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Journal

The Capco Institute Journal of Financial Transformation

A new world order

Colliding worlds

Compute is global. Power is local. Energy, capital and the structural tensions defining the new global order

Glen T. Ragland

KING'S College LONDON
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Journal

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Journal

Welcome to the 62nd edition of the Capco Journal of Financial Transformation, the second to be published in partnership with King's College London, a world-renowned leader in education and research.

This year marks the Journal's 25th anniversary and the beginning of **Capco30**, our strategic vision as we build towards Capco's landmark 30th anniversary.

At the heart of Capco30 is The Expert Advantage: our commitment to be the trusted partner clients turn to when the stakes are highest. We are proud to have built an exceptional business by obsessing about our deep expertise, our strong client relationships, our innovative culture and our reputation for impact.

The Journal has embodied that ambition since its launch in 2001. Over the past quarter century, it has brought together leading academics and industry practitioners – including Nobel laureates, international regulators and board members of major institutions – to examine the forces shaping financial services and the wider global economy. We are equally proud to see Capco experts sharing their perspectives alongside such distinguished contributors.

As Professor Crawford Spence, our editor from King's College, observes in his introduction, this edition might aptly have been titled 'how to survive and thrive in turbulent times'.

After decades of globalization, firms are both refocusing on local market shifts and new forms of cross-border collaboration. Technology is driving integration as trade barriers rise; financial innovation is accelerating amid monetary realignment and volatile geopolitics; and the green transition is redrawing both energy markets and fiscal priorities.

Edition 62 focuses on the **new world order** emerging from these shifts – and how leaders across financial services and energy are rethinking established assumptions, navigating new risks and identifying opportunities for growth.

The coming decade could bring one of the most consequential reconfigurations of global business and economic systems in generations.

This environment reinforces the importance of expertise, judgement and the ability to turn insight into action. At Capco, we help clients connect vision models and strengthening resilience to reimagining customer experiences and the future of work.

We bring together industry depth, technology and data capabilities, and disciplined execution to help clients navigate the moments that matter most with confidence.

The Journal is one expression of that Expert Advantage: convening leading perspectives, challenging established thinking and helping shape the agendas that will define the future of our industries.

I hope you will find the articles in this edition both thought-provoking and valuable for informing your organization's future vision and strategic decisions.

My sincere thanks and appreciation to our contributors, readers and clients.

Annie Rowland, Capco CEO

2026, Edition 62

Editor's note

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We could equally have labelled this volume of the Journal of Financial Transformation 'how to survive and thrive in turbulent times', given that each of the articles effectively attempts to tackle this issue in their own unique way. Times are indeed turbulent. Recent months and years have borne witness to increased military conflict, heightened economic shocks and the emergence of new political forces.

These disruptions are often captured in popular discourse by reference to, variously, the decline of the rules based international order, the rise of authoritarianism and the re-emergence of nationalism and protectionism as challenges to globalization. While putting clear conceptual parameters around what is a very unsettled geopolitical period is difficult, there is at the very least little doubt that the world is changing and that a new order is emerging. To paraphrase an old political aphorism: the old is dying and the new is struggling to be born.

This geopolitical reshuffling is the backdrop to the current issue of the Journal. Contributors were asked to think about how financial services and energy might respond to, and indeed themselves help reshape, the new global order that is emerging. What they have presented here can be grouped into four conceptual clusters, each of which makes up a distinct sub-theme in this issue of the journal: colliding worlds; monetary risks; strategic pivots; and private markets.

The first group of articles we refer to here as colliding worlds. The worlds that collide here specifically are those of finance and energy. Each of these forces us to zoom out from financial transactions and investments and think about the wider environmental and material basis for these. For example, Ragland's fascinating look at the arms race for computing power shows how the rapid expansion of data centers is at odds with the way in which existing energy infrastructure is built. Those who will be successful in rolling out advanced computing power are those who will be able to finance and build out alternative energy infrastructure at the same time.

This has strong parallels with Xu and Preda's article looking at the infrastructure of bitcoin mining, which demonstrates in some detail how supposedly digital assets have heavy materiality in terms of both the physical infrastructure that supports them and the energy consumption that goes into their mining and processing. Finally, Savignon takes the energy transition head on by exploring the mechanics and possibilities of carbon credits in Brazil, a country which is characterised by a dominance of renewables in its energy mix. Showing real heterogeneity in how carbon credits are deployed in different sectors in Brazil, this article concludes by outlining how those who are able to integrate thinking around finance, data and energy will be able benefit from and contribute to the energy transition in the Brazilian market.

Monetary risks refer to the various ways in which currencies are embroiled with risk at both the national and transnational levels. As the fundamental means via which deals are transacted, it is perhaps no surprise that we find money, in its various guises, to have so many political inflections. Cryptoassets are often heralded as some kind of safe haven (‘digital gold’) during times of economic and political turmoil and there are many central banks across the globe who are now pursuing digital currency projects of their own. These have significantly lagged the development of private crypto initiatives. One of the reasons for this might be the perceived financial crime risk that is associated with digital currencies in general, something which Tjeransen’s article outlines in detail.

Fiat currencies are also deeply imbricated in geopolitical factors. This is the subject of Hou et al’s article which draws attention to the ways in which currency risk premia are associated with trade imbalances between nations. Such factors are of increasing importance to, not only forex traders, but any organization engaging in currency hedging. Finally, nowhere is the importance of currency to geopolitics more evident than in Zayim’s article looking at how central banks engage in currency swaps with other central banks. Focusing on both China and the US, Zayim shows how each has sought to build up spheres of influence with different counterparties as part of larger attempts to accrue power and minimize geopolitical risk for themselves.

Our third conceptual ‘bucket’ looks at how individual organizations respond to geopolitical shifts. In other words, these articles look at the various strategic pivots that organizations make in order survive and thrive in turbulent times. These strategic pivots can take different forms depending on the geography and industry in question. For example, Schnyder shows how banks in East Central Europe can mitigate risk in response to rising anti-FDI policies in that region. In Scriven’s article the author shows how software delivery needs to be reconfigured in order to overcome increasing regulatory divergence and export controls.

In times of geopolitical uncertainty, capital markets can become less efficient in allocating capital and so firms have to focus more on their internal efficiencies, which is what Gkikopoulos and Stathopoulos illustrate in their article exploring the relationship between firms and banks; such relationships have implications for tax planning and productivity. Political turbulence also impacts hiring strategies, which Nguyen and Sila demonstrate in relation to corporate hiring practices during times of election uncertainty. Finally, Confalone makes a strong case for a strategic pivot towards developing ‘enterprise intelligence’ in the age of AI, a shift which has governance implications for financial services organizations.

The final sub-theme of the issue reflects an ongoing interest that we have had in private markets. The shift from public to private markets is one of the big secular shifts of modern finance, which was dealt with explicitly in issue 61. In this issue, we build on this with two further articles. One of these, by Phalippou, tackles the shift of private equity towards retail investors, outlining the potential risks in selling private equity products that were designed with institutional investors in mind to a less informed and less powerful constituency. Preda and Chen’s article pursues another tack, showing how venture capital funding in Asia and elsewhere has to be cognisant of surrounding government policy imperatives if it is to be successful.

Taken together, these articles argue that financial services are not simply being buffeted by geopolitical change. They are becoming one of the arenas in which that change is negotiated. Through payment systems, liquidity backstops, energy and computing infrastructure, corporate strategy and the evolving boundary between public and private markets, we can see how geopolitical forces manifest themselves and adapt to existing institutional constraints and imperatives.

Professor Crawford Spence
King’s College London

Compute is global. Power is local.

Energy, capital and the structural tensions defining the new global order

Author | **Glen T. Ragland** | Partner, Capco

Abstract

This article contends that the emerging global order will be shaped more by the physical systems powering compute than by compute capacity itself. The rapid, global expansion of hyperscale data centers driven by artificial intelligence contrasts with the local constraints of power systems limited by permitting, transmission capacity, fuel supply and market design. Hyperscale compute can be deployed globally within months, while the energy systems required to power it are constrained by local physical, regulatory and temporal limits that unfold over years or decades. This structural tension – compute is global but power is local – is already reshaping energy strategy, national competitiveness and capital allocation. In response, hyperscalers are pursuing behind the meter generation through integrated ownership, independent power producer partnerships and joint ventures, transforming power from a managed cost into a strategic asset. These shifts carry implications for energy companies, regulators and financial services, including new infrastructure finance structures, revised risk models and localized grid relief over time.

1. Introduction: the world is entering a power-constrained digital era

The world faces one of the most significant structural shifts since the creation of the modern internet. Artificial intelligence (AI) and hyperscale computing are expanding at an unprecedented pace. Multi gigawatt data centers are being planned or built across North America, Europe, the Middle East, Asia and Latin America. Many of these centers will require more power than today's largest industrial plants. What was once a predictable and gradual load is now an exponential curve [S&P Global (2025)].

This rapid expansion reveals a fundamental truth about the global economy's future. Compute can scale globally, but the power needed is inherently local. Digital systems expand instantly across borders, but electricity does not. Electricity must be generated, transmitted and delivered through physical networks limited by geography, permitting, fuel supply, land use and regulation. Consequently, power systems are emerging as the limiting factor for digital growth rather than compute capacity [Ember (2025)].

This tension is evident in the strain on grids worldwide. Interconnection queues often last for years. Transmission corridors are congested.

Approvals for new generation are slow and often contentious. In many regions, including Northern Virginia, Dublin, Frankfurt, Osaka, Singapore, Sydney and São Paulo, the local grid cannot meet concentrated new demand at the needed scale [S&P Global Market Intelligence (2025)].

While this strain is reshaping the energy landscape, another dimension is the response by financial markets. NVIDIA is now among the most highly valued companies in history, reflecting extraordinary expectations for AI-driven growth and digital value creation [Bloomberg (2025)].

By contrast, the U.S. energy sector's combined market capitalization is materially smaller, depending on how the sector is defined. While market capitalization reflects publicly listed companies rather than the entire physical energy system, the gap remains a useful signal of how markets are valuing compute relative to the industries that must supply the power enabling that growth [StockAnalysis (2025)]. This divergence reveals a deeper structural issue: digital value creation is increasingly limited by physical energy, while capital markets still price compute as if power were unlimited.

This disconnect affects energy and technology companies, and it also affects the financial institutions that allocate capital, price risk and influence that regions can scale.

The emerging global order will be defined by how nations and companies respond to this constraint. Those who can deliver reliable, low carbon, always available power will lead. Those who cannot will fall behind. The story of the next decade is the story of energy.

2. AI scale data centers as the new global infrastructure backbone

Artificial intelligence is now central to global infrastructure, and it requires a vast physical footprint. Data centers for training and inference consume large amounts of electricity, water, land and specialized equipment. They are becoming as vital as ports, railroads and highways once were [McKinsey (2025)].

These facilities are being planned or built across every major region, highlighting the global nature of this trend. In the United States, large scale projects are concentrated in Texas, Arizona, Ohio and Northern Virginia. Europe is seeing significant investment in Ireland, the Netherlands, Germany and Scandinavia as countries compete to attract digital infrastructure. The Middle East is pursuing clusters in Saudi Arabia and the United Arab Emirates through large integrated energy and compute developments. Asia is advancing rapidly in Japan, South Korea, Singapore and India. Latin America is growing in Brazil, Chile and Colombia [Reuters (2025)].

The scale of these facilities is difficult to overstate. A single training campus may require several hundred megawatts or more of always available power, and some multi-site developments can exceed one gigawatt of load. This is comparable to major industrial plants and, in some cases, the electricity use of a city-sized population [McKinsey (2025)]. Data centers cannot tolerate intermittent availability. Even minor disruptions can interrupt training cycles or real time inference. As a result, these centers require power that is constant, predictable and insulated from local grid volatility.

This growth is already straining regional grids. Many of the most desirable locations for development are constrained by limited transmission capacity, slow permitting for new lines or insufficient local generation. Interconnection queues in the U.S. stretch out for years. Europe faces congestion and planning challenges in multiple markets as data center demand rises faster than grid expansion [S&P Global Market Intelligence (2025); Ember (2025)].

These constraints are not temporary. They are structural and they will shape where artificial intelligence can grow. As AI becomes central to global productivity, data centers shift from private facilities to national infrastructure. Countries and companies that can scale power for this load will attract investment and talent. Those that cannot will lose out. The competition to build and host artificial intelligence is now a competition for reliable energy.

3. Behind the meter generation: the strategic response to global grid constraints

As global artificial intelligence demand accelerates, the single most important question becomes how to supply the power needed to support it. In many regions, the grid cannot expand fast enough to meet this new load [S&P Global Market Intelligence (2025)].

These constraints lead to a simple conclusion that many hyperscale operators are now reaching. If the grid cannot deliver the required power on the required timeline, then the only viable option is to build power directly for the facility itself.

Behind the meter generation provides this path. Behind the meter refers to energy generation located on site or adjacent to the data center rather than sourced from the traditional utility grid. This approach offers a level of control over power availability, reliability and carbon intensity that the grid cannot match under current conditions. Instead of waiting for long interconnection processes, hyperscalers can pursue their own development schedules and align generation with commissioning timelines [McKinsey (2025)].

The architecture of behind-the-meter generation varies by region, but the direction is consistent. Many developments are designed as hybrid systems that combine natural gas or liquefied natural gas (LNG) fired generation with renewable energy and storage. Gas provides the reliability and stability that artificial intelligence workloads require. Renewable energy contributes to decarbonization goals and reduces overall emissions intensity over time. Storage helps manage ramping and variability. Together, these assets create a system that is more controllable and more resilient; it also aligns with aggressive climate commitments adopted by many hyperscalers, including initiatives to pursue 24/7 clean power matching [McKinsey (2024)].

In regions with insufficient grid capacity, behind the meter projects can also reduce stress on existing infrastructure. Large loads do not need to be served by the grid, which can free capacity for other industries and customers. This benefit is often overlooked, but it has long-term implications for economic development and grid stability.

Behind the meter generation is more than a technical fix for power shortages. It marks a structural shift in powering digital infrastructure. In the past, companies used grid power to run compute. Now, power and compute are built as a single integrated system. This shift will shape energy strategy for decades.

4. Structural tensions defining the new global order

The rapid expansion of AI has exposed a set of structural tensions between how digital systems scale and how power systems are built and governed. These tensions are not isolated operational challenges or temporary bottlenecks. They reflect fundamental mismatches in speed, geography, governance and valuation between global compute growth and locally constrained energy systems. Together, they help explain why behind the meter generation is accelerating, why traditional grid and market frameworks are under pressure and why energy strategy, financial markets and national policy are being reorganized around power availability.

While these tensions can be summarized succinctly, they arise from concrete physical and institutional realities. Power systems are constrained by geography, fuel availability, land use, permitting timelines and regulatory structures that vary by region. Generation and transmission assets are capital intensive, slow to build and deeply embedded in local markets and governance frameworks. These characteristics fundamentally limit how quickly energy systems can respond to the pace of global, AI-driven demand growth.

These core tensions are summarized in Table 1.

Table 1: Structural tensions defining the new global order

Structural tension	AI and compute reality	Power systems reality
Structural tension	AI and compute reality	Power systems reality
Global vs local	Workloads and models scale globally and can shift across regions	Generation, grids, and fuel supply are tied to local geography and regulation
Speed of scaling	Capacity can expand in months	New generation and transmission take years or decades
Capital mobility	Capital for AI is globally deployable and highly liquid	Energy infrastructure is capital intensive and location bound
Climate ambition vs reliability	Strong pressure for net zero and renewable matching	AI workloads require firm, dispatchable power for uninterripted operation
Market valuation	Compute firms command extraordinary growth valuations	Energy systems are valued as mature, regulated infrastructure
Governance models	Centralized and rapid technology decision making	Fragmented regulatory and permitting frameworks
Forecasting assumptions	Exponential demand growth expectations	Linear infrastructure planning and investment models

This table summarizes the structural tensions between global artificial intelligence compute growth and locally constrained power systems.

5. Global archetypes: how nations are responding

The rapid growth of artificial intelligence and the rise of behind the meter generation are not occurring in isolation. Every nation faces its own mix of energy resources, policy constraints, climate goals and industrial priorities. These differences are leading to distinct national responses. Together, they form the early structure of the new global order.

Four archetypes are emerging worldwide.

5.1 Energy rich but policy constrained nations

Countries such as the United States, Canada, Australia and Qatar have abundant natural gas and strong potential for renewable power. Their challenge is not resource availability, but the governance frameworks that shape how energy infrastructure is developed. In market-based economies, development is often constrained by policy, permitting and transmission approval processes that can slow the pace of new generation. In state-directed systems such as Qatar, constraints are less about permitting and more about strategic prioritization, capital

Table 2: National archetypes in the emerging energy-AI order

Attribute	Energy rich, governance constrained	Energy-constrained, compute heavy	Climate ambitious, physically limited	State directed integrated systems
Representative regions	U.S., Canada, Australia	Singapore, Japan, South Korea, Ireland	Germany, Netherlands, U.K.	Saudi Arabia, U.A.E., China
Primary energy resource base	Abundant gas and renewables	Limited domestic energy	Growing renewables, limited firm capacity	Abundant state-controlled energy
Core constraint	Governance, permitting, transmission approval	Land, imports, grid congestion	Physical limits, grid expansion timelines	Strategic prioritization and capital allocation
Planning and execution speed	Medium to slow	Medium	Medium	Fast
Grid flexibility	Moderate	Limited	Limited	High
Role of behind-the-meter power	Accelerating to bypass delays	Essential to enable growth	Pragmatic bridge for reliability	Integrated by design
AI growth potential	High	High but constrained	Medium to high	High
Defining competitive factor	Policy reform and investment coordination	Energy access and imports	System integration and flexibility	Centralized planning and execution

National archetypes illustrate how differences in energy resources, governance models and physical constraints shape countries' ability to support large-scale artificial intelligence growth.

allocation and national energy policy objectives. As a result, these countries have the natural ability to support artificial intelligence scale growth, but the pace and direction of development depend on governance models and investment priorities rather than resource limits.

5.2 Energy constrained but compute heavy nations

Regions such as Singapore, Japan, South Korea and Ireland have become major digital and financial hubs, but they lack the domestic resources or land to support large scale new power generation. Singapore depends on imported fuel and faces land constraints. Japan and South Korea rely on LNG imports and have limited siting options for renewables. Ireland faces grid congestion and limited local generation expansion [Reuters (2025); Ember (2025)]. These regions have strong demand for artificial intelligence development but must turn to LNG imports, behind the meter solutions and regional energy partnerships to support growth.

5.3 Climate ambitious but physically limited nations

Countries such as Germany, the Netherlands and the U.K. have strong climate commitments and aggressive renewable targets. At the same time, they face physical limits in terms of land, transmission capacity and permitting for new large scale energy projects, even as renewable capacity continues to expand. These regions are pursuing integrated planning, offshore wind and flexible generation to balance renewable variability. However, they face a structural tension between climate ambition and the physical limits of their grids. Behind the meter generation that incorporates gas and renewables is becoming a practical bridge [Ember (2025)].

5.4 State directed integrated energy and compute systems

Saudi Arabia, the United Arab Emirates and China represent a different model. These countries are integrating energy and compute development into national industrial strategy. They can plan energy and artificial intelligence infrastructure together as one coordinated system. They can direct capital, develop large integrated projects and align long-term energy policy with digital growth objectives.

This model reduces friction and allows for rapid development of multi-gigawatt energy and compute clusters, particularly in environments where energy supply, land use, capital allocation and permitting authority are centrally coordinated.

These archetypes illustrate a simple reality. Nations will not compete on artificial intelligence alone. They will compete on the ability to deliver energy that supports artificial intelligence. Energy availability, policy speed and system integration will determine which countries lead in the global digital economy. The emerging order is not defined by who adopts artificial intelligence fastest. It is defined by who can power it.

6. The inflection point: data center load is rewriting the entire energy and financial system

The rise of artificial intelligence scale data centers marks a turning point not only for the energy sector but for the entire architecture of the global economy reshaping energy systems, financial markets and national strategy. What began as a technology trend is now driving a broad and far-reaching shift across national energy strategies, financial markets and supply chains. Data center load is no longer a marginal consideration. It is triggering a system-level transformation.

The first part of this transformation is the recognition that the traditional model of building digital infrastructure atop the existing power grid no longer works. The grid was not designed for multi-gigawatt digital campuses that require constant power without interruption. When hyperscalers build large loads faster than transmission, generation and substations can be added, the constraint moves from compute capacity to energy capacity. This is the moment when the digital economy becomes directly dependent on physical energy investment.

The second part of the transformation is the impact on national energy policy. Governments that once focused on balancing renewable targets, reliability requirements and industrial growth are now confronted with a new priority. AI development is becoming a national strategic asset, and energy policy must support it. Countries are revisiting generation mixes, rethinking LNG strategies, expanding renewable portfolios and accelerating permitting reform.

As a result, energy security is no longer defined solely by access to fuel or generation capacity, but increasingly by the ability to finance, build and sustain energy systems capable of supporting high-density digital infrastructure at scale.

Financial markets are also being reshaped. Many of the largest digital and compute companies rely on long-term power contracts, firm capacity rights and dedicated infrastructure to support their workloads. These contracts behave like long-term financial instruments with predictable cash flows and multi-decade horizons. As hyperscalers invest in their own power systems, new forms of energy-backed financing emerge. Capacity commitments, renewable integration and firm supply arrangements turn power into a financial asset rather than a simple operating cost.

This convergence places financial institutions at the center of the transformation. Banks, insurers and asset managers are increasingly required to underwrite long-dated energy assets whose economics are directly tied to digital demand. Decisions around credit allocation, risk appetite and project financing now shape not only energy infrastructure but also the pace and geography of artificial intelligence expansion.

The energy supply chain is also changing. The shift to behind the meter hybrid systems increases demand for natural gas, LNG, renewable assets, storage, transformers, power electronics and mineral inputs such as copper and lithium. These supply chains introduce their own geopolitical dependencies. Countries with strong gas resources or access to LNG may gain strategic advantage. Countries with limited access must negotiate long-term supply to secure their development.

The most important point is that data center load has become a forcing function that links the energy and financial systems. Compute cannot scale without power, and power cannot scale without capital. The global economy is entering a period in which the physical constraints of the energy system will determine the speed and direction of digital growth.

This is the inflection point. From a financial services perspective, it calls for a shift in how infrastructure, technology and energy risk are assessed together rather than in isolation. Institutions that continue to evaluate data center growth, power generation, grid investment and fuel supply as separate domains risk mispricing both opportunity and risk. By contrast, financial institutions that develop the capability to underwrite integrated energy and digital infrastructure, including behind the meter generation and long-term power commitments, will be better positioned to allocate capital and support clients navigating this transition.

The future shape of the global order will be driven by the ability to build, finance and sustain energy systems that support AI. The countries and companies that understand this connection will lead the next decade.

7. From energy producer to system actor

For many years, data centers functioned as large electricity customers. They purchased power from utilities, negotiated supply arrangements, and focused on efficiency behind the meter. That model is now changing. As artificial intelligence scale growth outpaces grid expansion, the largest technology companies are no longer only consumers of energy. They are becoming active participants in power generation and system design, and this shift has broad implications for how power markets, grids and investment decisions evolve.

This transition does not always require direct ownership of generation assets. Hyperscalers are pursuing a range of arrangements, including direct development, long-term partnerships with independent power producers and joint ventures with energy companies. What matters is not the specific structure, but the outcome. Hyperscalers are securing firm, long-duration power outside traditional grid expansion pathways, and in doing so they gain influence over reliability, cost and carbon performance.

As a result, power stops being a passive operating expense and becomes a strategic system asset. Hyperscalers begin to shape regional fuel demand, renewable deployment, grid planning assumptions and market dynamics. This shift is the mechanism that produces the second-order effects explored in the following sections, including changes in energy company strategy, financial services behavior, regulatory frameworks and the potential transition from grid shortage to localized surplus.

> *“For the first time in decades, energy companies are no longer just supplying growth. They are setting its limits. The pace of artificial intelligence and digital infrastructure expansion will be determined by who can deliver reliable, low carbon power at scale.*

8. What this means for energy companies

The rise of AI scale data centers and the shift of hyperscalers into power development has major implications for energy companies. For the first time in decades, energy companies are becoming both the constraint and the enabler of global economic growth. The future of artificial intelligence, cloud computing and advanced digital infrastructure depends on energy companies’ ability to deliver reliable, low-carbon, large-scale power.

The first implication is that energy companies regain strategic centrality. For many years, the narrative held that electricity would become a commodity and that the power grid would follow a mature and predictable growth pattern. AI has challenged that assumption. The ability to supply firm power at scale is now a competitive advantage. Energy companies that can deliver gas-fired generation, LNG supply, renewable energy and storage in integrated configurations will shape where hyperscalers invest and where new digital clusters emerge.

The second implication is the opportunity to form long-term partnerships with hyperscalers. As described in the previous section, the integrated, IPP and joint venture models require deep energy expertise. Hyperscalers may bring capital, technology and demand. Energy companies bring operational capabilities, regulatory experience and construction knowledge needed to develop and run large generation assets. This creates durable relationships that can span decades and yield stable contracted revenue.

The third implication is a shift in portfolio strategy. Energy companies will need to expand beyond traditional generation or supply roles. They will be expected to create hybrid systems that combine gas for reliability with renewables and storage for decarbonization. They will also need to navigate supply chains for fuel, equipment, minerals and long lead time components such as transformers. The companies that can coordinate these inputs will have an advantage in supporting hyperscale development.

The fourth implication is influence. As hyperscalers expand their energy footprint, they will work closely with energy companies to shape permitting, policy and market rules. Energy companies will play a critical role in advising on fuel security, renewable integration, grid stability and long-term planning.

In the decade ahead, the line between energy companies and technology companies will continue to blur. The companies that can operate effectively at this intersection will lead the next phase of global economic growth.

9. Implications for the financial services industry

The convergence of AI scale compute and energy infrastructure has significant implications for global financial services. Banks, insurers, asset managers and market intermediaries are no longer observing this transition from the sidelines. They are becoming central actors in how the new global order is financed, priced and governed.

The first implication is asset revaluation. For decades, energy assets have been treated as mature, cyclical and capital-intensive investments with modest growth expectations. AI driven demand challenges this assumption. The requirement for reliable, large scale, always available power introduces a new growth dynamic into the energy sector. Financial institutions will need to revisit valuation frameworks, discount rates and long-term demand assumptions for generation assets, gas infrastructure, LNG supply and hybrid systems that support digital infrastructure.

The second implication is the emergence of new financing structures. Behind the meter generation, long-term power purchase agreements and energy-backed compute contracts behave more like infrastructure assets than traditional utility supply arrangements. These instruments offer predictable cash flows, long durations and embedded demand growth. As hyperscalers partner with energy companies through integrated, IPP or joint venture models, financial institutions will play a critical role in structuring project finance, balance sheet financing and risk-sharing arrangements that align energy and digital investment horizons.

The third implication concerns risk and capital allocation. AI driven energy demand introduces new forms of commodity exposure, supply chain dependency and geographic concentration risk. Financial institutions must account for fuel availability, grid independence, regulatory treatment and carbon intensity when underwriting projects or extending credit. Climate related disclosures, stress testing and capital adequacy frameworks will increasingly need to incorporate energy reliability and infrastructure concentration as material risk factors.

The fourth implication is the evolving role of financial services as system enablers. Banks, insurers and asset managers are becoming intermediaries between technology companies, energy producers and governments. They influence which regions can attract hyperscale investment, which projects move forward, and how capital flows align with national energy and digital strategies. In this sense, financial institutions are not only pricing risk. They are shaping the structure of the new energy driven digital economy.

In the emerging global order, financial services will play a decisive role in determining how quickly and where AI infrastructure can scale. The institutions that understand the intersection of energy systems, digital demand and long-term capital formation will be best positioned to lead.

10. Regulatory tension and global market design challenges

As hyperscalers take on a larger role in energy production, regulators and grid operators worldwide face new and complex challenges. Electricity market structures, cost recovery mechanisms, planning processes and reliability frameworks were designed for a world in which large loads purchased power from the grid. That world is changing. The rise of behind the meter generation introduces regulatory questions that no region has fully resolved.

The first challenge is cost recovery. Power grids require significant investment to maintain transmission lines, substations and balancing capabilities. When large loads move off the grid, those costs must be recovered across a smaller customer base. Regulators must decide how to allocate costs fairly while preserving incentives for private investment. Some regions may adopt access charges, reliability fees or standby arrangements to maintain grid stability.

The second challenge is market design. Electricity markets differ across the world. The U.S. uses regional market operators. Europe relies on transmission system operators and distribution system operators coordinated through integrated day-ahead and intraday markets. Japan, Singapore and Australia use hybrid structures. The Middle East and China use state-directed systems. In all cases, a new question emerges. How should behind the meter assets participate in or support these systems? This includes pricing, capacity contributions, flexibility programs and the rules that govern the sale of surplus power [Ember (2025)].

A third challenge is planning and permitting. Governments must determine how behind the meter generation fits into national energy strategies. This includes coordination with renewable deployment, gas supply planning, and transmission expansion. As hyperscalers take on a larger share of power production, they become part of the national energy planning process, whether formally or through market influence.

For financial institutions, these regulatory and market design shifts introduce a new category of policy driven uncertainty. Load forecasts, regulated returns and capital recovery assumptions that have historically underpinned utility finance become less predictable as large customers self-supply. Lenders, insurers, and investors will need to reassess how they evaluate grid assets, regulatory risk and long-term infrastructure investment in a more distributed and evolving demand environment.

These regulatory tensions reflect a broader shift. Power systems that were built for traditional industrial loads must now evolve to support large scale digital infrastructure. This evolution will determine how quickly regions can attract AI development and how well they manage the transition to a more complex, distributed energy landscape.

11. The long-term shift from grid shortage to potential grid surplus

The global narrative surrounding AI growth has focused almost entirely on power shortages. Regions that host large data center clusters face overloaded substations, long interconnection queues and limited transmission headroom. This shortage has become a defining headline and an accepted constraint. Yet another, and more surprising, dynamic is beginning to emerge. As hyperscalers build behind the meter generation to serve their own facilities, major loads that would have been placed on the grid are removed from the system. Over time, this can create the conditions for localized grid surplus.

The scale of this effect is significant. A single campus may require several hundred megawatts or even exceed one gigawatt of load. When that load is served through dedicated onsite generation rather than the grid, it frees a large amount of capacity. Transmission lines that would have been congested gain room to operate. Substations that would have required upgrades remain within their limits. Grid operators gain more flexibility to support industrial electrification, residential development and commercial expansion [McKinsey (2025)].

A clear example is Northern Virginia, one of the largest data center markets in the world. The region has faced severe congestion and multi-year delays in expanding substations and high voltage lines. Several hyperscale operators are pursuing behind the meter generation to support new artificial intelligence facilities. If even a portion of expected load shifts off the grid, the region could move from persistent constraint to an environment with meaningful headroom for grid planners [Mordor Intelligence (2025)].

This shift can create new opportunities for regional economic growth. Cities that once struggled with limited power availability may regain room for new industries. Electrification of transport, heating and manufacturing becomes more feasible. Renewable integration becomes easier when the system is not pushed to its limits. In some regions, these changes may alter long-term planning and reduce the need for certain high-cost grid upgrades.

For financial institutions, this shift complicates traditional infrastructure planning and valuation. Long-term demand forecasts, revenue models and capital recovery assumptions that have historically underpinned grid investment and utility finance become less predictable when the largest new loads self-supply. Lenders, insurers and investors will need to reassess how they evaluate grid assets, regulated returns and long-term infrastructure risk in an environment where demand growth is increasingly shaped by private generation decisions rather than centralized load expansion.

Although some hyperscalers maintain a physical connection to the grid, the trend is toward full redundancy and operational independence. The largest operators are building behind the meter systems that include firm generation, onsite fuel supply, storage and microgrid controls. These systems allow data centers to operate in island mode without depending on the grid for backup or stability. The grid becomes optional rather than essential and may be used only for administrative simplicity or to sell excess energy when market rules allow it.

This shift introduces new questions for regulators and utilities. If major loads no longer rely on the grid for service, how should long-term grid planning be adjusted? How should costs be recovered when large customers no longer contribute to traditional rate structures? How should utilities forecast load when the biggest new facilities operate independent systems? How should regulators balance fairness, reliability and investment when the nature of demand is changing? These questions reflect a new planning environment in which behind the meter generation must be integrated into long-term system design, even if the grid is not providing primary service to the facility.

The transition from shortage to surplus will not occur everywhere, nor will it occur quickly. It depends on siting patterns, local resources, regulatory decisions, and the pace of behind the meter development. But the possibility itself is important. It shows that private generation not only reduces stress on power systems, but it can create new room for growth and new opportunities for regions that adapt to this change.

12. Clean energy transition acceleration driven by hyperscalers

The rise of behind the meter generation does not weaken the global transition to cleaner energy. In many ways, it strengthens it. Hyperscalers have some of the most ambitious climate and renewable energy commitments of any sector in the world. They are under sustained pressure from shareholders, customers, regulators and the public to reduce carbon intensity and demonstrate credible progress toward net zero goals [McKinsey (2024)].

Although most behind the meter systems begin with gas or LNG to provide firm power, they are designed with the expectation that the share of renewables will grow over time. Hyperscalers are pursuing configurations that combine gas for reliability with solar, wind and storage for decarbonization. They are entering long-term renewable procurement agreements and exploring hourly matching of renewable supply and demand [McKinsey (2024)].

The transition will not occur overnight. It requires new infrastructure, new market rules and new supply chain capacity. But the key point is that the pressure to pursue hybrid and clean systems begins on day one. A significant portion of future data center growth will be powered by systems that blend firm power with renewable energy and storage. This dynamic turns what might have been a purely fossil fuel driven increase in load into a catalyst for clean energy investment.

Hyperscalers are not only building the physical infrastructure for artificial intelligence. They are shaping the next phase of the global clean energy transition.

13. The physical constraints that shape AI: water, minerals and fuel supply

The expansion of artificial intelligence scale data centers is limited not only by power. It is also shaped by physical constraints essential to operating modern digital infrastructure. Water, minerals and fuel supply chains influence where facilities can be built and how reliably they can operate. These constraints add another layer of complexity to the global competition for artificial intelligence leadership.

13.1 Water as a local limiting factor

Water availability is emerging as one of the most important and least understood constraints on artificial intelligence growth. High-density computing systems produce significant heat, and many data centers depend on water-intensive cooling. Regions such as Phoenix, Dublin, Singapore and parts of Spain face water scarcity or regulatory limits on industrial consumption [Ceres (2025)].

Hyperscalers are exploring air cooling, immersion cooling and water recycling, but no technology eliminates the fundamental fact that water is a local resource that cannot be scaled globally. Compute may be global, but water is local.

13.2 Minerals and fuel supply chains as strategic variables

Behind the meter generation and hybrid systems also depend on global supply chains for gas, LNG, renewables, storage equipment and critical minerals. Renewable energy depends on copper, lithium, cobalt and other materials that are concentrated in specific regions. Transmission and grid equipment require steel, transformers and power electronics produced through long and complex manufacturing networks [U.S. Department of Energy (2023)].

These supply chains introduce geopolitical risk and create dependencies for hyperscalers and national governments. The reliability of these inputs will influence the reliability of the energy systems that support artificial intelligence infrastructure.

Together, these constraints show that artificial intelligence does not rely only on compute and power. It relies on water, minerals, fuel and equipment supply chains that are global in scale but local in impact. The future of digital development will be shaped as much by these constraints as by advances in technology.

14. Societal and economic impacts of energy driven digital clusters

The growth of artificial intelligence scale data centers and the rise of behind the meter generation have effects that go far beyond the energy system. They are already reshaping certain regions and will reshape many more in the decade ahead. Energy driven digital clusters are becoming a new form of industrial development that influences where people live, where companies invest and how governments plan for the future.

Regions that can provide reliable and affordable power are attracting new waves of digital investment. This investment supports construction, engineering and long-term operations. It also stimulates secondary industries such as advanced manufacturing, logistics and service providers that support data center operations. Cities that once competed on tax incentives or land availability now compete on energy availability and the ability to support high-density digital loads.

Labor markets are also changing. The rise of energy driven digital clusters requires a workforce that blends digital skills with energy system knowledge. Engineers, technicians, grid specialists and operations personnel are becoming essential components of digital infrastructure. This shift creates new career paths and demands new training programs that connect the energy and technology sectors.

Local communities face both opportunities and challenges. New data centers bring jobs and economic activity. They also bring increased demand for land, water and infrastructure. Regions that plan effectively can create balanced and sustainable growth. Regions that do not may struggle with mismatched land use, public concerns or infrastructure strain.

The rise of these clusters reflects a broader trend. Digital economic activity is becoming anchored to physical energy systems. The ability of regions to manage this connection will shape their economic future and their role in the global digital economy.

15. Predictions: what happens next

The forces reshaping the global energy and digital landscape are structural and long lasting. They are not temporary market conditions or short-term trends. They represent the next phase of economic development. Based on the direction of investment, the pace of artificial intelligence adoption and the constraints of the physical world, several outcomes are becoming increasingly clear.

First, hyperscalers will become some of the largest private power owners in the world. As loads grow, they will continue to build or co-develop generation assets that provide firm, reliable and controllable energy. In many regions, this will include gas, LNG, renewable energy and storage in hybrid configurations.

Second, energy assets will be revalued by global capital markets. For years, the energy system has been priced as a mature industry with modest growth expectations. That assumption no longer holds. Artificial intelligence growth will increase demand for firm power, gas supply, renewable integration and long duration storage. Capital markets will eventually reflect the central role of energy in digital growth, and energy companies will be priced accordingly.

Third, LNG and flexible gas will become essential stabilizers of global artificial intelligence growth. Countries that have access to gas or LNG import capacity will be able to support high-density digital infrastructure. Those without access will face pressure to secure long-term supply arrangements.

Fourth, carbon intensity will become a priced or price-differentiating attribute of compute. Hyperscalers and their customers will increasingly measure the carbon content of each unit of compute, and this will add a new dimension to competition among data centers and regions.

Finally, new financial structures will emerge. Energy backed compute contracts will become a distinct asset class that blends the stability of long-term energy agreements with the growth of digital demand. These contracts will define how hyperscalers and energy companies share risk, allocate capital and plan long-term investments.

Financial institutions that develop the capability to assess energy reliability, carbon intensity and digital demand together will gain a strategic advantage. Those who continue to evaluate energy, technology and infrastructure risk in isolation will struggle to price the realities of the new global order. These shifts mark the beginning of a new order. Power and compute will be developed together as one integrated system, and the world will organize around this reality.

16. Conclusion: energy will define the next global order

The world is entering a new era in which the physical constraints of energy shape the future of digital growth. Artificial intelligence, cloud computing and high-density data infrastructure are expanding at a pace that exceeds the ability of traditional power systems to support them. This shift has revealed a simple but powerful truth. Compute may scale globally, but the power required to run it is local. The new global order will be built on this foundation.

Throughout this article, we have explored how this tension drives new investment models, forms of collaboration and competition. Hyperscalers are building their own power systems because the grid cannot expand on the required timeline. Energy companies are becoming strategic partners and, in many cases, the essential enablers of artificial intelligence development. Nations are organizing themselves into new archetypes based on energy resources, regulatory structures and the ability to support artificial intelligence scale growth.

Financial markets have not yet fully aligned with this reality. Capital continues to price digital growth as if power can scale without constraint, while pricing much of the energy system as a mature industry with modest growth expectations. Over time, these assumptions will converge as investors, lenders and policymakers recognize that artificial intelligence growth depends on large scale investment in reliable generation, fuel supply, renewables, storage and supporting infrastructure.

The coming decade will be shaped by those who can deliver reliable, low cost, low carbon power at scale. Regions that align energy strategy with digital investment will attract the next generation of economic activity. Regions that cannot will face structural limits. The future belongs to nations and companies that understand that power and compute are now a single integrated system.

Energy, not compute, will define the next global order.

References

Bloomberg, 2025. Nvidia Hits $4 Trillion Value as Stock Rallies. Bloomberg, July 9, accessed July 7, 2025.

Ceres, 2025. Drained by Data: The Cumulative Impact of Data Centers on Regional Water Stress. September 23, accessed December 23, 2025.

Ember, 2025. Grids for Data Centres in Europe. June 19, accessed August 14, 2025.

McKinsey & Company, 2024. How Hyperscalers Are Fueling the Race for 24/7 Clean Power. December 18, accessed November 7, 2025.

McKinsey & Company, 2025. AI Power: Expanding Data Center Capacity to Meet Growing Demand, accessed November 7, 2025.

Mordor Intelligence, 2025. Northern Virginia Data Center Market, accessed December 12, 2025.

Reuters, 2025. Nvidia's Stock Market Value Hits $4 Trillion on AI Dominance. July 9, accessed July 9, 2025.

Reuters, 2025. Poor Grid Planning Could Shift Europe's Data Centre Geography, Report Says. June 18, accessed July 15, 2025.

S&P Global, 2025. Data Center Grid Power Demand to Rise 22% in 2025, Nearly Triple by 2030. October 14, accessed October 15, 2025.

S&P Global Market Intelligence, 2025. Grid Congestion Remains Key Issue as Data Center Load Growth Stresses System. October 16, accessed October 16, 2025.

StockAnalysis, 2025. Energy Sector Stocks, accessed November 7, 2025.

U.S. Department of Energy, 2023. 2023 Critical Materials Assessment. July 2023, accessed November 21, 2025.

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