



ACT

DECARBONIZING DATA CENTERS IN EMEA

What's Driving Action & Where
to Start – Key Trends Shaping
the Future of Sustainable
Digital Infrastructure

ACT ON IT.

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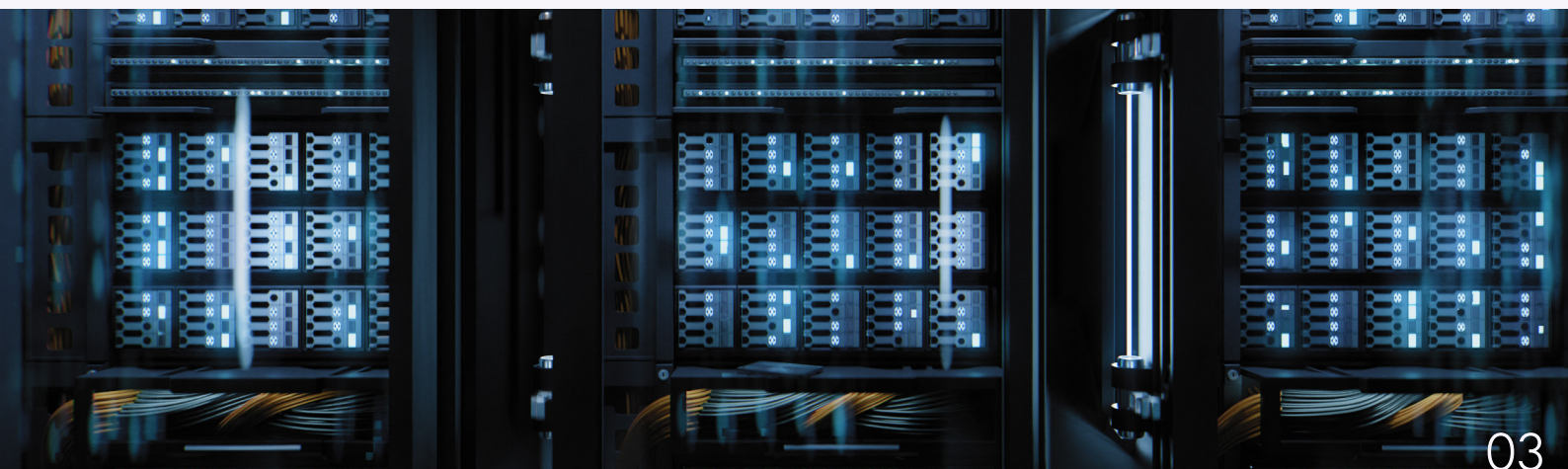
The Power Behind Europe's Digital Growth – and Its Carbon Cost

The digital economy is scaling fast. Cloud, AI, and connectivity demand are fueling double-digit growth in data-center capacity. For operators, the question is no longer if to decarbonize, but how fast. In response, the data center market is expanding rapidly, with continued investment in both established and emerging markets.

EU data center electricity consumption is projected to rise from approximately 70 TWh in 2024 to between 98.5 and 115 TWh by 2030 – equivalent to roughly 3.2% of EU final electricity demand.¹ This growth trajectory underscores the sector's expanding footprint and the corresponding need for sustainable energy strategies.

Key data center hubs such as Frankfurt, London, Amsterdam, Paris, and Dublin remain at the center of ongoing activity, even with ongoing challenges like land scarcity and power constraints. Meanwhile, emerging markets – including Madrid, Milan, Warsaw, and Stockholm – are experiencing a sharp increase in development.

The rapid expansion of the data center industry is driving a corresponding rise in carbon emissions – particularly from electricity use – prompting growing concern to operators, regulators, customers, and other stakeholders. To address this, operators are adopting decarbonization strategies that include switching to renewable energy and compensating for emissions through carbon credits, or taking energy efficiency measures. These approaches are increasingly important not only for reducing emissions, but also for maintaining operational resilience and meeting evolving regulatory and market expectations.



New Policies Are Raising the Bar for Energy Performance

Across EMEA, regulation is tightening around energy use, efficiency, and transparency. From the formal recognition and mandated use of Energy Attribute Certificates (EACs), to reforms in power market liberalization and green power trading schemes, these shifts show governments are moving from targets to enforcement. Understanding these frameworks early helps operators design investments that stay compliant and bankable through 2030.

POLICY LANDSCAPE: SUPPORTING THE TRANSITION TO RENEWABLE ENERGY IN EMEA

The table below highlights the policies most likely to affect site development, procurement, and reporting decisions over the next five years

COUNTRY	POLICY
EU-wide	Energy Efficiency Directive (EED) - Requires large data centers (≥500 kW) to report energy and environmental performance and encourages heat reuse and efficiency measures - First regulation that legally defines and monitors data center sustainability at EU level Corporate Sustainability Reporting Directive (CSRD) - Mandates detailed ESG reporting, including carbon emissions and environmental impact, for large companies starting in 2024 EU Taxonomy for Sustainable Activities - Defines technical screening criteria for sustainable economic activities. - For data centers, criteria include thresholds for Power Usage Effectiveness (PUE), renewable energy use, and efficient cooling to qualify as “green” investments. Digital Decade Policy Targets (2030) - Sets a target for all data centers in the EU to be climate-neutral by 2030 as part of broader digital infrastructure goals Minimum Performance Standards (Proposed)² - Existing sites: operational PUE < 1.5 by 2030 - New sites (from 2027): design-PUE < 1.3 with operational PUE < 1.4 within three years of commissioning - Water Usage Effectiveness (WUE) < 0.4 m³/MWh (Category 2, “net water input”) by 2030³ Climate Neutral Data Center Pact (Voluntary)⁴ - PUE targets of 1.3–1.4 (climate-zone dependent) - WUE ≤ 0.4 m³/MWh 100% renewable energy factor (REF) by 2030
Germany	Energy Efficiency Act (Energieeffizienzgesetz, BGBl. 2023 I Nr. 309)⁵ - Existing data centers (commissioned before July 2026): PUE ≤ 1.5 from July 2027; PUE ≤ 1.3 from July 2030 - New data centers (post-July 2026): PUE ≤ 1.2 within two years of commissioning - Staged Energy Reuse Factor (ERF) thresholds: 10% from mid-2026, 15% from mid-2027, 20% from mid-2028 - Renewable electricity targets: 50% by 2024, 100% by 2027
Netherlands	Provincial Regulations (Noord-Holland Initiative)⁶ Design-PUE of 1.16 required for large data centers (> 5 MW)
Ireland	Grid connection limits - Temporary restrictions on new data center grid connections in high-demand regions (e.g., Dublin) due to capacity constraints. - Focus on energy efficiency and on-site generation for new applicants.
UK	Climate Change Agreements (CCA) - Tax incentives for meeting energy efficiency and carbon reduction targets. - Forms part of the UK’s broader net zero and energy efficiency policy framework.



Your Options for Reliable, Renewable Power

Renewable procurement in Europe is fragmented but not impossible.

The right mix of instruments can balance cost, compliance, and credibility across markets. Data centers in Europe have several pathways to source renewable electricity:



Energy Attribute Certificates (EACs)

- Tracking instrument that matches electricity use to renewable energy supply
- Each EAC represents 1 MWh of renewable energy
- Fast, flexible market entry



Power Purchase Agreements (PPAs)

- Long-term electricity contract typically signed between the buyer and a power producer
- Can be further divided into physical and virtual PPAs⁷
- Long-term price certainty and proof of origin



Green tariffs

- Mechanism to procure electricity from renewable sources by paying a premium on top of the existing electricity rate



On-site installations

- Installation of solar panels on the user's facilities, typically on the rooftop
- Resilient, and shows visible commitment

For data center operators in Europe, a clear view of local rules and market conditions for renewable power is the basis for any decarbonization plan. Market maturity and regulatory conditions vary significantly across the region, shaping both the availability and feasibility of different renewable energy procurement options.

Among these, unbundled Energy Attribute Certificates (EACs) – such as Guarantees of Origin (GoOs) – remain the most widely accessible and commonly used mechanism, especially in markets where more advanced solutions, such as PPAs or green tariffs, are still under development or face structural limitations. In 2023, data centers in the EU sourced 86.8% of their electricity from renewables on a weighted-average basis.⁸ Within that renewable mix, approximately 70.4% came from Guarantees of Origin, around 29.4% from PPAs, and roughly 0.22% from on-site generation.⁹

For data center operators balancing performance, cost efficiency, and sustainability goals, understanding local market dynamics is key to identifying the right mix of renewable energy solutions. Based on current trajectories, achieving 100% renewable energy sourcing (REF = 100%) by 2030 at EU level is considered feasible.¹⁰ However, the European Commission recommends a shift toward more granular – up to hourly – matching enabled by RED III and sub-MWh certificates,¹¹ reflecting a broader trend toward enhanced temporal and spatial correlation between renewable energy generation and consumption.



What's Next in Data Center Power Strategies

As decarbonization becomes a strategic priority, data center operators are broadening their approach to renewable energy. From engaging supply chains, adopting 24/7 carbon-free energy strategies to exploring emerging technologies like nuclear and hydrogen, the industry is moving beyond traditional renewable energy sources and procurement models.



EXPLORING ALTERNATIVE CLEAN ENERGY SOURCES

As electricity demand surges – driven in part by the rise of AI workloads – data center operators are exploring a broader range of low-carbon energy solutions, including nuclear power. In addition to established renewable sources, technologies such as fuel cells, hydrogen, and ammonia are gaining attention for their potential to deliver reliable, carbon-free energy. Equinix, for example, is investigating the future use of small modular reactors (SMRs) to support data center operations, while Amazon recently acquired a facility in Pennsylvania powered by nuclear energy – signaling growing interest in non-intermittent clean power alternatives.



GROWING SHIFT TOWARD 24/7 CARBON-FREE ENERGY

A growing number of data center operators are pursuing 24/7 carbon-free energy (CFE) strategies to more closely align their electricity consumption with renewable energy generation. This approach enables operators to match energy use with clean power production on an hourly basis, addressing the intermittency of renewables and enhancing transparency in sustainability reporting.

The European Commission critically evaluates Guarantees of Origin on additionality and temporal/spatial correlation, and recommends a gradual shift toward 24/7-style matching over time.¹² This transition is enabled by RED III, which allows Guarantees of Origin to be issued in any fraction of 1 MWh (in multiples of 1 Wh), enabling more granular tracking and verification of renewable electricity.¹³



BOOSTING ENERGY EFFICIENCY

Cutting energy demand is a core pillar of data center decarbonization. Through established energy efficiency schemes and project development support, operators can lower Scope 1 and 2 emissions while reducing operating costs. Countries across EMEA have introduced various regulations and guidelines to foster the sustainable growth of data centers, particularly in the area of energy efficiency and renewable energy.

Heat reuse represents a particularly promising avenue for efficiency gains. In Vienna-Floridsdorf, for example, data center waste heat covers up to 70% of a hospital's heat demand, avoiding approximately 4,000 t CO₂ per year.¹⁴ Such projects demonstrate the practical potential of integrating data centers into local energy systems while delivering measurable climate benefits.



ADDRESSING SCOPE 1 EMISSIONS

In EMEA, operators face an additional decarbonization challenge: Scope 1 emissions. The EU F-Gas Regulation is forcing data centers to transition away from high-impact refrigerants in cooling systems, while diesel backup generators – critical for uptime – remain a barrier to achieving net-zero goals.

To act on Scope 1, operators can decarbonize backup power and heating with biomethane (GoO/PoS), tap efficiency schemes (e.g., CEE/CAE) to fund cooling upgrades, and use verified carbon removal credits to address residuals – complementing the ongoing transition to low-GWP refrigerants under the EU F-Gas rules.



NATIONAL INCENTIVE SCHEMES FOR EFFICIENCY

In some European countries, energy-efficiency measures are supported by dedicated financing schemes. In France and Spain, for example, mechanisms such as the CEE and CAE systems can help fund qualifying projects. If you would like to assess whether your data center efficiency project could be eligible, you can contact us for further guidance.



LEVERAGING RENEWABLE ENERGY TO REDUCE SCOPE 3 EMISSIONS

As pressure to address Scope 3 emissions intensifies, data center operators are increasingly extending their decarbonization efforts beyond their own operations to include both tenants and suppliers. This growing focus on Scope 3 emissions reflects a broader shift toward end-to-end decarbonization efforts.

Optimizing Your Renewable Energy Procurement

Operators can consider a structured, regionally informed approach across three key focus areas:

1

Map out sustainability targets and timelines

- Establish clear short- and long-term renewable energy goals that reflect both corporate ambitions and market realities
- Initiate early planning and conduct regular progress reviews to stay on track amid evolving regional dynamics
- Align targets with national and subnational regulations, which are rapidly advancing across many EMEA markets

2

Understand procurement options in operating markets

- Gain familiarity with the energy policy landscape in each country of operation – including regulations, incentives, and market access mechanisms – that influence procurement feasibility and pricing
- Explore and assess various EAC procurement options (e.g., GoOs, REGOs, I-RECs, TIGRs, or country-specific certificates like GECs or LGCs) based on local market conditions
- Monitor emerging procurement models and regulatory changes that could open new opportunities or present risks

3

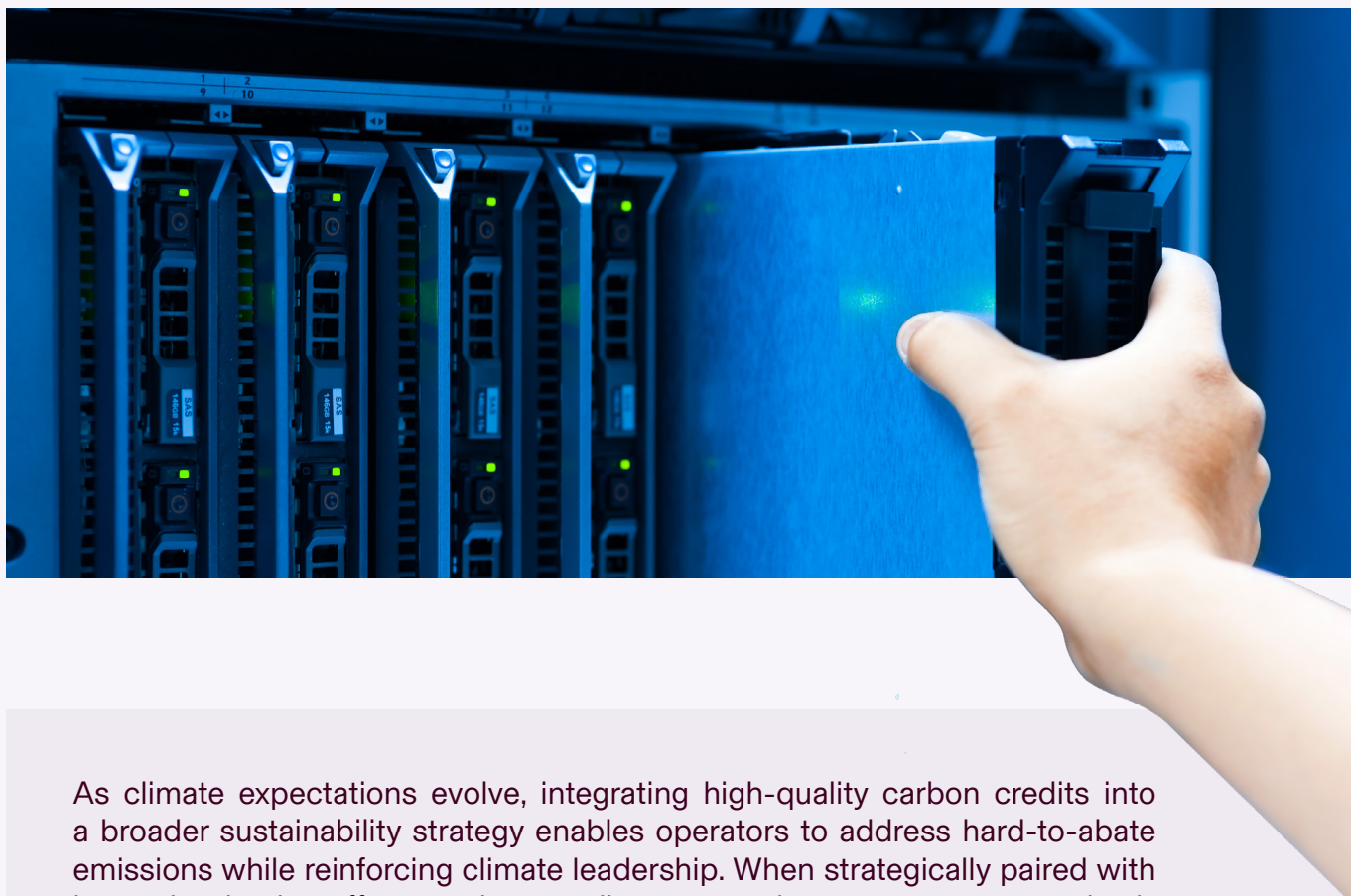
Optimize costs

- Leverage up-to-date market intelligence to identify cost-effective procurement strategies that balance sustainability goals with operational efficiency
- Compare the financial implications of different procurement pathways, considering contract length, price volatility, and market development stage



Beyond Your Value Chain: Carbon Credits and Carbon Projects for Hard-to-Abate Emissions

While investments in energy efficiency and renewable electricity remain central to decarbonization, many operators face residual emissions that cannot be fully eliminated in the near term. In this context, investments in high-quality carbon projects which reduce or remove emissions from the atmosphere are emerging as a practical and increasingly strategic instrument to bridge the gap.



As climate expectations evolve, integrating high-quality carbon credits into a broader sustainability strategy enables operators to address hard-to-abate emissions while reinforcing climate leadership. When strategically paired with internal reduction efforts, carbon credits can accelerate progress toward science-based targets and strengthen alignment with stakeholder expectations for environmental accountability.

In a market where emissions transparency and net-zero alignment increasingly shape competitiveness, data centers that act early in the voluntary carbon market will stand out – reducing risk, strengthening reputation, and delivering added value to customers and partners.

Making Informed Carbon Credit Investments

The carbon market enables organizations to advance their decarbonization efforts. However, navigating it can be challenging due to evolving standards, diverse credit types, and a mix of regulatory and voluntary frameworks. For data center operators, a well-informed and strategic approach is key to ensuring that carbon credit investments are credible, aligned with climate objectives, and tailored to organizational priorities.

When investing in carbon credits, organizations should consider the following key factors:

1. Define your purpose

Clearly aligning the purpose of carbon credit procurement, whether to satisfy regulatory compliance or support voluntary climate commitments, is essential to ensure that credits are eligible and contribute meaningfully to overall sustainability goals.

3. Align with your brand

Operators can consider two proven strategies when evaluating which types of climate action projects to support:

- **Business-centric:** Select carbon credits that reflect your operational footprint. For example, operators may favor tech-based or energy-efficiency projects due to their alignment with digital infrastructure operations.
- **Impact-focused:** Prioritize projects that align with broader ESG commitments, such as biodiversity or community impact. An operator seeking to address land-use or ecological impact may opt for nature-based credits, such as afforestation or mangrove restoration projects.

2. Prove environmental integrity

High-integrity carbon credits represent emissions reductions that are real, measurable, verifiable, and additional. Operators should prioritize credits that meet recognized standards, such as those approved by ICROA (International Carbon Reduction and Offset Alliance) or ICVCM (Integrity Council for the Voluntary Carbon Market). A rigorous, risk-based procurement process not only safeguards environmental outcomes but also protects reputation and enhances stakeholder trust.

4. Procurement strategy

Carbon credit procurement can be tailored to fit different risk appetites, timelines, and budgetary considerations:

- **Short-term:** For operators new to carbon credit markets, spot purchases can offer flexibility and a low-commitment entry point.
- **Long-term:** For those with defined climate goals and values, forward purchasing or direct investment in project development supports strategic planning and long-term impact. This approach can also help secure volume, price stability, and alignment with preferred project types.

Operators securing long-term access to verified projects now will have both lower risk and stronger stories to tell in 2026 and beyond.



Turning Carbon Credit Strategy into Action

For data center operators, the implication is clear: carbon credits are most effective when they are integrated into a broader decarbonization strategy rather than treated as a standalone instrument. That means defining when and why to use credits, setting clear criteria for quality and impact, and aligning procurement choices with both regulatory expectations and brand priorities.



A practical next step is to:

- 01 Clarify your role in the carbon market – compliance only, or also voluntary climate leadership.
- 02 Define guardrails for what “high-quality” credits mean for your organization.
- 03 Map your current and projected residual emissions to determine how credits can complement your reduction roadmap.
- 04 From there, many operators find it helpful to work with a specialist partner who can translate these principles into a concrete portfolio and procurement strategy.

ACT's Data Center Decarbonization Solutions



01.

CALCULATE YOUR EMISSIONS

Carbon Accounting

- Full coverage for calculation of Scope 1, 2 & 3 emissions
- Simplified data collection – API integrations with leading accounting software, 12k+ utility providers and AI OCR bill reading software
- Instantly generate audit trails and reports
- Quick turnaround time –onboarding and carbon calculation in weeks

02.

BOOST YOUR ENERGY EFFICIENCY

Efficiency Schemes (CEE/CAE)

- Certified energy savings through established energy efficiency schemes
- Reduced Scope 1 and 2 emissions and lower operating costs

03.

CUT YOUR SCOPE 1 EMISSIONS

Biomethane

- From backup power to heating systems, biomethane offers a low-carbon alternative to natural gas
- With access to global markets and certification schemes, ACT makes it simple to report potential reductions with verified impact

04.

REDUCE SCOPE 2 EMISSIONS

Global Renewable Energy Procurement

- Centralized, cost competitive procurement of EACs in every market in line with local regulatory requirements, and initiatives like SBTi and RE100
- Market and regulatory monitoring and updates

05.

TACKLE SCOPE 3

Digital Decarbonization Platform

- Integrated carbon accounting tool to measure and track emissions from your tenants and suppliers
- Centralized dashboard for complete visibility and control of your emissions
- Global renewable energy procurement within the platform
- Simplified EAC settlements and a clear overview of your renewable electricity inventory

06.

COMPENSATE YOUR RESIDUAL EMISSIONS

Carbon Credit Sourcing & Project Development

- Tailored high-quality carbon credit portfolio aligned to your sustainability goals
- Streamlined global carbon credit procurement
- Fully integrated, turnkey solutions for large-scale carbon project development – managing every stage from technical design to the delivery of verified carbon credits



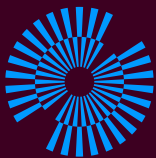
A man with dark hair, wearing a light blue button-down shirt and a dark grey blazer, is looking upwards and to the right. The background is a dark, blue-toned image of server racks in a data center, with some lights visible on the racks.

Decarbonizing data center operations is not a one-off project but **an ongoing, data-led transformation.**

In this paper, we have outlined the main regulatory drivers, technical levers, and procurement options that can help you reduce Scope 1 and 2 emissions while maintaining operational reliability. If you want to translate these insights into a concrete roadmap for your sites, ACT can support you – from opportunity screening and regulatory advisory to structuring renewable electricity and fuel solutions.



Get in touch with us to discuss your specific portfolio and **next steps.**



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