State of the EMEA data center market

Analyzing drivers of growth and future challenges facing the EMEA data center market

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Management summary

In January 2023, prevailing market sentiment indicated a shift in infrastructure fund focus, from telecommunication assets towards transport and energy sectors. However, this trend does not uniformly apply across all telecom asset classes, with the data center market an exception.

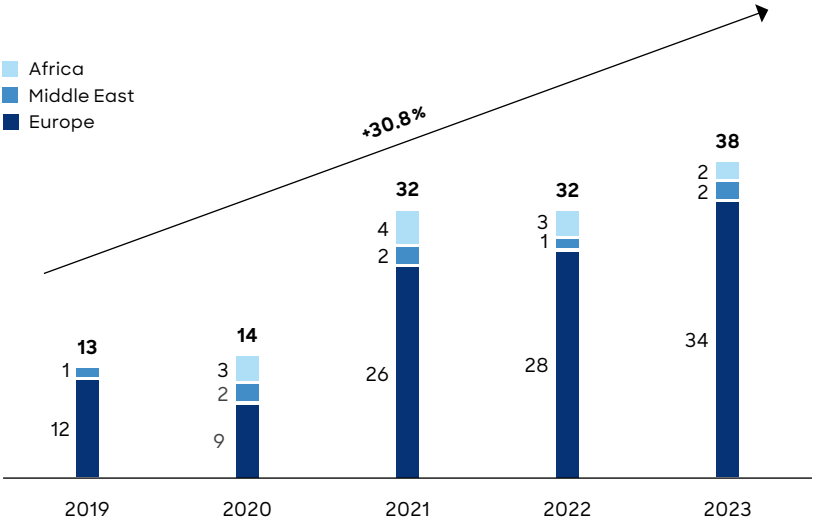
Roland Berger attributes this divergence to the robust business fundamentals of the data center market. These include significant growth in Megawatts (MW), consistently high utilization rates, and the potential for operational efficiencies. Nonetheless, the sector faces notable challenges, particularly in the realm of sustainability.

This document is designed to offer a concise overview of the key dynamics shaping the data center market in 2023 and beyond, highlighting both its strengths and areas of potential growth.

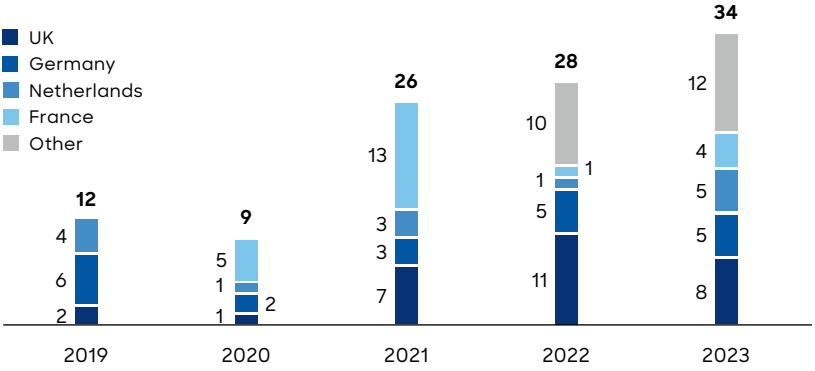
Deal flow

Transactions in the data center space grew in 2023, particularly in Europe with notable increases in activity from the Netherlands and France. Historically, the UK. has led the growth in Europe, but it maintains its status as the most active market. A notable transaction for the year was Digital realty and Blackstone's USD 7 billion joint venture to develop 10 data centers across Frankfurt, Paris and Northern Virginia.

Completed data center transactions in EMEA
2023 saw continued growth in the number of transactions, especially in Europe



Completed data center transactions in Europe
2023 saw a growth in activity Netherlands and France



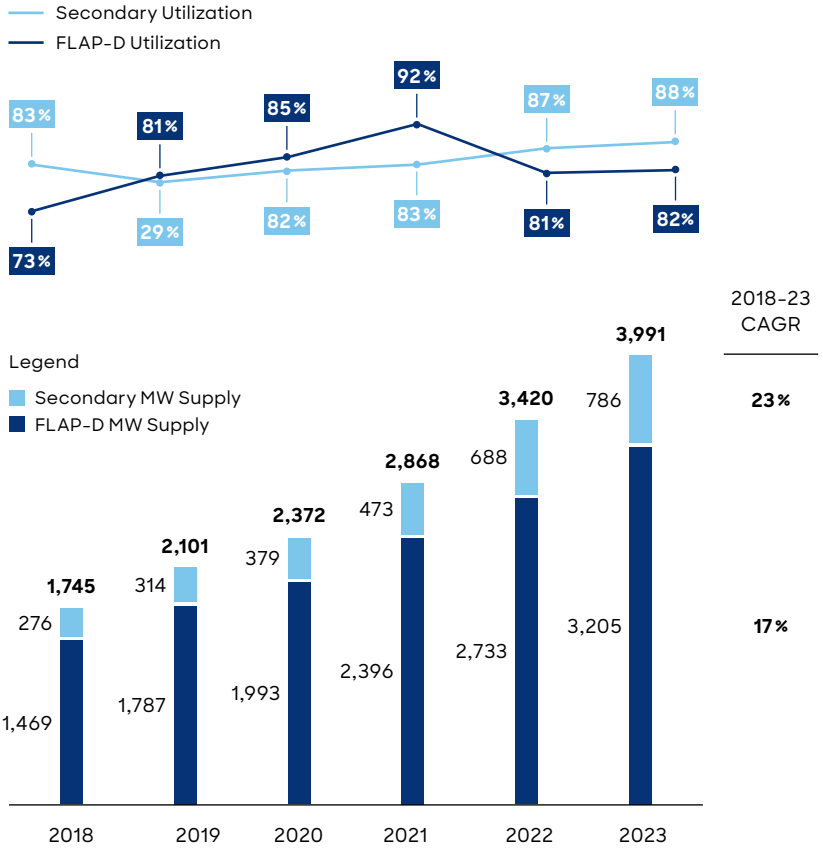
Source: TMT Finance

Underlying fundamentals

The European data center market exhibits robust underlying fundamentals, making it an appealing destination for capital investment. For example, in the FLAP-D markets (80% of total MW) the CAGR in MW supply from 2018-2023 was 17% with an impressive average utilization rate of 84%. Similarly, the secondary market grew CAGR 23% over the same period with an average utilization of 82%. These high utilization rates, primarily driven by pre-sold capacity to anchor tenants create and attractive utility-like cash flow profile for investors. Furthermore, the growth of the secondary market signals expansion opportunities and diversity beyond the traditional FLAP-D market.

European market MW supply & utilization

FLAP-D megawatts continue to rise with high utilization rates as a result of pre-sold capacity with anchor tenants



Source: CBRE

The key drivers of future megawatt demand are growing fast, and have longevity:

1

Rising data consumption

Mobile data traffic continues to surge driven by rising smartphone subscriptions and average data volumes per subscription

Fast fact: Mobile data traffic in Western Europe is forecast to grow ~16% from 2023 to 2029 with MEA forecast to grow ~26% over the same period.

2

Surge in GPU demand for AI

The demand for high-performance computing in AI and machine learning is growing which requires more power per rack. This has necessitated the expanded use of GPUs to meet these advanced computational needs.

Fast fact: Globally the revenue from the sale of GPUs is forecast to grow from USD ~6.0 b in 2022 to USD 9.7 b by 2026 – CAGR ~13%

Fast fact: Estimates suggest an extra 2,000 to 2,500 MW of IT load could be needed to meet the demand for AI workloads based on Nvidia's forecast to ship ~2.5 million H100 / H200 chips.

3

Ongoing cloud transition

Cloud migration still started over 5 years ago in 2018, however enterprises are still transitioning their workloads.

Fast fact: The median enterprise in the EU has only moved half of their servers to the cloud.

The other attractive trends include increasing rack densities, which allows for more MW from less floor space leading. Consequently, data center operators can avoid the escalating expense and challenges associated with constructing new facilities, such as land scarcity. Despite the upward trend in construction costs of between 3-7% (2022 to 2023), the market demonstrated resiliency by effectively passing through these costs to customers through increased rack rates. This resiliency has been successful in maintain profit margins, thereby enhancing its attractiveness to investors.

Source: Ericsson mobility report, Uptime Institute, Gartner, Eurostat, Roland Berger

European market MW supply & utilization

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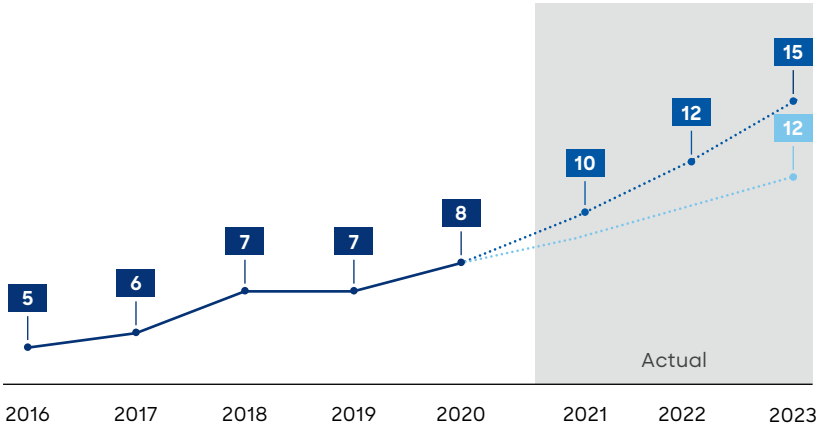
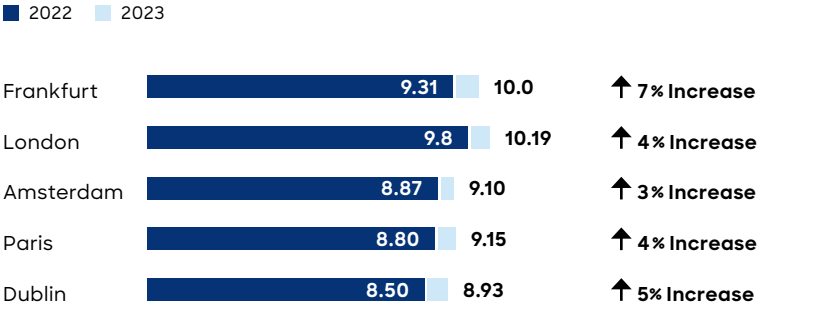


Data center USD cost to build per Watt

FLAP-D markets have seen on average a 5% increase in the cost to build



Source: Turner & Townsend

Market challenges

While the data center market presents solid investment fundamentals, operators face several familiar challenges:

1. Qualified staff shortage: ~30% of data center managers are "very concerned" over the scarcity of qualified personnel
2. Equipment procurement: 26% are very concerned about procuring equipment needed to meet higher capacity demands
3. Energy performance: 33% are very concerned about improving energy performance of facilities equipment and 30% are very concerned about improving energy performance for IT equipment

While these challenges are not new or unknown, we believe energy performance, and hence, sustainability, will pose the greatest challenge for operators. This belief stems from increasing pressure from customers and the introduction of new legislation, details of which are outlined in the table below:

Customers

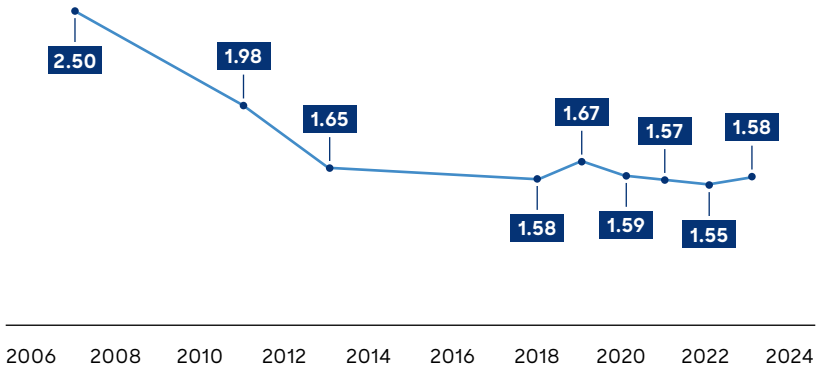
Description	Challenge for Operators
Corporate clients are progressively shifting the responsibility of managing Scope 3 emissions to data center operators in an effort to meet their own net-zero targets.	**Sourcing renewable energy** • Renewable energy for electricity in Europe are ~55% of total availability **Storage and reliability of renewables** • Reliability of energy is critical and sources such as wind and solar can be intermittent **Incremental costs from carbon offsetting** • Where 100% renewable energy is not feasible, carbon offsetting may be required creating additional operational costs

Regulation

Description	Challenge for Operators
In alignment with the EU's Green Deal, which aims for a 55% reduction in carbon emissions, regulations will soon mandate reporting for data centers with a total rated energy input exceeding 1 MW. The imitative is designed to encourage data center operators to enhance their energy efficiency. Although no specific targets for data center operators, have been established, there are extensive reporting KPIs including floor area, installed power, data volumes, energy consumption, PUE, temperature set points, waste heat utilization, water usage, and use of renewable energy.	**PUE has been flat for the last decade** • Further advancements in PUE require investment in systems to modulate equipment **Investment in rack density** • A double-edged sword in providing more efficient cooling, but increasing the power draw **Building ESG reporting capabilities** • EU directive places additional reporting burden on data center operators who will have to build tools to monitor and track KPIs for reporting purposes **Renewable challenges outlined above** • Sourcing, storage and reliability and costs of carbon offsetting need to be investigated and managed

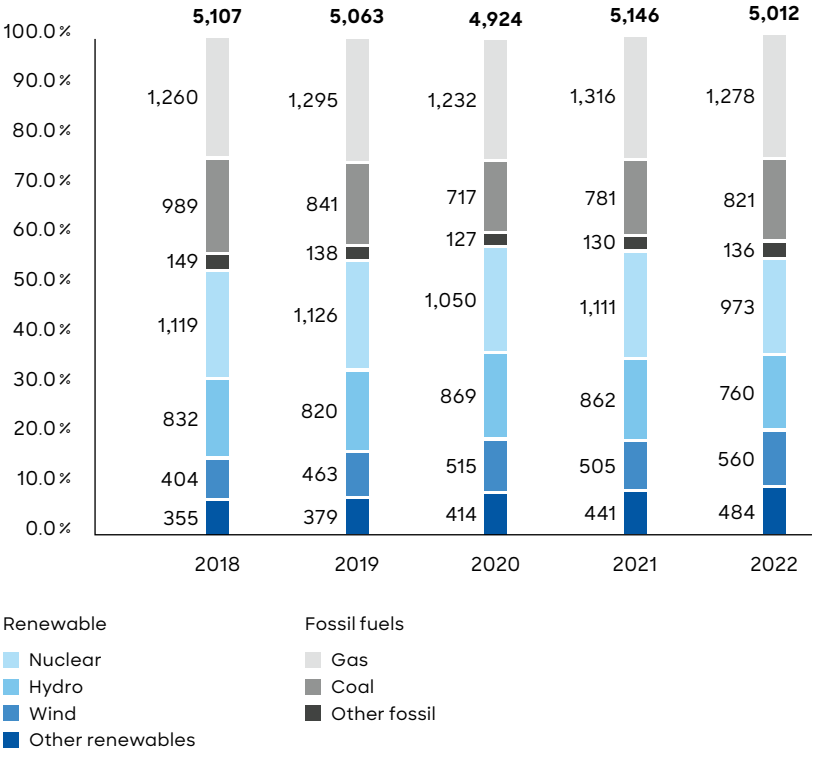
Average annual PUE

Over the past decade, PUE has remained flat; historical efficiency gains were a result of the easy yet effective modifications that yielded significant results in efficiency



Source: Ember climate

Terawatt hours of electricity generation by source in Europe
Renewables are creeping up on fossil fuel as an electricity energy source in Europe at 55% of total terawatt hours.



Source: Ember climate

Conclusion

In conclusion, the European data center market is one defined by rapid growth and emerging challenges. 2023 has witnessed significant transactional activity, with robust growth in key regions like the Netherlands, France, and the UK.

As the industry moves forward, it is clear that the path is lined with opportunities for growth, innovation, and sustainability. The ability of data center operators to adapt to these changes, enhance energy efficiency, and contribute to broader environmental goals will not only shape their success but also define their role in the digital and sustainable economy of the future.

How Roland Berger can help

Our expertise is deeply rooted in telecommunications and technology, across the digital infrastructure domain. This spans across various aspects, including growth strategy, due diligence, and business case development for both funds and enterprises. We possess a comprehensive understanding of the industry, its challenges, and, crucially, the emerging opportunities.

Leveraging our extensive experience, we are perfectly positioned to collaborate effectively with you and your teams. Our goal is to harness these opportunities together, navigating the complexities of the digital infrastructure landscape to achieve strategic success.

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