KEYNOTE INTERVIEW

Mind the transmission gap





As AI demand outpaces the grid, a power transmission bottleneck has emerged, with data centre delivery playing a key role in addressing it. IFM Investors' Lee Wright and Giovanni Stroeckx examine the risks and opportunities this tension presents

In the midst of what some analysts are referring to as an 'investment super-cycle', the need for data centres is growing at an accelerated rate. The sharp uptick in demand for AI and cloud computing has put the delivery of data centres at the forefront of the infrastructure conversation.

However, this rapid rate of expansion comes with its own set of difficulties. Grid operators, utility providers, regulators and investors are all under increasing pressure to keep pace. Investment director of infrastructure at IFM Investors, Lee Wright, and his Europe-focused peer, Giovanni Stroeckx, explain the challenges facing the grid, why transmission rather than generation is a critical factor and how different regions are responding to the sudden evolution in load growth.

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Q What does the build-out of AI infrastructure mean for electricity demand, and how far behind is the grid?

Lee Wright: In the US, it means we're moving from two decades of relatively flat, low load growth to what could be around 20 percent growth over the next five years. Roughly half of that is expected to come from new data centre demand. Today, data centres account for around 4-5 percent of electricity consumption, with some forecasts suggesting this could be more than double by the end of the decade. And that's before factoring in the effects of broader electrification trends in transport and residential heating, as well as increasing domestic manufacturing activity.

From our observations, the supply response is already under way and there's generation capacity planned to meet a significant portion of this new demand. The immediate challenge is

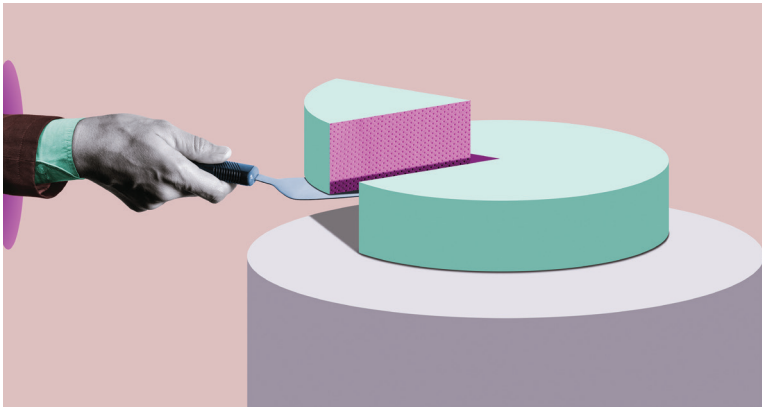
transmission. Our current planning, permitting and building processes aren't equipped to respond to this step-change, especially when hundreds of megawatts are delivered to a single location. We're talking about campuses drawing between 300MW and up to 2GW – comparable at the upper end to the residential load of a major US city like Houston – coming online in 18 months. Grid upgrades of this scale typically take a minimum of five years.

The challenge is less about generation capacity and more about transmission and storage capacity. That's what's defining exactly how far behind the grid is from where we need it to be.

Giovanni Stroeckx: Drawing on our experience, Europe faces similar dynamics, and in some cases, constraints are even more acute. The grid is the primary constraint, rather than generation capacity. Lead times for grid expansion are often estimated at seven to 10 years, sometimes even longer. And when you look at the FLAPD markets (Frankfurt, London, Amsterdam, Paris, Dublin), they're widely regarded as operating close to capacity. Not just today, but in terms of already-allocated future connections.

In Frankfurt, London and Amsterdam, data centres account for between one-third and one-half of all city electricity demand. In Dublin, this share is reported to be closer to 80 percent. Under current conditions, the grid faces significant limitations in delivering additional capacity within a commercially viable timeframe.

Operators are instead looking to move to Southern Europe where renewables build-out continues; to the Nordic region where hydropower helps; and to some extent to Eastern Europe. In many cases, the more immediate response has been to opt for locations outside of FLAPD, rather than near-term resolution of grid bottlenecks by operators.



Q How big is the funding gap, and where is it particularly acute?

GS: I think about it as more of a development gap than a funding gap. The question is how much additional capacity Europe needs. In my view, a useful comparison is operational data centre capacity per capita. In the US, this is often cited at around 120MW per million inhabitants, while in Europe it is closer to 30MW. This illustrates the scale of additional build-out Europe may see in the future.

Will the gap close? It appears unlikely in the near to medium term, given the challenges in securing locations where data centres can connect to power. It may be challenging to scale capacity to several times current levels, particularly while cloud adoption in Europe is generally viewed as lagging the US by roughly 10 years. Is there a shortage of funding? Generally not for projects that are considered viable. The challenge is that many proposals do not meet the thresholds required to attract investment.

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LEE WRIGHT

Q How are different regions responding, and what's the realistic timeline for resolution?

GS: In Europe, the response varies significantly across jurisdictions. In some cases, authorities have taken the position that they do not want additional data centre capacity. In Amsterdam, Dublin and Frankfurt, grid operators have introduced de facto restrictions on new connections.

As a result, operators are shifting geographically to locations where electricity capacity exists today and/or has the potential to expand over time. In practice, where near-term solutions are not available within existing regulatory and grid frameworks, data centre operators are making their own commercial decisions and relocating to alternative markets.

LW: The US is not dissimilar in that responses are emerging but remain uneven across regions. Like Europe, the US doesn't have a single grid but rather operates as a set of regions, with utilities behaving differently within them.

Some municipalities may decline new developments, while others continue to offer incentives. Overall, utilities are accelerating capital investment. Under the current policy environment, regulators are encouraging faster planning and permitting processes. On the demand-side, data-centre operators are adapting by securing power earlier, adding behind-the-meter solutions or moving to new markets. That's why there used to be three Tier 1 markets in the US, but now there's over half a dozen that have a real critical mass of capacity coming online.

Utility capital expenditure is back at decade highs too, supporting continued network investment. The main challenge is that transmission development can still take five years or more, depending on which part of the country you're in. Recent increases in spending are expected to deliver partial relief over the next two to four years. Post 2030, congestion pressures are expected to ease, although this remains a lengthy timeline from where we sit today.

Q What should investors be mindful of when investing in the data-centre sector?

GS: Our investment approach is grounded in healthy conservatism. It's about building in buffers for equipment lead times, labour tightness, power connection lead times, realistic timelines for signing customer contracts; and ensuring lease rates compensate for those assumptions. The structural shortage of capacity in Europe can support this approach, as customers have shown a willingness to accept higher lease rates where operators can offer a reliable ready-for-service date not too far into the future.

We first started assessing data centre opportunities back in 2019. It took several years to complete our first US investment and longer still to complete our first European investment. You might ask why this took time, and the answer is that it reflects our deliberately selective approach. As an open-end strategy, we don't face the deployment pressure often faced by closed-end strategies. We have deliberately focused on businesses with three core characteristics.

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> **GIOVANNI STROECKX**

Firstly, we target businesses protected by high barriers to entry that occupy prime positions in markets where demand exceeds supply due to land and power constraints – where incumbents benefit from structural advantages relative to new entrants to unlock that land and power, and where we have clear conviction in the durability of those advantages.

Secondly, we focus on businesses that serve established counterparties, including large enterprise customers and leading hyperscale customers. We focus on diversified customer bases, ie we avoid platforms overly dependent on a single customer. Finally, we look for assets providing essential services or supporting mission-critical workloads. On the enterprise side, this typically involves large, established customers, while for hyperscale it centres on traditional cloud services. For AI related workloads, long-term contracts are also a key consideration. Moreover, we believe our decades of experience across power and utilities informs our understanding of the challenges, and our flexibility to deploy additional equity over time is a differentiator versus closed-end strategies.

Q Five years from now, where does durable value in the data-centre infrastructure sit, and where are the opportunities in the short term?

LW: Durable value tends to sit in areas the market has historically favoured. For hyperscale, it's campuses with secured expansion capacity. These are locations where large customers can establish operations and plan over long time horizons. For enterprise and hybrid co-location, it's more about constrained metros with advantaged fibre connectivity, where you need to be close to the end user. Across both segments, value sits with facilities whose internal power, cooling and white space can adapt as hardware requirements evolve – platforms that can demonstrate the ability to scale alongside customer requirements.

Where do we see less value? Small facilities with limited expansion potential, facilities that can't support high-density workloads or have poor latency. Those may be more challenged as supply and demand rebalance.

As for new opportunities, we're focused on teams with differentiated approaches to addressing delivery bottlenecks, whether through powered land, advantaged supply chains, conversion of industrial assets or access to permits and interconnects that are meaningfully advanced relative to typical timelines. There can be idiosyncratic opportunities out there, but the challenge is finding those that can unlock value today and still build durable assets over the next decade. ■