



MARKET SNAPSHOT

Infrastructure at an Inflection Point

Monthly analysis of the forces
reshaping the digital infrastructure
economy.



23.7 GW

U.S. data center
power capacity in
development

↑ 27% YoY

Source: S&P Global



\$250B+

Projected global
AI infrastructure
spend in 2026

Source: Goldman Sachs



90%+

Share of new data
centers requiring
increased power
density solutions

Source: Dell'Oro Group



78

Major infrastructure
policy actions
tracked globally
in 2026 YTD

Source: Critical Stack
Policy Tracker



01 | EXECUTIVE OVERVIEW

The Infrastructure Supercycle Is Here

AI, data, and digital services are creating unprecedented demand for infrastructure—powering a decade of investment and innovation.

The world is entering a new infrastructure supercycle driven by exponential growth in compute demand, accelerated by AI adoption, data proliferation, and the digitalization of every industry.

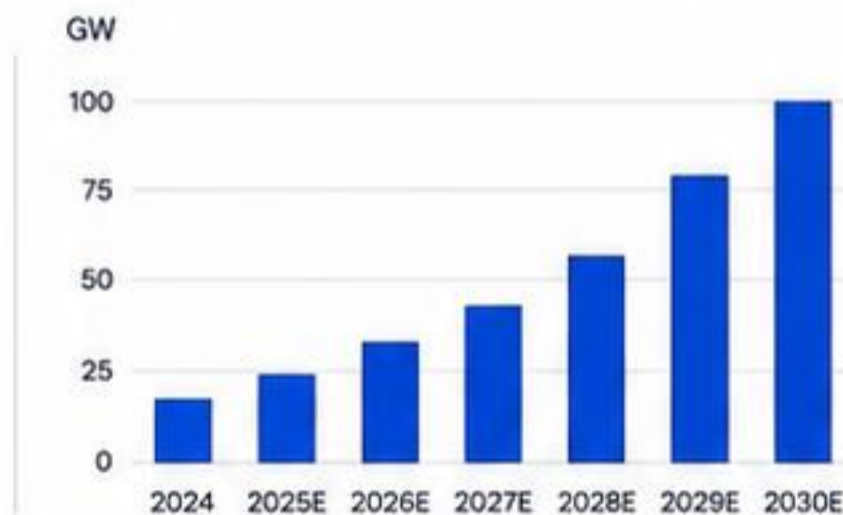
This supercycle will be defined by the ability to build, power, cool, and connect infrastructure at scale. Those who invest early, move decisively, and execute effectively will set the foundation for long-term leadership.

Global Demand Acceleration

Projected increase in global data center installed power capacity by 2030

2.4x

Source: McKinsey



The next decade will be defined by infrastructure. The winners will be those who build, power, and connect it—at scale.

JEFF DORF

Editor, Critical Stack

BY THE NUMBERS



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KEY TAKEAWAY

Infrastructure is no longer following demand—it is being built in anticipation of it.

02 | MARKET DYNAMICS

Compute Demand Is Outpacing Everything

AI adoption, data growth, and digital services are converging to create a level of infrastructure demand the world has never seen before.

From frontier AI model training to real-time inference at the edge, from cloud migrations to sovereign data strategies—demand is accelerating across every segment and every region.

The result is a structural shift: infrastructure is no longer a support function. It is the engine of economic growth and competitive advantage.


KEY INSIGHT

Compute demand is growing 2–3x faster than power supply, creating a widening infrastructure gap that will define the next decade of investment.

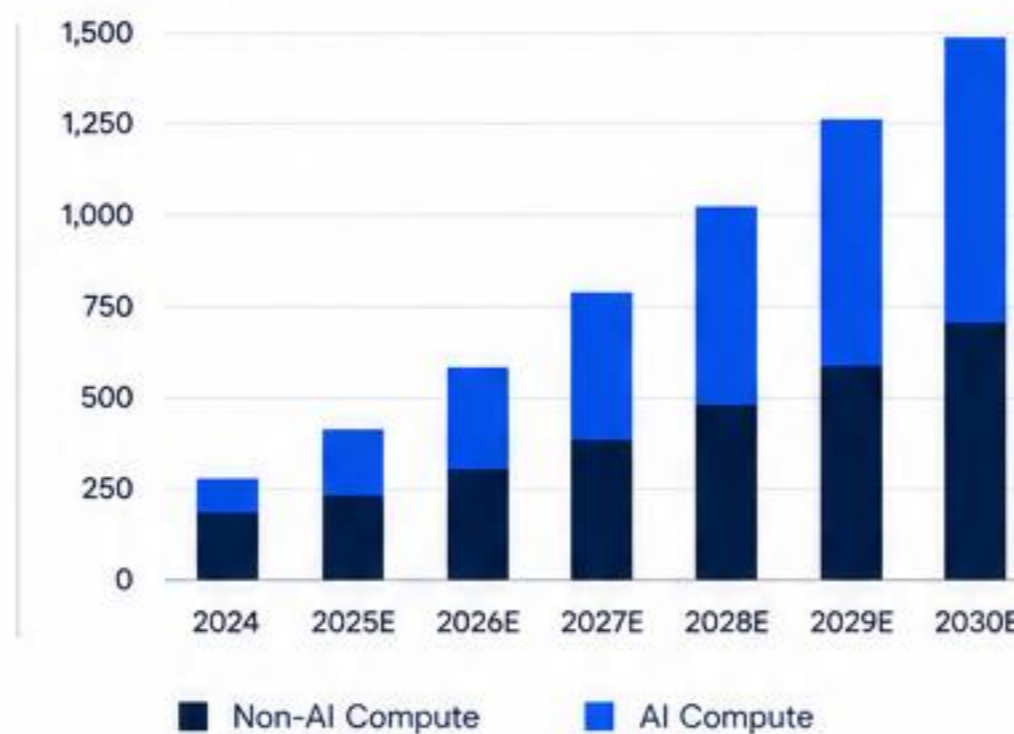
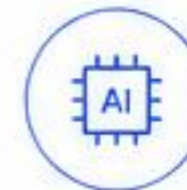
Global Compute Demand Growth

Estimated AI & non-AI compute demand (EFLOPS)

3.6x

Total compute demand expected to grow by 2030

Source: Bain & Company


PRIMARY DRIVERS

AI Model Scale

Larger models, more training, and exponential inference workloads.


Data Explosion

Global data creation projected to reach 200+ zettabytes by 2028.


Cloud & Digital Services

Enterprise cloud adoption and SaaS growth continue to accelerate.

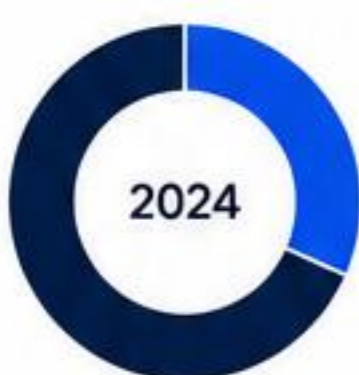

Sovereign & Regionalization

Nations and regions investing in domestic infrastructure for data security and resilience.

Workload Mix Shift | 2024 vs. 2030E

68%
Non-AI Compute

32%
AI Compute



43%
Non-AI Compute

57%
AI Compute



Source: Bain & Company



The constraint is no longer ambition. It's infrastructure.

– Industry Operator

03 | INVESTMENT LANDSCAPE

Capital Is Flowing Into the Infrastructure Backbone

Infrastructure has become one of the most attractive investment themes of the decade.

Private capital, sovereign wealth, and strategic investors are deploying billions across data centers, power, cooling, and connectivity assets to meet the needs of an AI-driven future.

This is not a cyclical buildout—it is a structural investment wave with multi-decade runway.

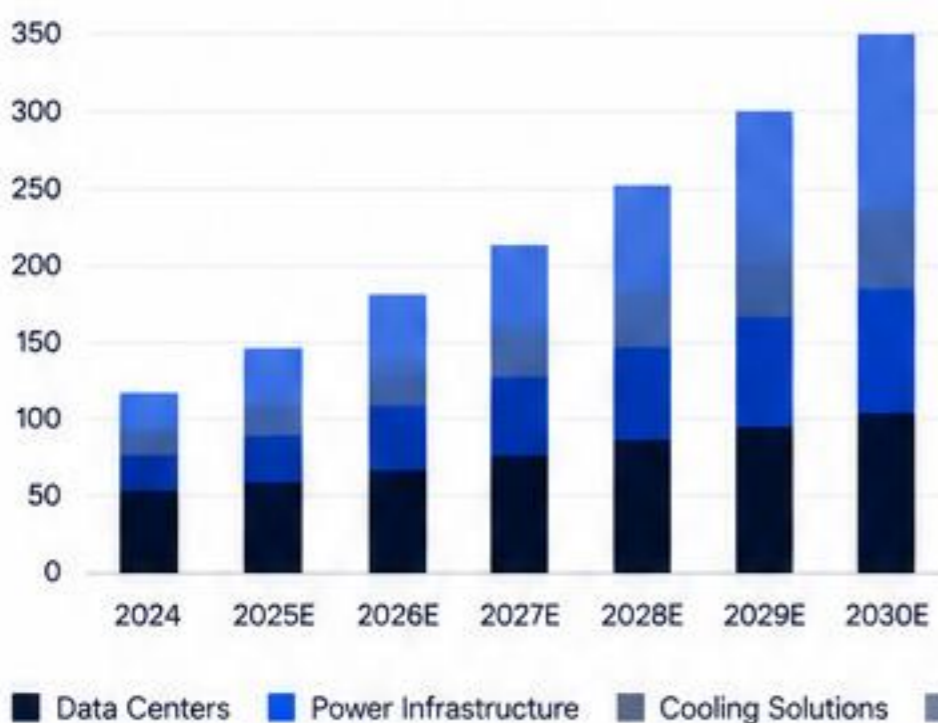


KEY INSIGHT

Infrastructure investment is shifting from reactive to strategic, with long-duration capital backing projects that power the next era of digital growth.

Global Infrastructure Investment Outlook

Annual investment in digital infrastructure (USD Billions)



WHERE CAPITAL IS DEPLOYED



Data Centers

Hyperscale, colocation, and edge capacity

42%



Power Infrastructure

Generation, transmission, and grid modernization

28%



Cooling Solutions

Liquid cooling, HVAC, and thermal systems

17%



Connectivity

Fiber, subsea, and network infrastructure

13%

Source: McKinsey

INVESTMENT DRIVERS



Secular Demand

AI, cloud, and data growth are driving persistent capacity needs.



Resiliency & Sovereignty

Nations and enterprises are investing to secure critical digital infrastructure.



Attractive Fundamentals

Long-duration assets with strong cash flows and inflation resilience.



Capital Diversification

Institutional and private capital are allocating more to real assets infrastructure.



The infrastructure layer is the new platform layer of the economy.

– Global Infrastructure Fund Manager

04 | POWER CONSTRAINT

Power Capacity Is the Defining Constraint

Insufficient power availability is the #1 bottleneck limiting data center growth worldwide.

Grid interconnection queues have reached record levels, with projects waiting years for power. At the same time, construction lead times for new generation continue to lengthen.

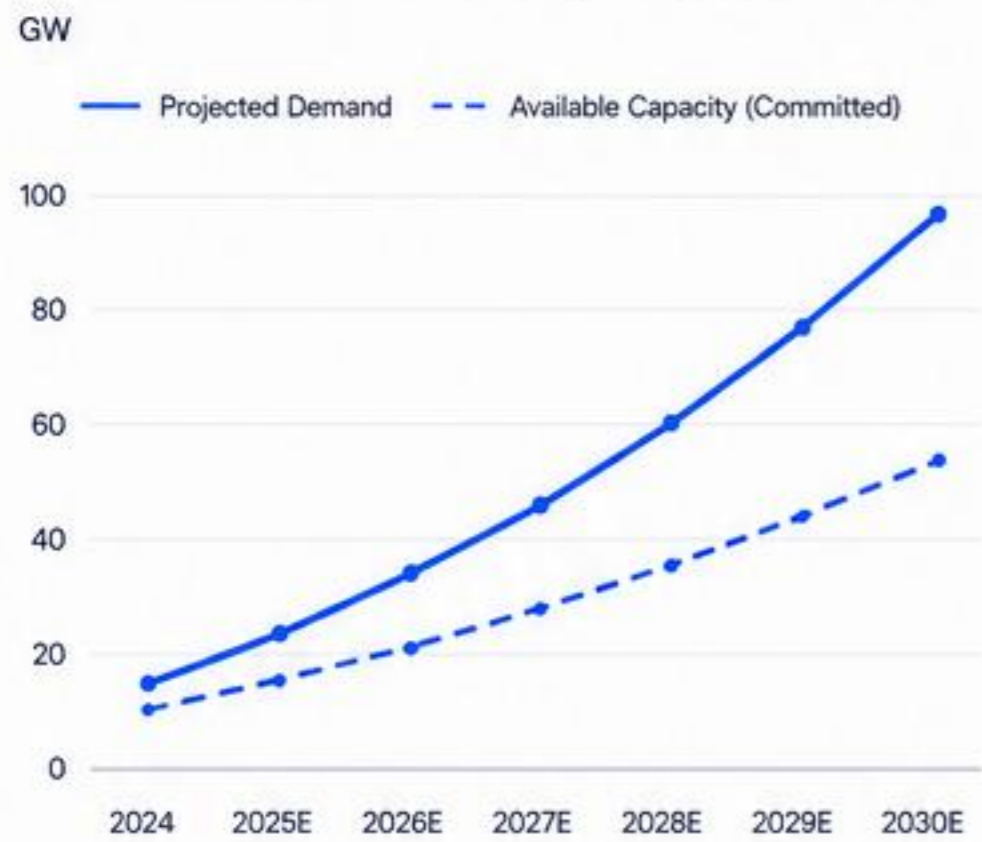
Until power capacity expands meaningfully, compute growth will remain geographically concentrated and economically constrained.



KEY INSIGHT

Power is now the critical path for digital infrastructure. Projects with power access will win. Those without it will wait—or lose.

Global Data Center Power Capacity vs. Demand



~45 GW

Projected power capacity shortfall by 2030

2-5

Year typical interconnection queue wait times in major markets

Source: S&P Global, Grid Strategies, Wood Mackenzie

INTERCONNECTION QUEUE SNAPSHOT



United States

1,200+ GW

Total capacity in interconnection queues
~70% are data centers and AI-related

Source: Lawrence Berkeley National Laboratory



Europe

300+ GW

Total capacity in interconnection queues

3-7 year average wait time

Source: Aurora Energy Research



Asia Pacific

250+ GW

Total capacity in interconnection queues

Growing constraints across key markets

Source: Wood Mackenzie



Global Trend

2-3x

Increase in queued capacity since 2022

Demand far outpacing grid and generation expansion

Source: Grid Strategies

POWER SOLUTIONS IN FOCUS



New Generation

Natural gas, nuclear, and renewables expansion required at scale.



Onsite Power

Behind-the-meter generation and storage reduce grid dependency.



Grid Modernization

Transmission upgrades and permitting reform are essential.



Power Partnerships

Hyperscalers and utilities are forming long-term strategic alliances.



Power is the new land. The best sites are already spoken for. The winners will secure power early and build strategically.

- Data Center Developer

05 | EQUIPMENT CONSTRAINT

Equipment Lead Times Are Extending and Limiting Growth

Supply chain constraints and surging demand are pushing lead times to record highs across critical infrastructure equipment.

From transformers to switchgear to generators, key equipment is now a gating factor for project timelines. Long-lead items are increasingly driving the overall schedule—not construction.

Projects that secure equipment early will have a material advantage in speed-to-power.

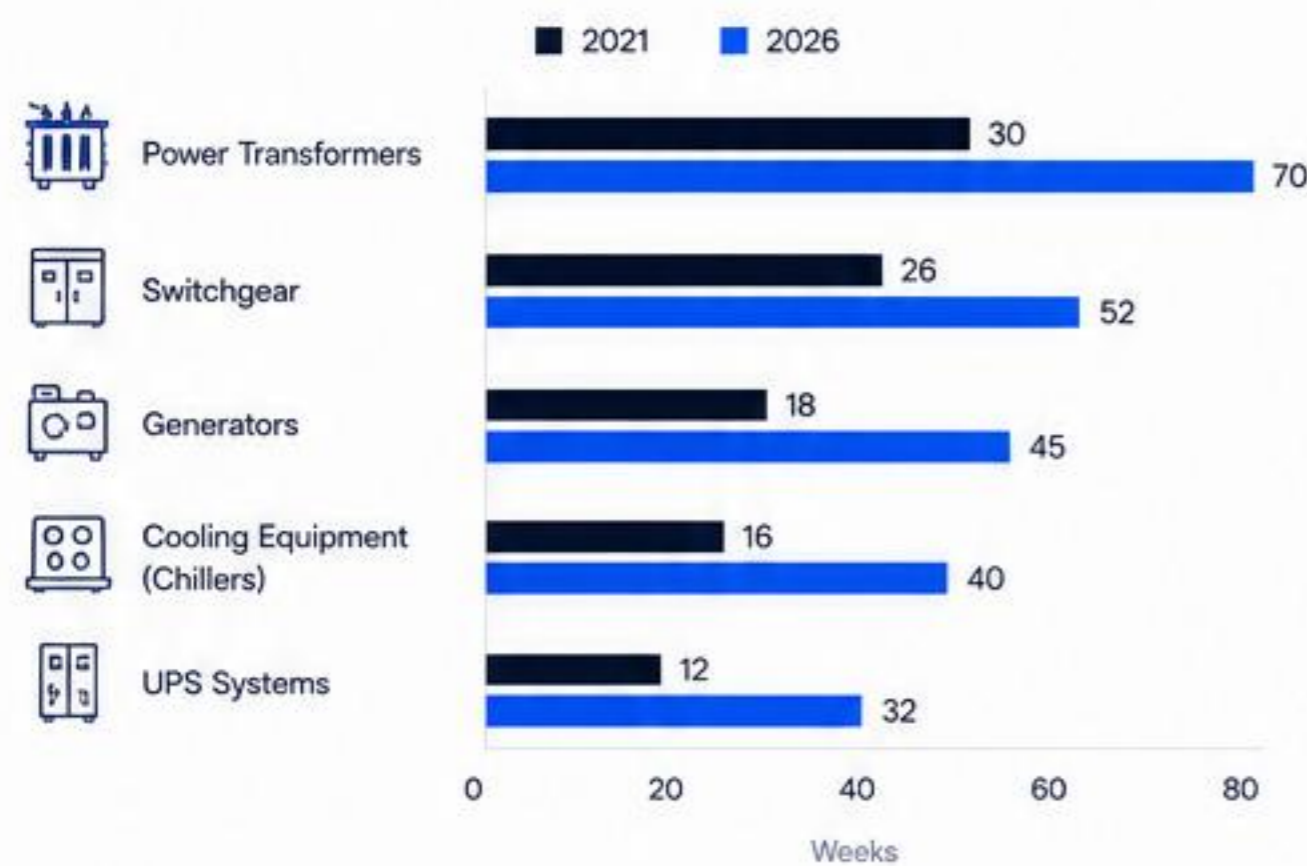


KEY INSIGHT

Equipment is the new long pole in the tent. Projects are no longer delayed by permits—they're delayed by lead times.

Critical Equipment Lead Time Trends

Typical lead times in weeks



Source: Wood Mackenzie, Equipment Manufacturers, Grid Strategies

IMPACT ON PROJECTS



Longer Project Timelines

Extended lead times add 6–18 months to project schedules.



Higher Costs

Escalating equipment prices and premium freight are increasing total project costs.



Geographic Concentration

Regions with existing equipment supply networks maintain a significant advantage.



Risk of Delays

Equipment availability is now one of the top risks cited by developers and investors.

Source: Deloitte, KPMG, Industry Interviews

WHAT DEVELOPERS ARE DOING



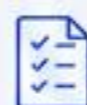
Secure Early
Lock in long-lead equipment during early development phases.



Dual Source
Qualify multiple suppliers to reduce single-source risk.



Strategic Inventory
Build and stage critical equipment inventory closer to project sites.



Integrated Planning
Align equipment procurement with power and construction schedules.



You can't compress a transformer. Lead times are the new reality—our best projects plan for that from day one.

– Infrastructure Investor

06 | GEOGRAPHIC & STRATEGIC SHIFTS

Infrastructure Is Moving to Where Power, Policy, and Proximity Align

The next wave of digital infrastructure will be geographically more diverse—but strategically more concentrated.

Power availability, regulatory certainty, and network proximity are reshaping where capital flows and capacity is built.

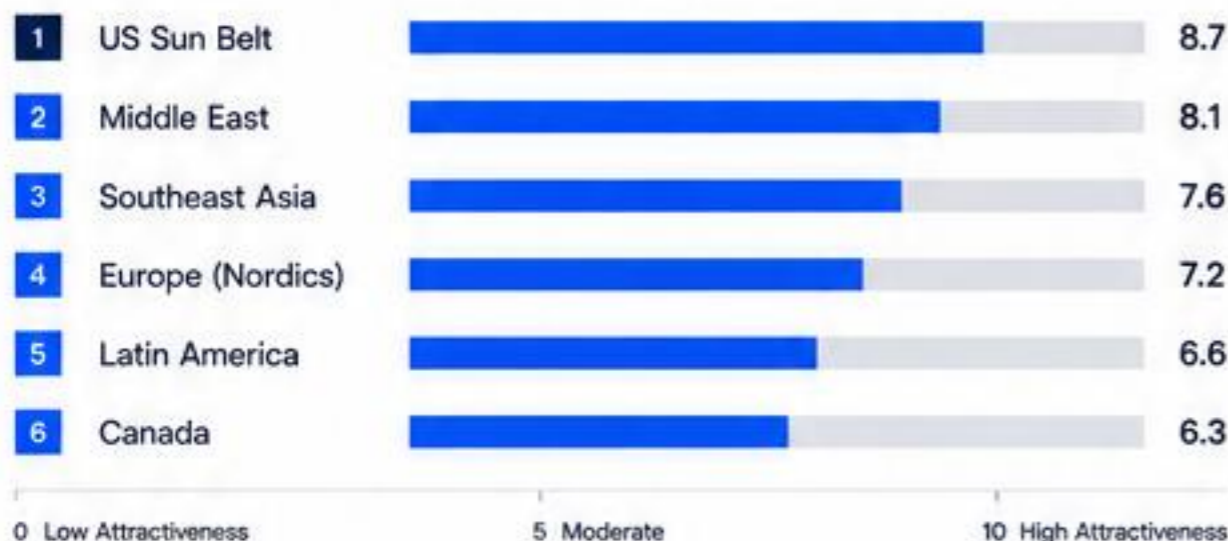
Regions that solve for infrastructure fundamentals today will be tomorrow's digital economy winners.


KEY INSIGHT

Digital infrastructure is becoming a geopolitical asset. The winners will be regions that combine abundant resources, smart policy, and strategic positioning.

Emerging Infrastructure Hotspots

Attractiveness score based on power, policy, connectivity, and talent


ABUNDANT POWER

Access to reliable, affordable, and scalable energy is the top driver.


POLICY CERTAINTY

Clear permitting, incentives, and stable regulation reduce execution risk.


NETWORK PROXIMITY

Low-latency connectivity to users, clouds, and trading partners creates advantage.


TALENT & ECOSYSTEM

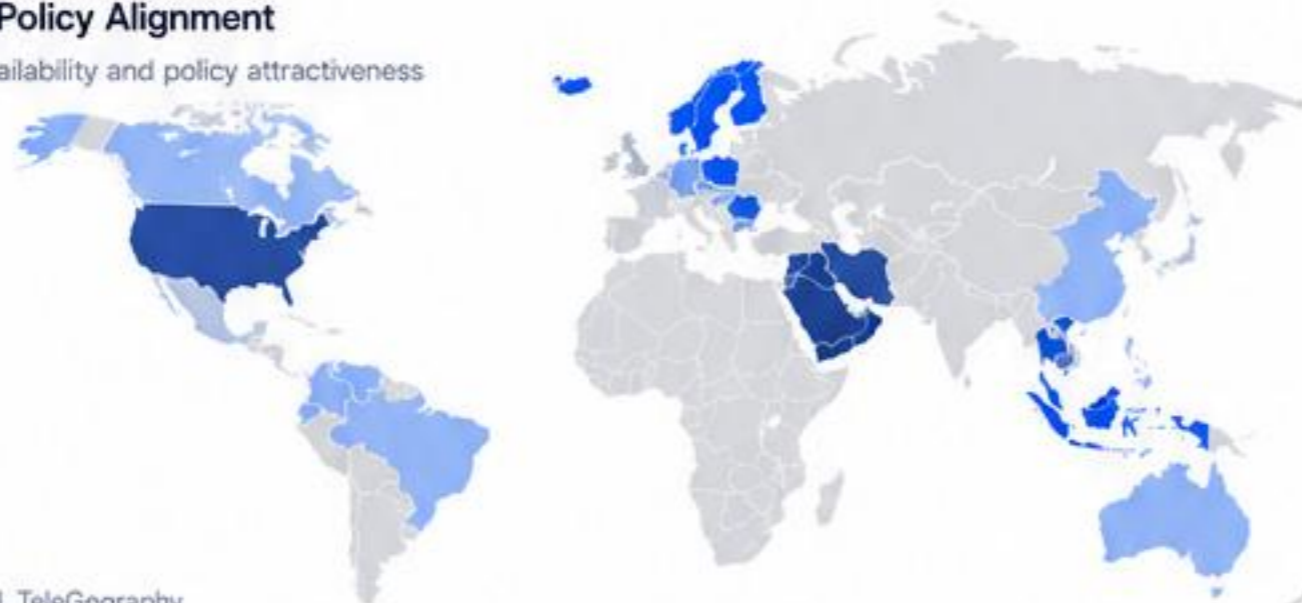
Access to technical talent and supplier ecosystems drives long-term scale.

Source: McKinsey, Wood Mackenzie, BCG

Illustrative Map: Power & Policy Alignment

Regions scoring high on power availability and policy attractiveness

- High alignment
- Moderate alignment
- Emerging alignment
- Low alignment



Source: IEA, World Bank, S&P Global, TeleGography

Strategic Shifts Underway

Power-Rich Regions Are Gaining Share

Regions with energy advantage are capturing a disproportionate share of new capacity.


Rise of Co-Located Generation

Onsite and adjacent generation projects are accelerating to meet demand.


Sovereign Infrastructure Strategy

Nations are investing in domestic digital infrastructure to secure economic and national security priorities.


Hyperscaler Diversification

Cloud and AI leaders are expanding beyond traditional hubs to reduce risk and secure capacity.


Edge and Regionalization

Compute is moving closer to where data is created and where users are located.



The next decade will be won by countries and regions that treat digital infrastructure as economic infrastructure.

– Infrastructure Investor

07 | WHAT HAPPENS NEXT

Building the Infrastructure Advantage: What to Watch Through 2030

The infrastructure supercycle is just beginning. The next five years will be defined by execution, adaptation, and strategic positioning.

Investors, operators, and policymakers that move decisively today will capture outsized value tomorrow.

Here are the key signals we're tracking and the actions that will separate the leaders from the rest.

KEY SIGNALS WE'RE TRACKING



Compute Demand Acceleration

AI model advancements and wider adoption continue to drive exponential infrastructure needs.



Power Supply Response

New generation, transmission upgrades, and storage deployment will determine capacity outcomes.



Cooling Innovation & Efficiency

Liquid, hybrid, and chip-level cooling solutions become mainstream at scale.



Supply Chain Normalizing

Equipment lead times improve as manufacturing capacity and component supply catch up.



Policy & Permitting Reform

Faster permitting and clearer frameworks unlock investment and accelerate deployment.

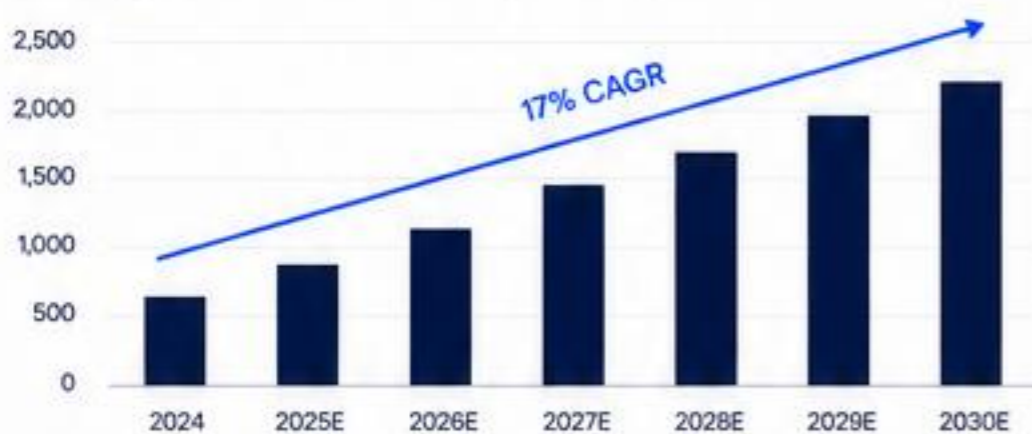


Infrastructure Security

Physical and cyber security become foundational to digital infrastructure resilience strategies.

INFRASTRUCTURE INVESTMENT OUTLOOK

Global digital infrastructure investment (USD Billions)



\$2.4T+

Total digital infrastructure investment expected by 2030

2.6x

Growth from 2024 to 2030

Source: Deloitte



LOOKING AHEAD

The winners of the next decade will be those who secure resources early, move decisively, and build infrastructure that is resilient, efficient, and built to scale.

ACTIONS THAT CREATE ADVANTAGE

- 01 Secure Power Early**
Prioritize sites and partnerships that lock in long-term power access.
- 02 Diversify Geographically**
Build across multiple regions and grids to reduce concentration risk.
- 03 Invest in Efficiency**
Optimize power and cooling efficiency to improve economics and sustainability.
- 04 Strengthen Partnerships**
Align with utilities, suppliers, and communities for long-term success.
- 05 Build for Resilience**
Design infrastructure that can adapt to demand, technology, and policy changes over time.



Infrastructure is the foundation of the AI era. The countries, companies, and investors that build it best will lead everything that follows.

– Critical Stack

08 | SOURCES, METHODOLOGY & SIGNALS

Methodology, Sources, and Signals We're Tracking

Critical Stack's market snapshots are built on proprietary analysis, industry data, and conversations with the operators and investors building digital infrastructure.

Our goal is to surface the high-signal insights that help leaders make smarter capital and operational decisions.

OUR METHODOLOGY



PRIMARY DATA SOURCES




SIGNALS WE'RE TRACKING (NEXT 6-12 MONTHS)

 POWER	<ul style="list-style-type: none"> > New grid interconnection queue volumes and wait times > Onsite generation project announcements and deployments > Transmission capacity additions and regional constraints
 COOLING	<ul style="list-style-type: none"> > Liquid cooling adoption rates and vendor deployments > Water availability policies and permitting changes > Innovation in heat rejection and efficiency technologies
 COMPUTE	<ul style="list-style-type: none"> > AI chip roadmap and platform transitions > Rack density trends and workload mix shifts > Hyperscaler capacity guidance and capex signals
 SUPPLY CHAIN	<ul style="list-style-type: none"> > Transformer and switchgear lead times > Data center construction cost and labor trends > Component shortages and manufacturing capacity
 GEOPOLITICAL & POLICY	<ul style="list-style-type: none"> > Data center incentive programs and policy shifts > Export controls and technology restrictions > Sovereign cloud and infrastructure initiatives

REPORT AT A GLANCE



WHAT WE MEAN BY "SIGNAL"

 A signal is an early indicator of change that has a measurable impact on infrastructure outcomes. We track signals to help our audience act before trends become obvious.

HOW TO USE THIS REPORT

-  **For Investors**
Identify where capital can create the most value over the long term.
-  **For Operators**
Plan capacity, manage risks, and optimize performance.
-  **For Policymakers**
Understand the infrastructure needs that underpin economic growth.

“ The digital infrastructure economy will be won by those who see around corners, invest ahead of constraints, and build systems that last. **”**

– Critical Stack

ABOUT CRITICAL STACK

Critical Stack provides market intelligence and strategic insights for the digital infrastructure economy. We deliver research that helps leaders navigate complexity and build the future.

CONTACT

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Thank You for Reading.

The digital infrastructure economy is at an inflection point. Critical Stack delivers the intelligence you need to navigate complexity and build the future.

We appreciate your time and interest.
We look forward to staying connected.



Help Shape What We Cover Next.

We are always looking ahead and deepening our coverage of the topics that matter most to leaders across the digital infrastructure ecosystem.

WE'D LOVE YOUR INPUT

What topics, questions, or trends would you like to see us explore in future snapshots?



Emerging technologies and innovations



Market or regional dynamics



Policy, regulation, or market structure



Share your suggestions with us at
insights@criticalstack.com

Your feedback helps us deliver insights
that drive better decisions—for all of us.

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Our Mission

Critical Stack is the intelligence platform for the digital infrastructure economy. We connect data, insight, and community to help leaders build what's next.