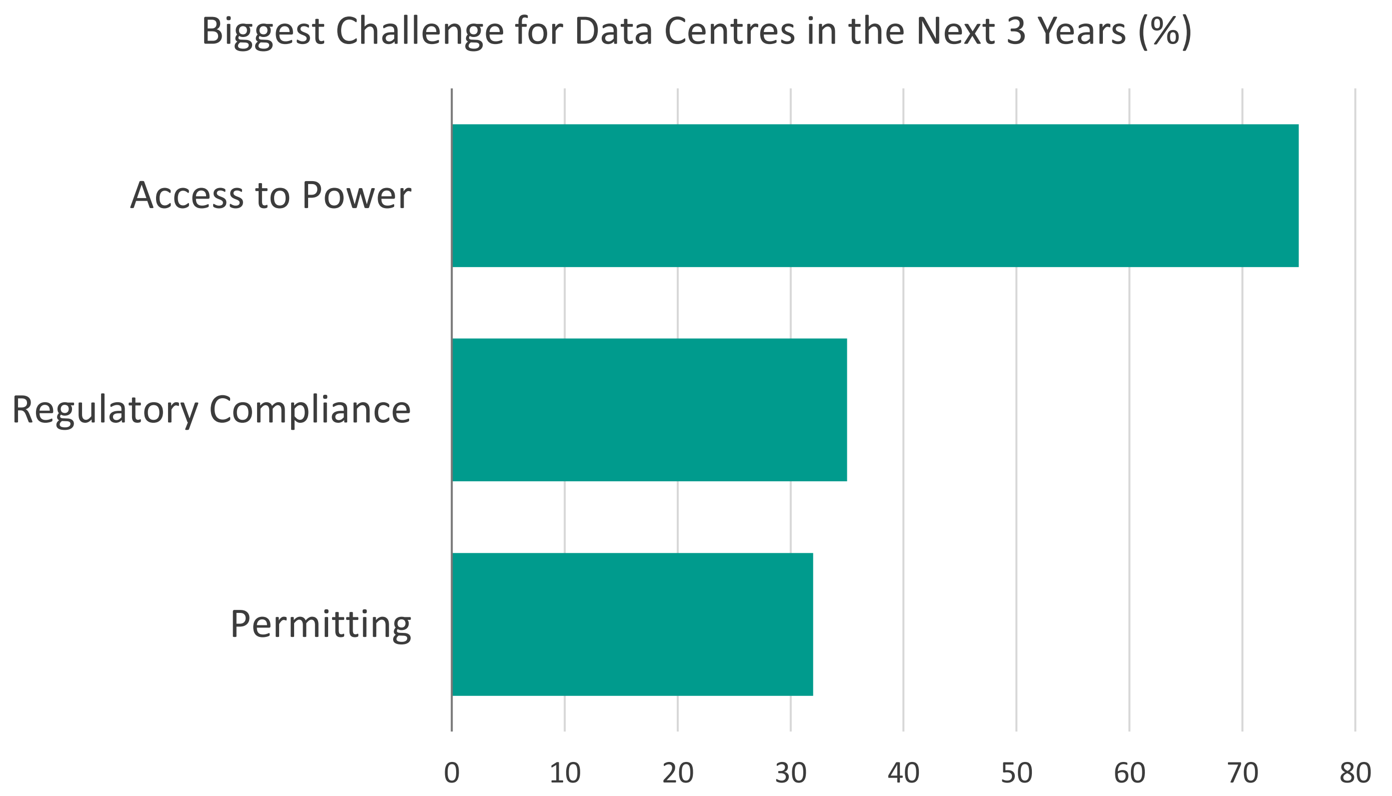
Voltage/Reactive Power Support

- Active voltage regulation at connection point to prevent localised voltage issues

* ENTSO-E position on the need for national connection requirements to ensure EU power system stability

Several challenges for grid planning, but foremost is access to power and to grid

Connection lead times range from a few years to over a decade in constrained regions



System adequacy - Generation

Generation capacity must meet peak demand + reserves + new emerging loads while meeting decarbonisation targets

System adequacy - Grids

Reinforcement take years - much longer than data centres deployment

Three approaches for access to power

Transparency on hosting capacity

TSOs provide **clear**, forward-looking **information on where grid capacity is available** to steer site selection

Efficient & fair grid capacity utilisation

Move from “first-come first-served” to **structured allocation** that **rewards credible**, **ready projects**

Flexible connection agreements

Reduced firm allocation + **conditional capacity** enables 3–5 years faster access with >99% availability

Efficiency and fairness in connection requests management

A comprehensive queue management can unlock grid access by avoiding speculative requests

Financial Guarantees & Deposits

Deter opportunistic queue occupation

Project Maturity Milestones

Proof of land rights, permitting status, technical design and financing

Withdrawal Penalties

Discourage strategic queue holding and encourage earlier decision-making

Capacity Release Mechanisms

Allow network operators to advance ready projects

Flexibility & System-Value Criteria

Prioritise projects supporting system or decarbonisation goals

An effective framework may draw on a different combination of these tools to best suit the specific national or regional context, balancing their respective advantages and trade-offs

Flexible connection agreements: from static limitations to Bring Your Own Generation

Flexible connection agreements help resolve grid planning challenges, but their implementation differs on multiple aspects especially on lead time and controllability

Lead time

Static Capacity Limitation

- Consumption capped during predefined time windows (e.g. seasonal peak hours)
- Simple to implement
- May not reflect actual real-time grid needs

Dynamic Capacity Limitation

- Limits triggered only when grid or generation constraints arise
- Better alignment with real system conditions
- Requires coordination and control capabilities from both parties

Bring Your Own Generation

- Data centre provides on-site dispatchable generation and/or storage
- Potential participation in markets
- Highest system benefit but also highest investment and operational complexity

Level of controllability

More sophisticated solutions unlock greater controllability and system benefit but come with higher costs and complexity

The right choice depends on **local conditions**

Flexibility sources within data centres

Three categories of assets: IT domain, cooling infrastructure, on-site generation + storage

IT Load Side	Cooling Side	Generation side
IT Load	**Cooling Load**	**Diesel (Backup) Generator**
	Thermal Storage	**Gas Turbine, Fuel Cell**
		Additional Renewables

(Additional) UPS and BESS*

*BESS = Battery Energy Storage System

IT workload type determines flexibility potential

IT **workload types** are **diverse** and determine load profiles, predictability and controllability characteristics

Workload Type	Latency Sensitivity	Time-Shift Potential	Geo-Shift Potential	Overall Flexibility Potential
AI / ML Training	Low	High	High	High
Batch / Data Processing	Low	High	Medium–High	Medium–High
Backup / Disaster Recovery	Low (until failover)	High	Low	Medium
AI Inference	Medium–High	Low–Medium	Medium	Medium-Low
Web / SaaS / Content Delivery	Medium–High	Low	Medium–High	Low
Transactional / Real-Time	Very High	Very Low	Very Low	Very Low

Flexibility needs matched by flexibility sources within data centres

Sources have **different** availability and operational **characteristics** which shape the **suitability to different market products**

Flexibility Provider	Inertia / Fast Frequency Response	FCR / Primary Reserve	aFRR / Secondary Reserve	mFRR / Minute Reserve	Energy Market (Day-ahead / Intraday)
Activation time	**< 1 s**	**< 30 s**	**30 s – 5 min**	**5 – 12.5 min**	**15 min – hours**
IT UPS Battery	Suitable	Suitable	Possible	Limited	Not suitable
IT Load Shift	–	Not suitable	Possible	Possible	Possible
Cooling UPS Battery	Suitable	Suitable	Possible	Limited	Not suitable
Cooling Load Shift	–	Suitable	Possible	Marginal	Limited
Thermal Storage	–	Limited	Limited	Suitable	Suitable

Suitability of data centres flexibility must also be assessed against other flexibility providers on performance and costs to estimate actual market impact

From grid-safe to grid-supporting to grid resource

A **natural progression** driven by both regulatory requirements and operator needs

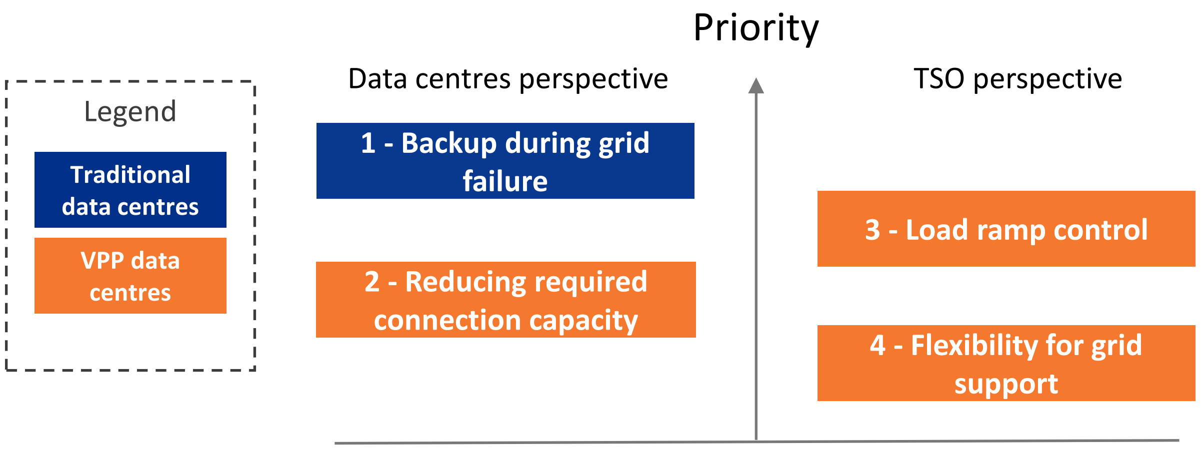
Grid-safe operation is the **non-negotiable baseline**, once its control architecture is in place, it serves as foundation for grid support and market participation

1 Grid safe	2 Grid supporting	3 Grid resource (VPP*)
Mandatory baseline ensuring data centres do not destabilise the grid by coordinating assets already on-site	Extends flexibility by adding dedicated battery modules to the existing UPS leveraging existing infrastructure	Coordinates load, storage, dispatchable generation, and associated renewables maximising value for operator and grid

*VPP = Virtual Power Plant

Drivers for transforming a data centre into a Virtual Power Plant

Flexibility is unlocked only after operators’ core reliability needs are secured

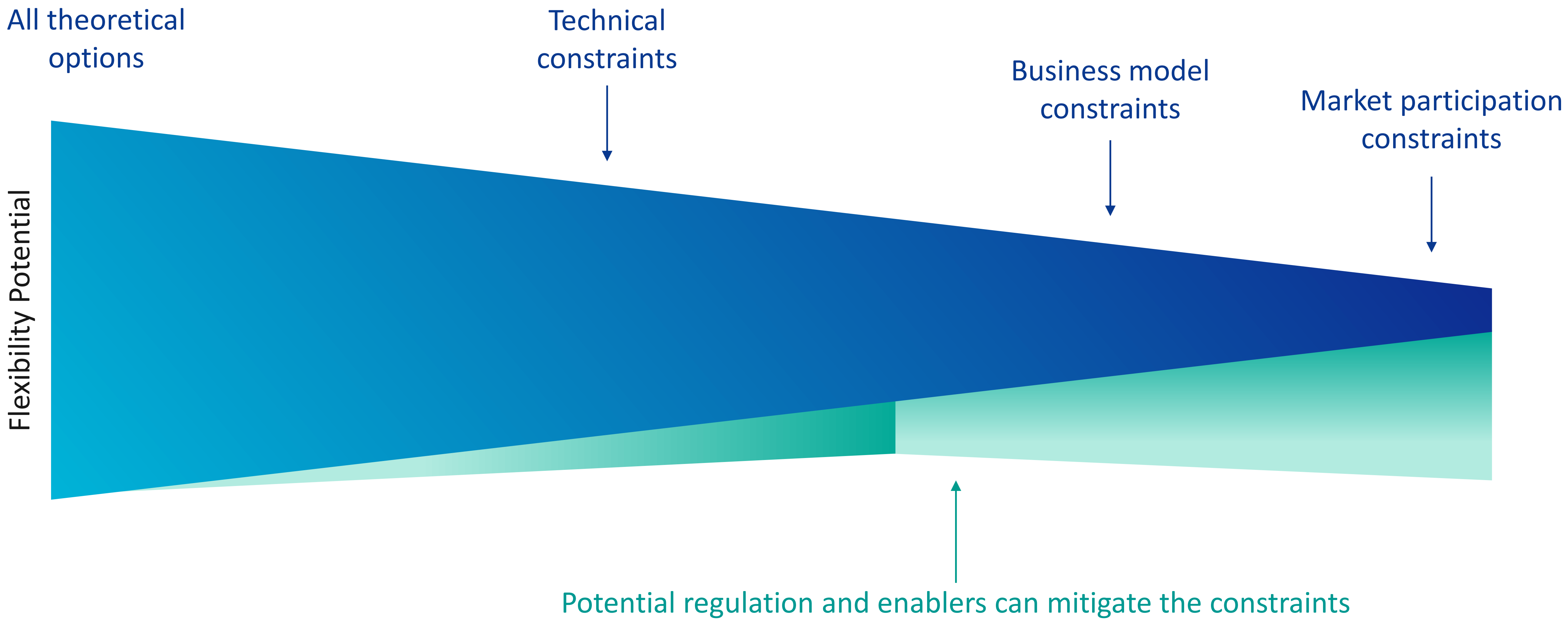


With proper incentives, **TSO needs can be internalised also in data centres perspective**

Fulfilled Data Center Priorities	Generation Type
1, 4	Diesel Generator
1, 2, 3, 4	Gas Turbine, Fuel Cells
2, 3, 4	Renewables with BESS
4	Only Renewables

Only technologies that satisfy the highest operator priorities (backup + connection reduction) **can support a full VPP implementation**

Multiple factors are constraining the final data centres flexibility options



Key messages

Operations

- Ownership and business model is essential to determine impact, potential and behaviour
- Software-driven load dynamics, instant disconnection and reconnection behaviour, invisibility to conventional monitoring **challenge existing operations**
- **Updated connection requirements** are essential and, where possible, to be coordinated across EU

Planning

- Foremost concerns for data centres planning is access to power and to grid
- **Transparent hosting capacity**, **reformed connection procedures**, and **flexible connection agreements** can reduce the time-to-power gap without compromising system security
- Alternative are moratoria or mandatory generation on site

Flexibility opportunities

- Load profiles are weather-, geography-, and business-driven, leaving marginal UPS and generation spare capacity; some loads can be shifted across time and sites.
- The **same control capabilities** needed **for grid-safe operation form the foundation for active grid support** and **market participation**
- **Data centres can transition from passive consumers to VPP-enabled resources contributing to flexibility, resilience, decarbonisation**

Q&A via the **Q&A** in **Teams**

European Data Centre Association on the State of European Data Centres 2026

Chad McCarthy (Technical Committee Chair, European Data Centre Association)

23rd June 2026

European Data Centre Association

State of European Data Centres 2026 Report

Presented by **Chad McCarthy**
Chair of the Technical Committee, EUDCA

Square de Meeus 38/40, 1000 Brussels, Belgium
www.eudca.org

23rd June 2026

European Data Centre Association

2025-2026: Europe's Data Centre Market at an inflection Point

Growth	Cloud-led expansion	→	**AI-driven acceleration**
Investment	€100bn outlook	→	**€176bn AI-scale capital cycle**
Sustainability	Leadership commitments	→	**Measurable regulated performance**
Location	FLAP-D centric	→	**Energy-led regional diversification**

State of European Data Centres 2026 Report – Overview

The European data centre industry is entering a new phase of unprecedented expansion, technological transformation and strategic relevance. Driven by:

- Accelerating digitalisation
- The rapid adoption of artificial intelligence (AI)
- A growing need for resilient and sovereign digital infrastructure, including dark fibre

The sector is expanding at record speed across multiple regions in Europe.

- FLAP-D (Frankfurt, London, Amsterdam, Paris, Dublin) markets remain essential to Europe's digital core
- However, growth is now increasingly distributed across Southern Europe, the Nordics, Central and Eastern Europe and a rising group of Tier-2 metropolitan regions.

23rd June 2026

European Data Centre Association

€26bn

Annual scale colocation investment, driven to new highs by AI infrastructure

>2/3

Of IT power is now delivered by commercial colocation and hyperscale facilities

Colocation data centres continue to grow rapidly, fuelled by:

- the ongoing migration to hybrid cloud, and
- the surge in AI-related workloads requires high-density, highly scalable infrastructure.

Scale colocation campuses are now the primary driver of new capacity additions.

- Investments are reaching new highs, with €176 billion in cumulative investments expected in Europe between 2026 and 2031.

Growth has shifted from strong, cloud-led expansion to AI-driven hyper-expansion

- With higher power intensity and faster scaling requirements.
- This acceleration is reinforced by strong demand from hyperscale providers launching new cloud regions, expanding sovereign cloud zones, and deploying AI-dedicated facilities.
- Investment has moved from capacity expansion to capital-intensive, AI-optimised infrastructure at industrial scale, with significantly higher spend per site.

The continued challenge of access to power is holding back a lot of investment - total data centre power will not be able to triple as required, according to the EU.

State of European Data Centres 2026 Report – Rapid Growth

23rd June 2026

European Data Centre Association

Growth, Size, Market

Growth Markets: Spain, Italy, and Portugal

Are surging due to new subsea cables

AI Hubs: The Nordics

Have entered a new phase of hyperscale and AI-training campus development

State of European Data Centres 2026 Report – Hyperscale on the march

Hyperscale-owned data centres also continue their expansion across Europe.

- Beyond traditional hubs into regions with abundant renewable energy, favourable climates, and strong international connectivity.
- The Nordics, Southern Europe and parts of Central and Eastern Europe are rapidly becoming integral components of Europe's hyperscale footprint.
- Operators are adapting facility designs to support extreme rack densities, liquid cooling, advanced electrical architectures, and new forms of energy integration.

The market has shifted generally from hub-centric expansion to a distributed, energy-driven location strategy, fundamentally altering Europe's data centre geography.

23rd June 2026

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90%
Of energy consumed by European data centres is now from renewable sources

70%
Of operators report compliance with 75% renewable or hourly carbon-free energy

55%
Have already achieved 2030 Water Usage Effectiveness (WUE) goals

Energy efficiency is holding firm even as usage rises. The sector is embracing circular economies and innovation in heat reuse

State of European Data Centres 2026 Report – Sustainability

Sustainability remains at the core of sector development

- The **sector has moved from sustainability commitment to measurable delivery and regulatory integration**, even as absolute energy use continued to rise sharply.
- The **implementation of the new Energy Efficiency Directive (EED) marks a major shift toward harmonised reporting and transparency across Europe**.
- The sector continues to be **a leader in renewable energy procurement**, including a growing share of enhanced high-impact Power Purchase Agreements (PPAs) while investing in advanced cooling technologies, energy-system flexibility, and heat-reuse initiatives.
- **Operators face rising environmental expectations and a growing need to integrate their facilities more deeply into national energy and heat systems.**

Conclusion – a call for coordinated action

- **Grid constraint:** Power availability is now the single most important inhibitor to growth. Total data centre power will not be able to triple as required by the European Union due to access-to-power challenges holding back investments.

- **Coordinated action**: Overcoming grid congestion, long lead times for connections and complex permitting procedures require coordinated action between grid operators, policymakers, and the data centre industry.

- **Moving to execution**: Leveraging the newly signed Declaration of Intent for the Sustainable Integration of Data Centres into the EU Energy System – a collaboration to establish standardised, operational frameworks for improved planning, forecast and connection agreements, flexibility, energy generation and storage.

Thank You

European Data Centre Association

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Panel discussion on Data Centres and the Power System

Chad McCarthy
European Data Centre Association

Rina Bohle Zeller
Agora Energiewende

Saif Aldahmor
EirGrid

Stavros Stamatoukos
European Commission

Antonio Iliceto
ENTSO-E

Closing remarks

Elena Fjørtoft (Convenor of the RDIC Working Group Future of Energy Systems, ENTSO-E)

Thank you for your attention

E-mail us in case of extra questions: rdi@entsoe.eu

EXCELLENCE

We deliver to the highest standardss. We provide an environment in which people can develop to their full potential.

TRUST

We trust each other, we are transparent and we empower people. We respect diversity.

INTEGRITY

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We care about people. We work transversal and we support each other. We celebrate success.

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We are a learning organisation. We explore new paths and solutions.

We are ENTSO-E