



In collaboration with
Accenture

Powering Growth: Bridging the Investment Gap in Electricity Systems

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The conversion gap: why capital is not translating into power-system infrastructure

The power sector is central to economic growth, security and competitiveness. As electrification accelerates and new sources of demand emerge, investment in power infrastructure must keep pace to support this transformation. Capturing this opportunity requires investment to accelerate, particularly in grids, flexibility and the infrastructure required to connect new generation and demand. Yet available capital, proven technologies and growing policy ambition are not translating consistently into investable projects and delivered infrastructure at the pace required. This “conversion gap” is a defining challenge for power systems.

Closing the gap requires more than capital. Project investability depends on credible revenue models and regulation, effective risk allocation and confidence that infrastructure can be delivered on time and at predictable cost. Reliable and affordable power infrastructure is a strategic priority, especially amid geopolitical uncertainty and growing need for resilience. The urgency is mounting as electrification expands, with artificial intelligence (AI) and data centres adding further pressure on electricity systems. This requires investment not only in new generation, but also in grids, storage and demand-side flexibility to better use the existing infrastructure and integrate new capacity.

There is an imperative to act, and costs of delay are already visible. Global electricity demand is projected to increase by around 40% by 2035, and by about 50% by 2050,¹ while more than 2,500 GW of generation and storage remain stuck in connection queues.²

The costs of infrastructure delays are high: the European Commission estimates EU congestion management costs could reach €26 billion annually by 2030 and €103 billion by 2040, with up to 310 TWh of renewable electricity curtailed.³ In the United States, data centres could account for 11.8% of electricity consumption by 2030,⁴ adding further strain on generation and transmission. While these pressures differ across markets, they point to a common challenge: the speed at which power infrastructure can be planned, financed and delivered is critical to economic resilience and the energy transition. Understanding the conversion gap requires looking beyond the availability of capital to the conditions under which it can be deployed.

This is where the complementary strengths of the Clean Energy Ministerial (CEM) and the World Economic Forum can add value. CEM brings governments together to advance practical policy cooperation and implementation, while the Forum brings private sector perspectives, investment expertise and multistakeholder engagement. Together, they provide a platform to identify practical actions that can strengthen investment conditions, improve project pipelines and accelerate infrastructure delivery. Insights from the Forum's Future of Power Systems initiative and the [CEM's Action Agenda for Power Systems Solutions](#) point to a consistent conclusion: the challenge is ensuring that projects are sufficiently mature, structured and de-risked to attract investments.

Investors engage at different project stages. Early-stage capital can support emerging technologies and business models, while institutional and infrastructure investors typically require proven technologies, credible delivery and predictable revenues. Without these conditions, capital remains on the sidelines even with strong technology and policy ambition.

Four recurring barriers prevent opportunities from progressing to investment and delivery:

1. Uncertain investment conditions:

Policy and regulatory uncertainty, unclear revenue models, weak counterparties and unpredictable returns can deter investment. A high cost of capital discourages investment in capital-intensive infrastructure.

2. Weak project development and delivery:

Projects can be delayed, struggle to reach financial close, or lose commercial viability due to underdeveloped pipelines, lengthy permitting, fragmented responsibilities, social acceptance

challenges, limited visibility into manufacturing and supply capacity, input-cost volatility and unclear routes to market.

3. Asset-specific financing needs: Technologies and infrastructure assets have different risks, development timelines and revenue profiles, requiring tailored financing and risk allocation structures. This is important for emerging solutions with less established business and revenue models.

4. Limited public resources: Public finance alone cannot meet the scale of investment required, making it essential to create the conditions needed to mobilise private capital.

Addressing these barriers requires coordinated action across governments, regulators, investors and industry. The following sections examine the enabling conditions and measures being developed across CEM and Forum communities to support accelerating investment and delivery.



What makes power infrastructure investable

Closing the conversion gap requires conditions that allow investors to assess and manage risks, achieve competitive returns and have confidence that projects can be developed and operated over the long term.

Two complementary sets of enabling conditions are particularly important: regulation, policy and market design, which shape the broader investment environment; and bankability and risk allocation, which determine whether individual projects can attract and sustain investment.

Regulation, policy and market design

- **Long-term planning and policy predictability** give investors confidence that projects will remain viable over their investment lifetime. System-wide planning can provide visibility on future needs and create a credible investment pipeline. This should include the materials, manufacturing capability, workforce and supply chains needed to deliver future infrastructure. Stable policy frameworks, credible price and tariff signals, clear permitting and spatial planning pathways help translate plans into financeable projects.
- **Empowered institutions and consistent regulatory frameworks** reduce uncertainty throughout the project lifecycle. Independent, capable regulators, transparent governance and clear responsibilities provide confidence that rules are applied consistently. Where regulators are independent from government, early engagement can align investment needs with regulatory frameworks and enable private capital. This is essential for long-lived infrastructure, where regulatory decisions can affect project economics. Maintaining regulatory stability once capital is committed is critical to investor confidence, while frameworks also need sufficient flexibility to evolve transparently as technologies, market conditions and system needs change. For regulated networks, enabling investment requires balancing capital needs with affordability, as costs may ultimately be borne through consumer tariffs or public funding.
- **Stronger coordination and stakeholder engagement** can address bottlenecks across different institutions and stages of project development. Coordination among ministries, regulators, system operators, utilities,

investors, local authorities and communities can identify constraints earlier, streamline implementation, reduce delays and build support for new infrastructure.

- **Demand visibility and credible revenue models** translate future system needs into investable opportunities. Infrastructure can create system value through lower costs, reduced curtailment, resilience and economic growth, but these benefits do not automatically generate revenues. Bankability depends on converting sufficient system value and future demand into predictable contractual or regulated revenues. Clear demand signals, credible offtake arrangements and pricing structures are important where infrastructure must be built ahead of demand. Financeable terms and scenario-based planning can help bridge mismatches between long-term revenue needs and shorter offtake commitments while managing underutilization risk.

Bankability and risk allocation

- **Asset-specific approaches to risk** recognize that technologies differ in maturity and risk profile, even as advances can reduce costs, improve performance and strengthen project economics. Investment frameworks can remain broadly technology-neutral, while allowing risk assessment and mitigation measures to reflect these differences, helping promising technologies and projects reach the maturity required to attract investment.
- **Public-private collaboration to mobilise capital** is essential given the scale of investment needed. Credible counterparties and appropriate risk allocation are central to bankability. Where specific risks remain difficult for private investors to absorb, guarantees, concessional finance, credit support, blended finance and project aggregation can address targeted barriers and help attract private capital. Mechanisms should evolve as technologies, costs and system needs change to avoid locking in unnecessary costs or inefficient solutions.

These conditions are mutually reinforcing and create the confidence needed for investors, manufacturers and suppliers to commit capital and capacity at scale.

Initiatives supporting investable power systems

The enabling conditions outlined above need to be translated into practical policy, regulatory and financial measures. CEM and the Forum have developed complementary resources to help

government and business leaders identify barriers and implement practical approaches to reduce uncertainty and mobilize capital.

BOX 1 CEM Initiatives

Through its work, CEM provides platforms for knowledge sharing and collaboration around specific investment challenges, including those associated with emerging technologies. Long-term planning and policy predictability are strengthened through multiple CEM initiatives, with stronger coordination and stakeholder engagement cutting across these efforts.

The [21st Century Power Partnerships](#) support countries to develop Power Sector Action Plans that articulate policy and regulatory environments for planning, building and operating power systems. Action plans identify strategic priorities, providing greater visibility to prospective project developers and investors. Twelve countries have already published their action plans, and more are expected in the coming years.

[International Smart Grid Action Network](#) complements this with collaborative grid planning involving grid operators, policy-makers, local authorities and other stakeholders, reducing uncertainty around future grid needs and investment decisions and creating predictable conditions for timely and efficient grid development.

Effective institutions and consistent regulatory frameworks are at the heart of the [Empowering Regulators for Accelerated Decarbonization \(ERAD\) campaign](#). Strong, capable and independent regulators improve investors' confidence in both current rules and how they will evolve over an investment lifetime. ERAD supports regulators in strengthening their institutional frameworks and capabilities, while facilitating dialogues with policymakers. Through regulatory health checks, ERAD identifies barriers and develops practical recommendations to strengthen regulatory frameworks and capabilities that improve investor confidence and faster deployment of energy infrastructure.

Demand visibility, credible revenue models, and asset-specific approaches to risk are also reflected in CEM's technology-focused work. The [Supercharging Energy Storage Initiative](#) works to accelerate the development and deployment

of energy storage by addressing key barriers to investment. Drawing on international case studies, the initiative sheds light on derisking measures, effective revenue mechanisms, financing instruments, institutional capacity, and policy reforms needed to mobilize capital and accelerate global energy storage deployment.

The [GeoFuture Initiative](#) works to move next-generation geothermal from an emerging opportunity to deployable, investable infrastructure, directly addressing the financing, regulatory and data barriers that constrain investment. The Geothermal Case Study Series – its first flagship practical tool – documents replicable enabling conditions and financing structures, including blended finance models such as public grants, loan guarantees and offtake structures, drawn from operational projects. By profiling proven regulatory frameworks and de-risking approaches alongside technical lessons on drilling costs, resource capacity and induced seismicity management, the series gives governments and investors a practical, evidence-based roadmap for moving geothermal projects from planning to bankable implementation. The GeoFuture Initiative will also provide targeted technical assistance to countries and launch an Industry Advisory Group to engage with the private sector.

The [NICE Future Initiative](#), the only CEM nuclear initiative, leads the global conversation on the role of nuclear energy in the energy systems of the future. Through analyses such as jobs and economic development impact assessments and techno-economic modelling, the NICE Future Initiative supports countries in assessing deployment pathways for established and emerging nuclear technologies. Furthermore, the initiative has developed Principles for the AI-Nuclear Nexus to support nuclear developers and countries in de-risking project financing and speeding project development. As countries look to diversify their power systems, the NICE Future Initiative assists them in assessing the value that nuclear energy can provide.

Through its Future of Power Systems (FPS) initiative, the Forum convenes leaders to identify investment barriers and translate insights into practical frameworks, solutions and approaches to support investment and delivery.

The [FPS Enablers Framework](#) provides a practical tool for assessing the key building blocks needed to enable future power systems, helping decision-makers identify gaps and prioritize the enabling conditions most relevant to their system.

The complementary [Innovation Playbook](#) demonstrates how these conditions can be addressed via examples that could be adapted elsewhere. For example, the [Energy Savings Insurance Model by the Inter-American Development Bank](#)⁵ shows how guarantees and standardized

verification address performance risk; the [UK's electricity storage cap-and-floor framework](#)⁵ provides revenue certainty while protecting consumers from excessive returns; and [Australia's Capacity Investment Scheme](#)⁵ illustrates how governments can reduce merchant revenue risk while maintaining competitive market incentives.

Decision-makers need visibility on available market-design mechanisms and how they can be applied to specific challenges. The [FPS Market Design Taxonomy](#), a menu of 50+ mechanisms linked to specific outcomes, helps policy-makers and regulators identify the approaches best suited to their context. For example, [local flexibility markets developed by Areti and Siemens](#)⁵ illustrate how to manage variability and network constraints.

Together, these initiatives help translate system priorities into investable and deliverable projects. Their value lies not in prescribing a single model, but in helping decision-makers identify constraints and select an appropriate combination of measures.

For example, Uruguay's power sector transformation, documented in CEM [Action Plans](#) and the Forum report [Electricity Reinvented](#), illustrates the importance of system-wide approaches: sustained policy direction, coordinated planning, competitive procurement, clear institutional roles and effective risk-sharing reinforce one another. Isolated interventions are less effective than a coherent approach linking policy, planning, regulation, investment and delivery. Governments should avoid replicating individual mechanisms, rather identify blockers, then tailor the mix of measures needed.

The CEM and Forum communities work closely together to advance shared priorities on power sector investment and transformation. Together they can identify barriers, share practical solutions and build stronger alignment. CEM and the Forum call on all stakeholders to step up collective action, strengthen public-private cooperation across borders and business sectors, and turn shared priorities into concrete investment and delivery.

Governments, business leaders, investors and other stakeholders must also work together to share practical solutions and align efforts. CEM and the Forum will continue to provide a platform to support this effort, helping mobilize the investment and partnerships needed to accelerate the delivery of secure, competitive and resilient power systems.

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Endnotes

1. International Energy Agency (IEA), *World Energy Outlook 2025: Executive Summary*, 2025, <https://www.iea.org/reports/world-energy-outlook-2025/executive-summary>
Note: Global electricity demand is projected to increase by around 40% by 2035 under the IEA's current and stated policies scenarios, and by about 50% by 2050 under the IEA's net-zero emissions scenario.
2. International Energy Agency (IEA), *Electricity 2026 – Grids*, 2026, [Grids – Electricity 2026 – Analysis - IEA](#)
3. “More coordination needed in renewable deployment to prevent grid congestion”, *European Commission, Joint Research Centre (JRC)*, 27 May 2024, https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/more-coordination-needed-renewable-deployment-prevent-grid-congestion-2024-05-27_en
4. Berkeley Lab, *United States Data Center Energy Usage Report: 2025 Update*, 2026, <https://eta.lbl.gov/publications/united-states-data-center-energy-2025>
5. All case studies referenced in this report are available through the World Economic Forum's *Future of Power Systems Innovation Playbook*. The QR code linking to the Playbook is provided below





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