Position paper

Brussels, XX February 2026

Data Centres & Digitalisation: The role of CHP

Artificial intelligence (AI) and digitalisation, while not without challenges, offer a major opportunity to make Europe's energy systems smarter, more flexible, and more resilient. To ensure that data centres and digital technologies contribute positively to the energy transition, it is essential to scale up renewable energy and energy-efficient solutions such as cogeneration. These will be crucial to meeting rising electricity demand and managing the additional pressure that digitalisation places on Europe's energy infrastructure.

Data centres play a pivotal role in EU's competitive, green and digital transition: as critical infrastructure with rapidly growing energy demands, their sustainable operation is central to current debates. At the same time, data centres provide a unique platform to advance efficient and renewable technologies, such as combined heat and power (CHP), as part of increasingly integrated energy systems.

COGEN Europe welcomes the European Commission's initiative to work on a Strategic Roadmap for Digitalisation and AI in the Energy Sector, including an Energy efficiency rating scheme for data centres, and sees this as an important opportunity to further develop the potential of CHP for energy efficiency, security of supply and climate protection through digital solutions.

The EU's energy and climate framework, including the recently adopted Fit for 55 package and the Clean Industrial deal initiatives, encourage the widespread adoption of energy efficient and renewable energy solutions. Extending clean energy provisions to data centres applications will be critical in ensuring energy, climate and competitiveness objectives are met. Furthermore, integrating digitalisation principles within energy policy will benefit the energy sector in areas pertaining to interoperability, energy-related data and cybersecurity.

To ensure the consistent application of the EU "Energy Efficiency First" principle across the planning, energy supply, and operation of data centres, we must recognise high-efficiency combined heat and power (CHP) as a preferred solution for the joint provision of electricity, heat, and cooling. Therefore, COGEN Europe calls for:

- ✓ **Facilitate the deployment of CHP in data centres,** by recognising high efficiency cogeneration as a key solution in the upcoming energy efficiency rating scheme for data centres – in line with Article 26 in the Energy Efficiency Directive.

- ✓ **Support CHP production for data centres in combination with low carbon and renewable fuels, including biogas, biomethane, hydrogen, waste heat and nuclear sources**, to diversify clean energy sources available to these applications and ensure their efficient and local use.

- ✓ **Prioritise grid connection for data centres with on-site energy projects that relieve strain on electricity grids,** including demand response, self-production of electricity during peak demand periods, high efficiency cogeneration and/or renewables (in line with the Article 27, Annex XIII and Annex XIV of the Energy Efficiency Directive_.

- ✓ **Mainstream waste heat recovery from data centres,** supporting the re-use of waste heat on-site for heat, cooling and power production or for supply to district heating.

- ✓ **Leverage digitalisation to improve energy efficiency and flexibility,** promote the deployment of smart energy management systems, predictive maintenance tools, digital twins, and interoperable data standards to optimise electricity, heat, and cooling flows in real time and support demand-responsive operation.

- ✓ **Ensure cross-sector digital integration, s**upport cross-sector and cross-energy vectors data platforms and intelligent control systems to increase overall system efficiency and flexibility.

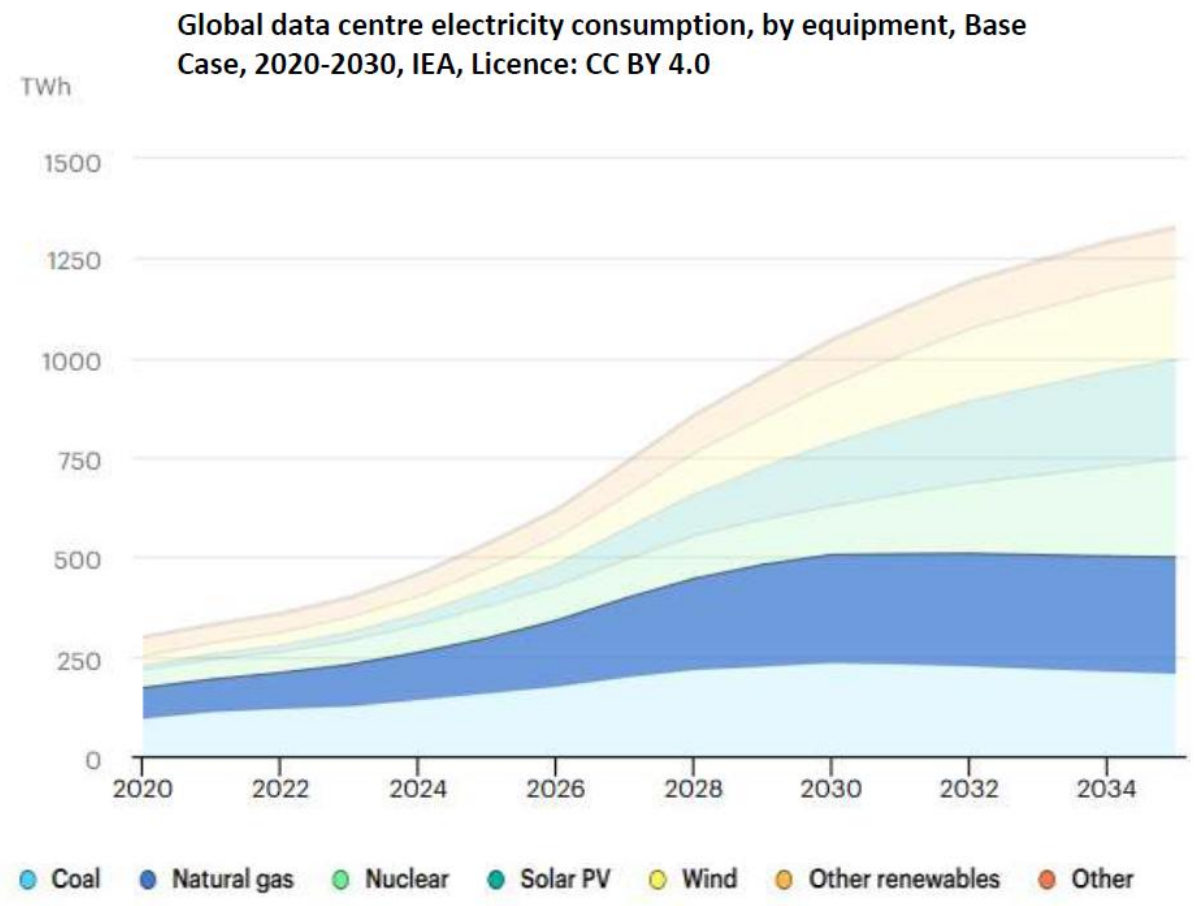
- ✓ **Strengthen standardisation, transparency, and cyber resilience,** develop harmonised technical standards, certification schemes, and cyber-resilience requirements for digital energy systems.

- ✓ **Harmonise monitoring and reporting frameworks**, ensure EU-wide, standardised reporting of key data centre performance indicators, including PUE, CUE, WUE, and ERF, in line with the Energy Efficiency Directive and Delegated Regulation (EU) 2024/1364.

- ✓ **Strengthen EU-level coordination and implementation,** establish targeted financial instruments to support CHP deployment in data centres, launch pilot projects for waste heat recovery and integrated energy systems, facilitate structured coordination between energy and digital stakeholders at EU level, and issue best-practice guidance to support implementation by Member States.

Cogeneration as an enabling energy efficiency solution for data centres

According to the IEA the global electricity generation to supply data centres is projected to grow from 460 TWh in 2024 to over 1 000 TWh in 2030 and 1 300 TWh in 2035. Complementing significant growth of solar PV and wind, thermal energy sources such as gaseous fuels and nuclear will account for more than 50% of demand.



Against this backdrop, the EU can take the lead on increasing the sustainability of energy supply for data centres, while maintaining security of supply and ensuring competitiveness. This can be achieved through a set of complementary measures, which include the cost-effective use of cogeneration solutions:

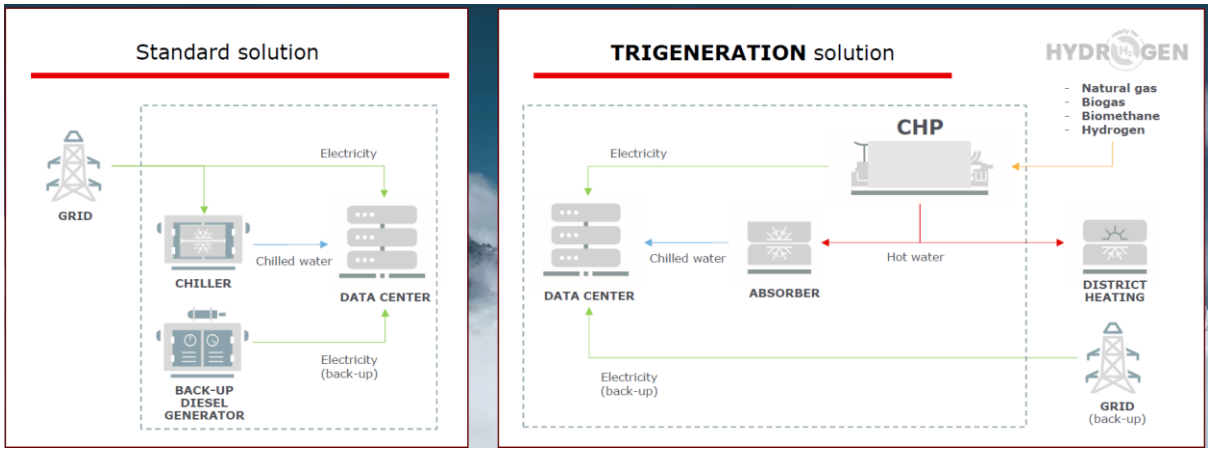
- **Boost all renewables and low carbon fuels:** Support the uptake of a range of low carbon and renewable energy sources. Priority can be given to PV and wind. But given the intermittency of the sources, thermal renewable fuels and nuclear sources can also enhance resiliency for data centres, given their need to operate continuously.

- **Maximise energy efficiency:** At times of insufficient renewable energy, priority should be given to the efficient use of conventional fuel via cogeneration for the production

of electricity, heating and cooling . High efficiency cogeneration solutions are available to displace less efficient and more polluting alternatives, such as grid electricity, on-site diesel generators and stand alone gas boiler.

- **Foster highly efficient hybrids/Partial electrification:** Promote the mix of technologies on-site, which can both increase resiliency for the data centre and reduce strain on the power grids. For instance, the combination of CHP, eBoiler/heat pump and DHC connection, complemented by storage and controls, will maximise security of supply while ensuring sustainability. This is because the electrified solution can absorb renewable power from the grid, when abundant. Meanwhile, the CHP component can run at times of insufficient renewable power and/or peak demand on the grid, producing electricity on-site, reducing strain on the grid and lowering the need to expand costly grid connections.

Integrating CHP systems into data centre infrastructure is a central pillar for decarbonising and strengthening the resilience of the digital economy. Combined with the analytical and control capabilities of AI, this approach enables the creation of highly efficient, sustainable energy systems. Future CHP solutions based on green gases, such as biomethane and hydrogen, will further reinforce these synergies, positioning data centres and AI applications as pioneers in the EU's energy transition.



An ambitious EU policy framework is needed to fully recognise and promote the benefits of cogeneration in data centres[1], as outlined below.

Advantage	Key Insights	Impact
Highest Energy Efficiency	CHP/CCHP systems achieve 70–85% total fuel utilisation, far exceeding grid-only electricity and electric chillers [i]	Reduces energy use and CO_2 intensity, directly supporting EU climate and energy-efficiency objectives.
Optimised Cooling	CHP-driven absorption chillers replace energy-intensive electric chillers, converting waste heat into cooling.	Addresses 35–50% of data-centre energy demand; maximises efficiency in AI workloads.
Alleviates Grid Congestion & Reduces Need for Grid Expansion	Provides firm on-site capacity where grid reinforcement may take 24–60 months.	Avoids over-investment in centralised peak generation; supports decentralised energy planning; enables partial electrification and mitigates grid connection expenses.
Enhances Resilience	CHPs can operate in N+1 or 2N redundancy, reducing reliance on diesel backup.	Ensures reliable energy supply for critical AI infrastructure without increasing emissions.
Rapid Load Response	CHP systems can follow multi-megawatt AI load swings (>100% per minute) while maintaining thermal stability.	Meets fast-ramping requirements of AI workloads; reduces dependence on inefficient spinning reserves.
Waste-Heat Valorisation	Converts otherwise wasted heat into electricity, cooling, or heating.	Aligns with EU Energy Efficiency Directive (EED) objectives for cost-effective use of waste heat.
Cost-Effective Local Generation	Reduces peak electricity imports and dependence on the grid.	Lowers operational costs and accelerates deployment of digital infrastructure in line with EU digitalisation priorities.
Flexible and efficient planning, operation and maintenance	Artificial intelligence (AI) plays a crucial role in optimally managing the integrated system of CHP units and data centres, further enhancing operational synergies. AI algorithms continuously analyse the operating data of CHP units, enabling condition-based predictive maintenance that prevents breakdowns, extends system lifespan, and reduces maintenance costs	By evaluating electricity prices, renewable energy availability in the grid, and heat demand, AI can determine the ideal operating schedule for CHP units, allowing electricity to be used or fed into the grid when it delivers the greatest economic or environmental benefit.

[1] Insights provided by the COGEN World Coalition Report, *"CHP – A key Enabling Technology for ensuring Data Centre Development Is Efficient, Cost- Effective and Resilient"*

About COGEN Europe

COGEN Europe, the European Association for the Promotion of Cogeneration, is the cross-sectoral voice of the cogeneration industry. We have over 60 members: 13 national associations and 50 organisations spanning the entire value chain from technology manufacturers and users to consultancies. The cogeneration sector is committed to the creation of a resilient, decentralised and carbon neutral European energy system by 2050 with cogeneration as its backbone, empowering European citizens and industry to generate their own efficient, reliable and affordable clean heat and power locally.

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Contact information

Kyara De Barros (kyara.barros@cogeneurope.eu)

Alexandra Tudoroiu-Lakavičė (alexandra.tudoroiu@cogeneurope.eu)