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Data Centers: a Looming Bubble… or Not?

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Over the last few months, we have been asked this question several times because of the many announcements of new multi-MW Data Centers projects world-wide.

Yesterday morning, after the last announcement of a new 300 MW Data Center project in the new hub of Aragon region (Spain), a very respected senior financer asked us again the Trillion-dollar question: Is there a bubble coming? Will be there enough customers for so many Data Centers?

As 30 year Data Center industry veterans, ours gut feeling is that there is a minor bubble risk, as the tailwinds in our sector are the strongest ever, and the speed of innovation and adoption of new digital and AI technologies are growing at an amazing speed in all fields… whilst deployment of DCs aren´t happening fast enough.

As an example, Microsoft Office 365 can include now the new Co-pilot AI engine… and there are 1.5 Bn Office 365 users world-wide. Just this add-on will require many MW of Data Center capacity everywhere… Here we can also include ChatGPT, DeepSeek, Autonomous Vehicles, AI Services, etc…. such added DC infrastructure capacity to support these new technologies, will take years to build due to power supply constraints, permits, construction process, etc.

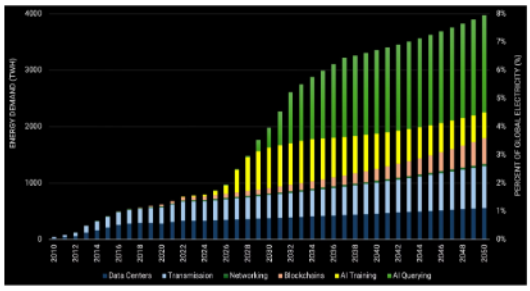
But what if instead of being in front of possibly the biggest revolution in humankind (and with the biggest need for Capital), we in front of the biggest potential bubble ever? To clarify this, we have decided to look at and analyze some hard data to provide a factual based response to this question.

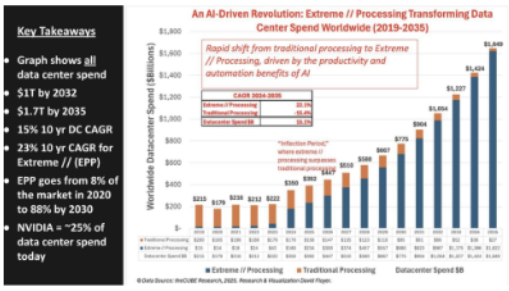
We acknowledge this study should be done in more depth and at a much more granular level, but the goal of this short paper is providing a first high level view of the global situation that the Data Center Industry is facing and provide an objective point of view about the potential risk of a bubble due to a possible DC oversupply…or not.

Fact 1: Data Center (DC) capacity demand is expected to grow very strong at rates of 4x until 2050.

Multiple sources, from global consulting firms (CBRE, EY, McKinsey…) , GPU and CPU manufacturers (NVIDIA,…), etc. confirm that the DC demand outlook (shown in power consumption terms) looks very solid and will grow between 3x

to 4x in the next 25 years ahead, mainly driven by AI. All are coincident on this promising outlook.





The construction process of a DC is as an average 3 years (at least for its initial phase) and its complete delivery at full power may take 5 years or more.

Global DC operational capacity in 2024 was 59,580 MW plus new projects announced of 34,360 MW shows a total DC projected capacity of 93,940 MW by 2030. This seems pretty well aligned with the expected demand by 2030 of 132,000 MW.
(source CBRE, C&W, ChatGPT, Mordorintelligence, others).

If we go more granular, and we analyze for instance the fast growing DC market in Spain, the current installed DC capacity mainly concentrated in Madrid, Aragon and Barcelona is 450 MW (2025). The announced added capacity increase of 900MW will take around 5 years to be fully deployed by 2030, adding up to a total DC capacity of 1.350MW by 2030. This will be some above the expected demand by 2030 of 990 MW, however if we consider the fact that Aragon is becoming a European regional hub and that possibly 60% of the DC capacity build there by Hyperscalers and the rest will serve European and African demand (est. 450 MW), then we can say that planned capacity still will be below projected demand. (source CBRE).

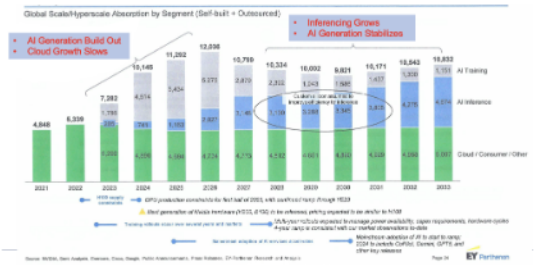
Of course, GPU restrictions due to geopolitical tensions and GPU undersupply could slow down AI growth and DC growth; but this will only be temporary.

Conclusion: The Data Center demand looks very solid and the strong innovation tailwinds support such projections.

Risk level for bubble contribution: LOW / MODERATE.

Fact 2: Adoption of AI Accelerates starting in 2025.

The exponential growth in data centers we have seen to date have mainly been attributable to the large scale, greater than 100MW data centers to support AI training (Large Language Models). This expansion will continue through 2026 and start to level out into 2027. However, the next phase of the AI story, AI Inferencing, will start to grow in 2026 and continue into 2033.

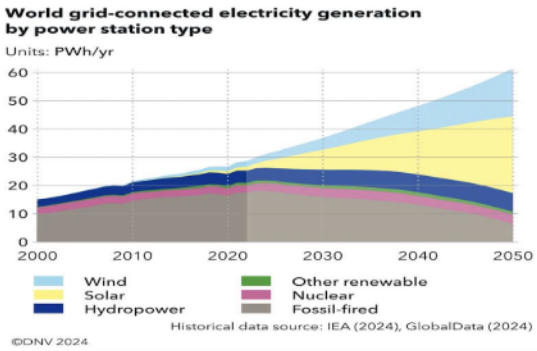


AI inferencing will be the implementation of the AI learning, and these data centers will need to be located closer to the demand in metro centers to minimize latency. AI inferencing will be used to drive the everyday usage of AI to increase employee productivity, product innovation, manufacturing efficiency, cybersecurity, and competitive advantage. According to the EY Parthenon study (*New EY research finds AI investment is surging, with senior leaders seeing more positive ROI as hype continues to become reality – 15 July 2024*), 88% of senior leaders say they will spend up to 25% of their budget on AI investments. These investments will continue to drive the growth of AI Inferencing data centers.

Conclusion: AI is the new engine of innovation and productivity and will propel DCs growth either of large scale or in metro areas for the next 25 years ahead. Risk level for bubble contribution: LOW.

Fact 3: Grid-connected power generation is projected to grow 2.5x until 2050.

Despite the growth may look subpar Vs. the DC growth outlook, considering that Data Center consumption today represents just a 2% of global power consumption and in 2050 is projected to be an 8%, and that a growing number of Data Centers will be off grid (powered by small Nuclear reactors, Renewable & Gas fired microgrids, etc), we can make the assumption that in the long run, power generation should not be a constraint for DC growth.



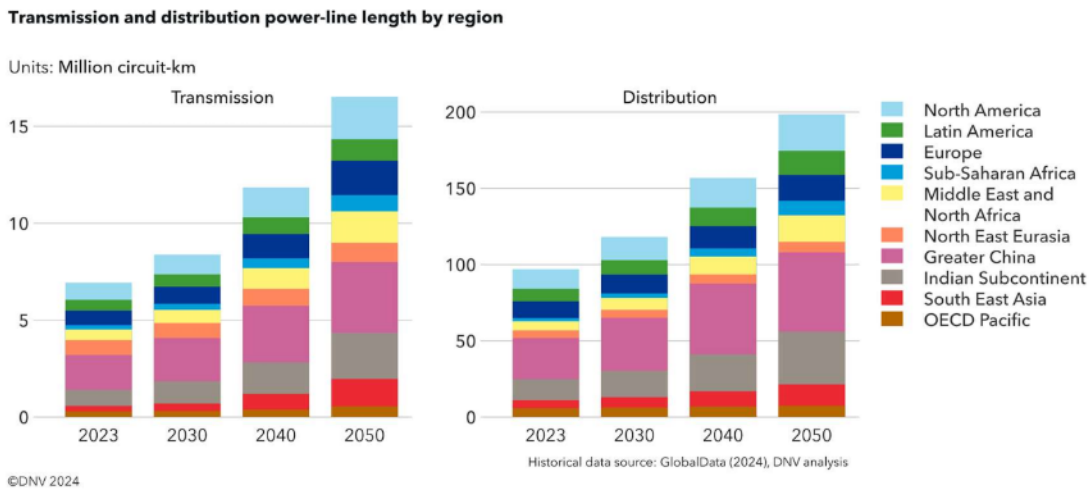
One of the major hurdles to on-site generation is that the administrative permits to develop new power generation projects that can take at least 5 years.
This could actually lead to some constrains in power access, therefore slowing down the deployment of DCs, and maybe causing a risk of DC capacity undersupply.

Conclusion: despite power supply data centers will continue to grow

Risk level for bubble contribution: LOW.

Fact 4: Power transmission and distribution growth projections at global level (shown in Km) will grow globally x2+ by 2050.

This is currently the biggest bottleneck that most countries are facing. However, there are misbalances when looking at different global regions.
Europe shows a very slow growth of its transmission and distribution lines until 2035. China, India, USA show a faster growth.



This could be a factor that can (and actually is) constraining the growth of Data Centers capacity in certain regions, as Europe. Currently, HV power Transmission and Distribution lines, are the weakest points in the whole Data Center supply chain, and moreover could cause power scarcity, slow down the deployment of DC projects and maybe drive DC leasing prices upwards in certain regions.
So, causing the opposite effect of a bubble.

In most European countries, the 5 year transmission plans are driven by the same investment % of the GDP, same as 25 years ago, ignoring the new electro- intensive Data Center sector needs. Eventually, the levels of GDP % will grow to cope with DCs demand, as this is going to be the major hurdle for Data Center projects in the future.

Higher investments in power transportation infrastructure have been already approved in US and China, as it has been recognized that DCs are the pillars of AI innovation and a prosperity enabler for all society.

Conclusion: transmission and distribution power lines will grow slower in Europe and faster in Asia and USA and this can be an element of DC growth constraint. Risk level for bubble contribution: LOW.

Fact 5: not all announcements will go through as per issues with capital funding, planning, zoning or else.

The is a term in the industry for a lot of new data center announcements, Ghost data centers. These are announcements of a data center project that will struggle

to get out of the starting gates. Not all MW's announced will be delivered due to lack of power commitments, permitting challenges, contracting challenges and funding short falls. This could have the opposite effect of a bubble and help keep the market in check.

Conclusion: it is possible that at least a 20% of projects will either suffer serious delays or will never take off.

Risk level for bubble contribution: LOW.

Final Conclusion: *With all these facts in hand, and based on the strong Data Center projected demand ahead and assuming such projections are right, as well as the forecast of the key Data Center needed elements (energy generation, transmission and distribution) combined with the significant decoupling between Data Center announcements and putting them into service, facts indicate that : 1) the risk of bubble seems negligible or very Low; 2) moreover, there is some moderate risk of Data Center undercapacity due to the long lead of delivering fully powered Data Centers, and even possibly pushing DC leasing prices some upward in some specific power constrained metro-areas.*

But of course, many things can derail and prove us wrong… but digitalization is one global megatrend that is unstoppable. And it cannot happen without Data Centers.

Looking forward to interesting times ahead.

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