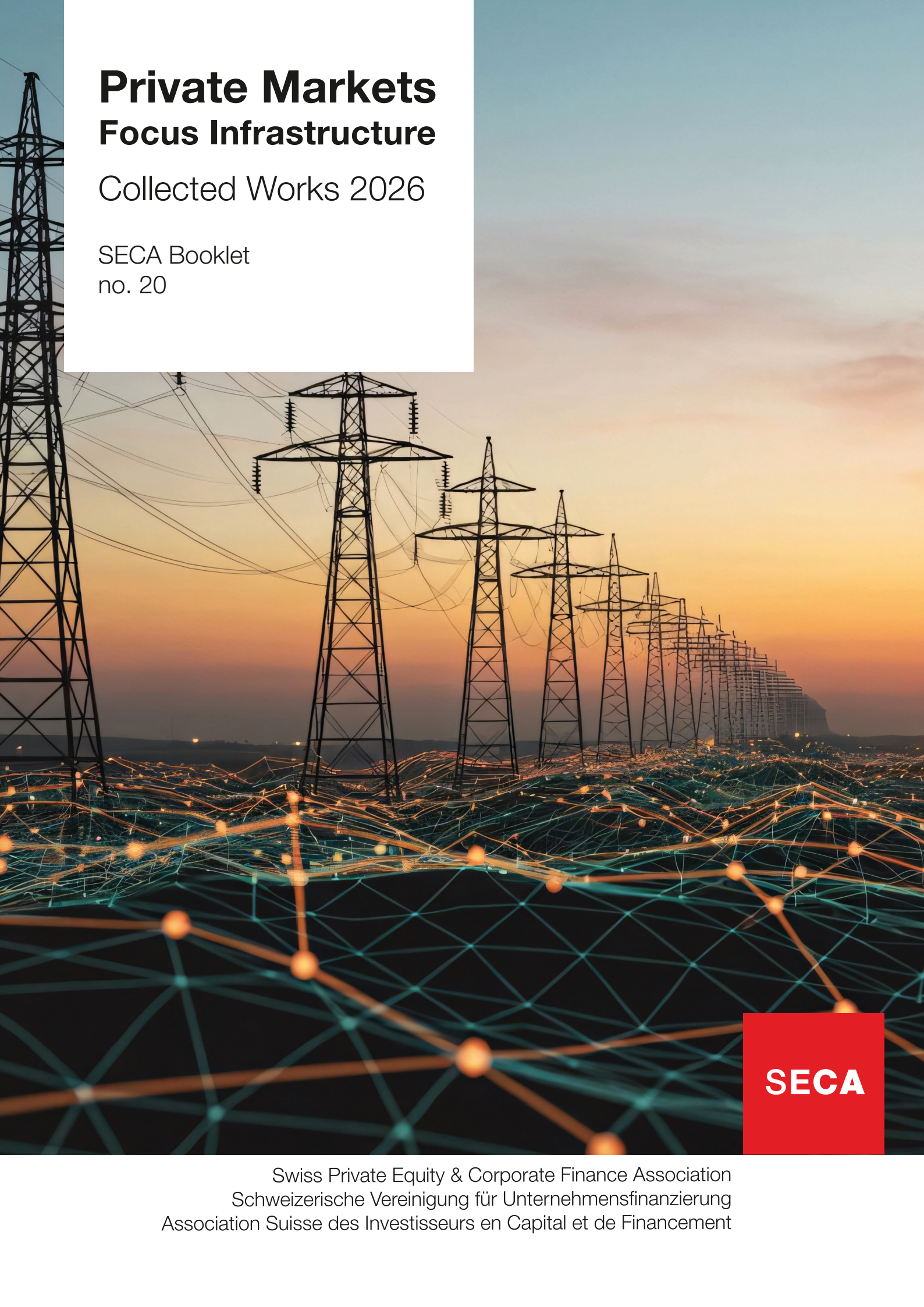




Private Markets Focus Infrastructure

Collected Works 2026

SECA Booklet
no. 20

SECA

Swiss Private Equity & Corporate Finance Association
Schweizerische Vereinigung für Unternehmensfinanzierung
Association Suisse des Investisseurs en Capital et de Financement

The Swiss Private Equity & Corporate Finance Association (SECA) is the representative body for Switzerland's private equity, venture capital and corporate finance industries. SECA has the objective to promote private equity and corporate finance activities in Switzerland. Meanwhile, SECA has a strong base of more than 550 members, which is composed of several investment companies, banks, corporate finance advisors, auditing companies, management consultants, lawyers and private investors.

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Private Markets Focus Infrastructure



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Vorwort

Vorwort

Private Infrastructure – eine Anlageklasse mit weiterem Potenzial

Infrastruktur ist für das Funktionieren unserer Wirtschaft und Gesellschaft unverzichtbar. Gleichzeitig führen Energiewende, Digitalisierung und der stark wachsende Bedarf an Rechenleistung zu einem erheblichen Investitionsbedarf. Für langfristig orientierte institutionelle Anleger eröffnet dies attraktive Möglichkeiten zur Diversifikation und zur Renditeoptimierung.

Auch Schweizer Pensionskassen möchten ihren Infrastrukturanteil weiter ausbauen. Die heutige Allokation liegt gemäss Untersuchungen der Hochschule Luzern weiterhin bei lediglich rund 2 bis 3 Prozent. Gleichzeitig erlaubt der regulatorische Rahmen gemäss BVV 2 grundsätzlich eine Infrastrukturquote von bis zu 10 Prozent. Damit besteht für viele Vorsorgeeinrichtungen weiterhin ein grosser Spielraum.

Vorteile für langfristige Investoren

Infrastrukturanlagen können langfristige und vergleichsweise stabile Cashflows bieten. Regulierte, vertraglich vereinbarte oder inflationsgebundene Erträge können zudem einen Schutz gegenüber Inflation ermöglichen. Die geringe Korrelation zu traditionellen Anlageklassen macht Infrastruktur darüber hinaus zu einem interessanten Instrument zur Diversifikation.

Gerade in einem von geopolitischen Unsicherheiten, Inflationssorgen und veränderten Zinsbedingungen geprägten Umfeld gewinnt die Resilienz des Gesamtportfolios an Bedeutung. Infrastruktur

kann hier eine wichtige Rolle spielen. Entscheidend ist dabei nicht allein die Höhe der Allokation, sondern eine sorgfältige Portfolio-Konstruktion über unterschiedliche Sektoren, Regionen und Strategien hinweg.

Neue Chancen und Perspektiven

Das Infrastrukturuniversum entwickelt sich laufend weiter. Neben Energie und Transport gewinnen insbesondere digitale Infrastruktur und Rechenzentren an Bedeutung. Gleichzeitig eröffnen Mid-Market-, Value-add- und Secondary-Strategien institutionellen Anlegern zusätzliche Zugangsmöglichkeiten.

Der vorliegende Sammelband greift diese Entwicklungen aus unterschiedlichen Perspektiven auf. **Ardian, DWS, Eigen Advisory, Energy Infrastructure Partners, IFM Investors, infrAM, Invest Europe, Marsh, Partners Group, PATRIZIA, Reichmuth & Co., Schroders Capital, SFP Infrastructure Partners, Stepstone, Stonepeak, Swiss Life** und **UBS** beleuchten aktuelle Fragestellungen rund um Portfolio-Konstruktion, digitale Infrastruktur, Mid-Market- und Value-add-Strategien sowie den Secondary-Markt.

Wir hoffen, dass dieser Sammelband Schweizer Pensionskassen und weiteren institutionellen Investoren wertvolle Impulse für die Einordnung dieser langfristig bedeutenden Anlageklasse bietet.

Weitere Informationen

Die SECA unterstützt institutionelle Investoren mit Informationsmaterial und Schulungen zum Thema Private Markets, Private Infrastructure and Private Debt.

www.private-markets.ch

www.seca.ch



Zug/Rotkreuz, November 2026

A handwritten signature in black ink, appearing to read "John Davidson".

John Davidson
Hochschule Luzern – Wirtschaft, IFZ
Prof. Dr.

A handwritten signature in black ink, appearing to read "M. Pedergrana".

Maurice Pedergrana
SECA General Secretary
Prof.Dr.oec.



Einführung

Was macht Private Infrastructure besonders?

Private Infrastructure unterscheidet sich in wesentlichen Punkten von anderen Private-Markets-Anlagen. Während Private Equity typischerweise auf die Entwicklung und Wertsteigerung von Unternehmen ausgerichtet ist, steht bei Infrastruktur häufig ein physischer oder digitaler Vermögenswert im Zentrum. Die Wertentwicklung basiert dabei nicht allein auf einer möglichen Veräusserung, sondern vielfach auf langfristigen, vertraglich oder regulatorisch geprägten Erträgen.

Gleichzeitig ist „Infrastruktur“ kein einheitliches Anlageuniversum. Ein Windpark, ein Rechenzentrum, ein Fernwärmenetz, eine Mautstrasse oder ein Glasfasernetz weisen sehr unterschiedliche wirtschaftliche und regulatorische Charakteristika auf. Entsprechend unterscheiden sich auch Rendite-Risiko-Profile, Finanzierungsstrukturen, Laufzeiten und operative Anforderungen.

Eine fundierte Auseinandersetzung mit Private Infrastructure muss deshalb verschiedene Perspektiven zusammenbringen: Investoren und Asset Manager ebenso wie Betreiber, Banken, Berater, öffentliche Institutionen und Regulatoren.

Zwischen Rendite, Resilienz und gesellschaftlicher Wirkung

Die wachsende Bedeutung von Private Infrastructure wirft zugleich grundlegende Fragen auf. Wie lassen sich die enormen erforderlichen Investitionen finanzieren? Welche Rolle soll privates Kapital bei der Bereitstellung öffentlicher

oder systemrelevanter Infrastruktur spielen? Wie können attraktive Investitionsbedingungen geschaffen werden, ohne die langfristigen Interessen von Gesellschaft und Wirtschaft aus dem Blick zu verlieren?

Damit bewegt sich Private Infrastructure an einer Schnittstelle zwischen Kapitalmarkt, Realwirtschaft und öffentlichem Interesse. Diese besondere Stellung macht die Anlageklasse anspruchsvoll – und gleichzeitig besonders relevant.

Der vorliegende Sammelband setzt hier an. Er beleuchtet Private Infrastructure aus unterschiedlichen fachlichen und praktischen Perspektiven und zeigt auf, welche Entwicklungen den Markt prägen, welche Investitionsmöglichkeiten entstehen und welchen Herausforderungen sich Marktteilnehmer gegenübersehen.

Der Sammelband verfolgt dabei nicht das Ziel, eine abschliessende Definition oder ein einheitliches Investitionsmodell für Private Infrastructure zu liefern. Vielmehr soll er unterschiedliche Sichtweisen zusammenführen und damit einen Beitrag zum Verständnis eines Marktes leisten, der sich dynamisch entwickelt und zunehmend an Bedeutung gewinnt.

Denn eines wird bereits heute deutlich: Die Infrastruktur der Zukunft muss nicht nur gebaut, sondern auch finanziert werden. Private Capital wird dabei eine wichtige Rolle spielen. Die entscheidende Frage ist nicht mehr, ob privates Kapital Teil der Infrastrukturfinanzierung sein wird, sondern wie diese Rolle ausgestaltet werden kann.



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Wir investieren in Energieinfrastruktur,
um Mehrwert für unsere Investoren
zu schaffen.

IFM Investors

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infrAM

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"Infrastructure investing is about \$
patience. Infrastructure secondaries
are about information."

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Stonepeak

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UBS

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Ardian

The architecture of resilience: infrastructure has won its place in portfolio construction

ARDIAN

Ardian is a world-leading private investment house, managing or advising \$200bn of assets on behalf of more than 1,920 clients globally. Our broad expertise, spanning Private Equity, Real Assets and Credit, enables us to offer a wide range of investment opportunities and respond flexibly to our clients' differing needs. Ardian's main shareholding group is its employees; our more than 1,100 employees are spread across 22 offices in Europe, the Americas, Asia and Middle East. Since 2008, we have established a strong local foothold in Switzerland, with over 40 professionals spanning various teams. Through commitment, knowledge and technology, we bring lasting value to our companies and contribute positively to the whole industry.

The architecture of resilience: infrastructure has won its place in portfolio construction

Marion Calcine

Member of the Executive Committee, Executive President of Ardian France, Chief Investment Officer for Infrastructure



Resilience in an investment portfolio is not guaranteed. While careful portfolio construction around public and private markets allocation remains key, private infrastructure can insulate investors from volatility and diversify their sources of return.



Ardian's Paris office, Place Vendôme.

Image source : [Ardian Website](#)

Why private markets benefit **investment portfolios**

Portfolio construction starts with determining how an LP's asset allocation is split across public and private markets. Private markets have undergone fundamental change during the last decade. While deal activity initially ground to a halt in the early days of the COVID-19 pandemic, there has been stalled recovery since with deal volumes remaining uneven this year. Fundraising boomed in 2021 before a decline due to interest rate shocks in 2022.

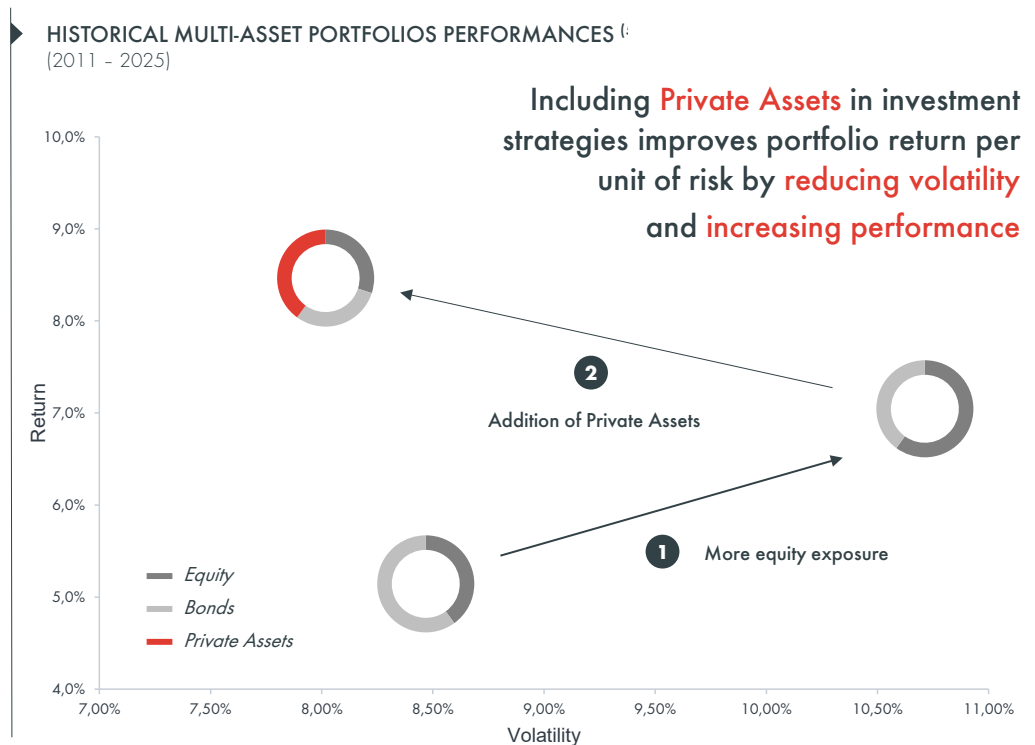
This higher interest rate environment has resulted in a significant shift within private markets managers towards value creation, and away from leverage, to deliver returns to investors. It has also reinforced the importance of thinking holistically about how private markets – and the asset classes within it – best fit within a portfolio.

For both institutional and private wealth investors, private markets provide access to a wealth of resilient, growing businesses and assets that are not available through public markets.

Private markets have outperformed public markets since 2010, according to a 2025 paper by MSCI, and delivered annualized net return at 12-plus% with 60% lower volatility compared to public markets and very low correlation to other asset classes¹. This is why private markets belong in diversified portfolios.

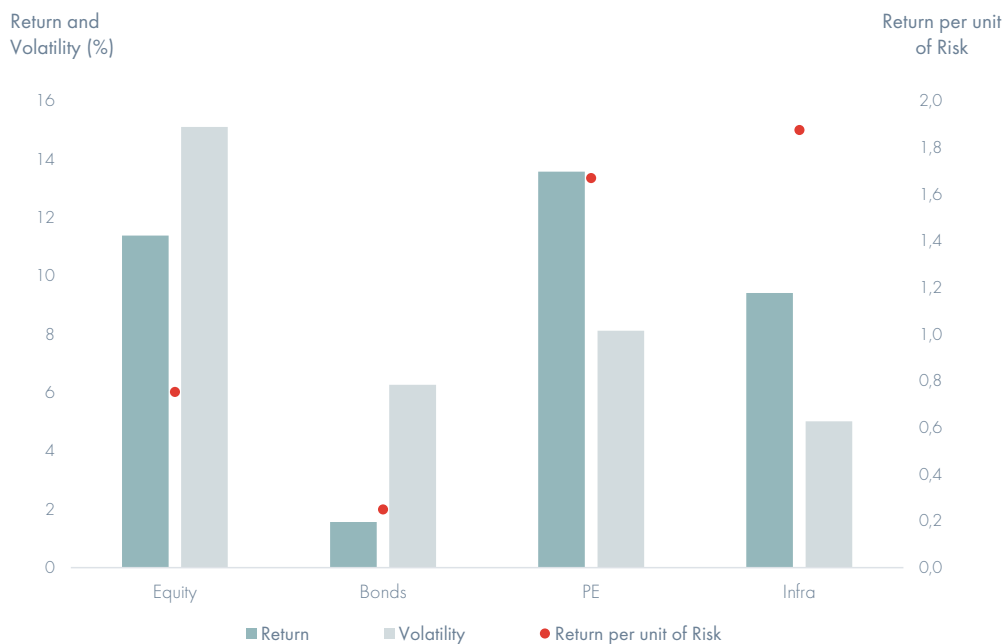
Ardian's analysis of different portfolio configurations shows that adding private assets to traditional Bond/Equity portfolios decreases volatility and increases returns.

¹ MSCI, [Has Private Equity Outperformed Public Equity?](#), 6 Nov 2025.



Shows the historical portfolios performances with annualized quarterly returns and volatilities. **Source:** Ardian computations as of May 2026 on data from Bloomberg, MSCI, Cambridge up to Q3 2025. Equity proxied using MSCI World TR, Bonds proxied using Bloomberg Global Aggregate Index TR, Private Assets 40% allocation includes 25% Private Equity proxied using Cambridge Private Equity Quarterly Index and 15% Private Infrastructure proxied using Cambridge Infrastructure Quarterly Index. Portfolio 1 represents 60% Bonds / 40% Equity, Portfolio 2 represents 40% Bonds / 60% Equity, Portfolio 3 represents 30% Bonds / 30% Equity / 40% Private Assets. Public indices performance reported as Gross performance. Private indices performance net of fees and carry.

ASSET CLASSES RETURN AND VOLATILITY (2010 – 2025)



Shows the return and volatility and return per unit of risk for different asset classes, with Infrastructure achieving the highest return per unit of risk. **Source :** Ardian computations as of April 2026 on data from Bloomberg, MSCI, Cambridge up to Q3 2025. Equity proxied using MSCI World TR, Bonds proxied using Bloomberg Global Aggregate Index TR, PE referring to Private Equity proxied using Cambridge Private Equity Quarterly Index, Infra referring to Private Infrastructure proxied using Cambridge Infrastructure Quarterly Index. Annualized return and annualized volatility figures. Public indices performance reported as Gross performance. Private indices performance net of fees and carry.

The bottom left shows a traditional 60/40 portfolio split between bonds and equities. Investors seeking higher returns could increase their Equity allocation to 60%, and arrive at the second portfolio, which would indeed give higher return, but also higher volatility. But by allocating 40% to private markets (here split into 25% Private Equity and 15% Infrastructure), you have less volatility and more return. All in all, this third portfolio achieves a return to volatility ratio that is 63% higher than Bond Equity portfolios.

Infrastructure improves portfolio returns

The second level of portfolio construction is allocating within private assets. This is where infrastructure can play a key role.

Infrastructure is essential to economies and supported by growth megatrends, including rising AI demand, the energy transition and decarbonization. It is resilient to adverse economic conditions, outperforming in periods of high inflation and remaining competitive in low inflation periods. And when rates rise, private infrastructure becomes a volatility dampener. Its low-to-moderate correlation to other asset classes means it can counteract the increased volatility of bonds.

The last five years of macroeconomic instability have demonstrated, in quantitative terms, the strength of infrastructure. Compared to equity, bonds and private equity, it consistently achieves the highest risk adjusted return through higher rates and higher inflation. This makes infrastructure a fundamental lever to consider in resilient portfolio construction.

Asset classes performances across GDP and Rates periods : 2010-2025



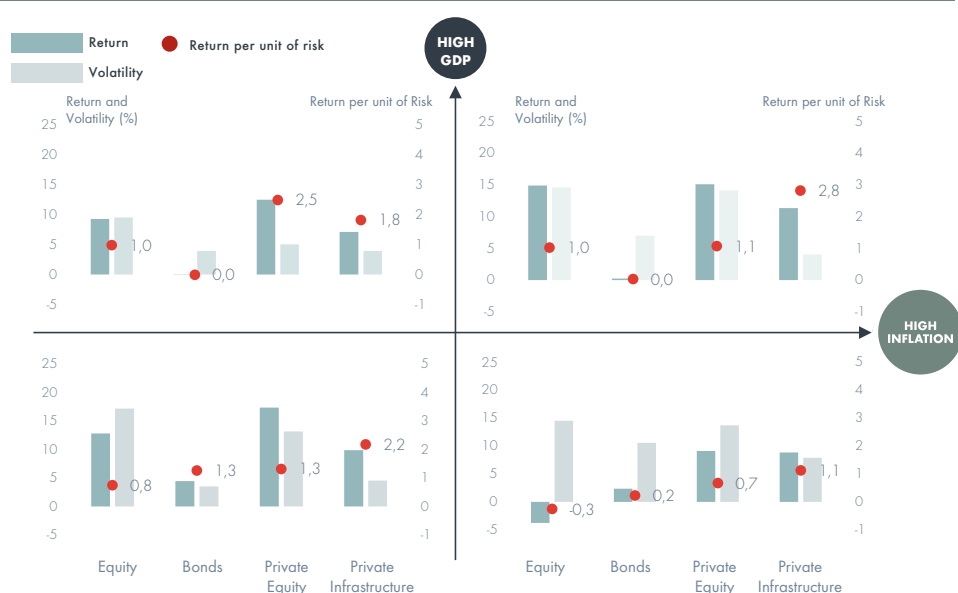
Shows the returns per unit of risk, across asset classes across GDP and Inflation periods, with Infrastructure consistently achieving the highest risk adjusted return.

Source: Ardian computations as of April 2026 on data from Bloomberg, MSCI, Cambridge up to Q3 2025. Equity proxied using MSCI World TR, Bonds proxied using Bloomberg Global Aggregate Index TR, Private Equity proxied using Cambridge Private Equity Quarterly Index, Private Infrastructure proxied using Cambridge Infrastructure Quarterly Index. Return represented by four quarterly rolling returns, volatility on annual returns. Public indices performance reported as Gross performance. Private indices performance net of fees and carry. High and Low GDP periods defined with a 2% threshold on US YOY real GDP growth. Increasing and decreasing Rates periods defined with positive or negative YOY US 3-months treasury bill rates variations.

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Asset classes performances across GDP and Inflation periods : 2010-2025



Five key benefits of allocating to infrastructure

1

Low exposure to macro cycles

Since infrastructure provides essential services, it is fundamental to the functionality and efficiency of global economies. This creates stable and predictable demand regardless of adverse macroeconomic conditions or political uncertainty, making it an attractive asset class for longer-horizon investors.

2

Hedge against inflation

Prices are often set by regulatory bodies, thereby balancing profitability with consumer protection, and indexed to inflation. At Ardian, we have consistently seen more than 85% of revenues indexed to inflation in our infrastructure portfolios across different fund vintages and more than 70% contracted over the long term.

3

Lower volatility

Infrastructure has lower beta values, indicating reduced price fluctuations and lower investment risk. It achieves its lowest volatility in periods of high GDP growth and highest risk-adjusted return when GDP growth is low. Overall, private infrastructure's return per unit of risk is the highest of all rates conditions, demonstrating its resilience.

Return per unit of risk (2011 - 2025)

	High GDP		Low GDP		High GDP		Low GDP	
	Rising Rates	Declining Rates	Rising Rates	Declining Rates	High Inflation	Low Inflation	High Inflation	Low Inflation
Bonds	-0.11	0.45	0.19	1.41	0.03	-0.01	0.22	1.26
Equity	0.74	2.09	0.17	0.59	1.02	0.98	-0.26	0.75
PE	1.6	1.19	1.22	1.28	1.07	2.49	0.67	1.32
Infra	2.12	2.34	3.04	1.38	2.82	1.82	1.12	2.18

Shows the return per unit of risk for each asset class against rates, GDP and inflation, with Infrastructure achieving the highest returns of all rate conditions. **Source** Ardian computations as of April 2026 on data from Bloomberg, MSCI, Cambridge up to Q3 2025. Information provided for illustration purposes only, no binding contractual force. Equity proxied using MSCI World TR, Bonds proxied using Bloomberg Global Aggregate Index TR, PE referring to Private Equity proxied using Cambridge Private Equity Quarterly Index, Infra referring to Private Infrastructure proxied using Cambridge Infrastructure Quarterly Index, Listed Infrastructure proxied using MSCI World Infrastructure TR, Private Credit proxied using Cambridge Private Credit Quarterly Index. Return per unit of risk computed as annualized return divided by annualized volatility. Public indices performance reported as Gross performance. Private indices performance net of fees and carry.

4

Uncorrelated returns

Private infrastructure has low correlation with public markets and moderate correlation with other asset classes, making it a strong diversifier and more resilient during market downturns. Hard assets with regulated or contracted revenues generate stable yield for investors. At Ardian, the strong performance of our infrastructure strategy is achieved through low volatility and decorrelation from public indices.

Asset classes quarterly return correlation (2011 – 2025)

- **Private Infrastructure** shows low correlation to public markets and moderate correlation to other private asset classes
- **Ardian** achieves lowest correlation with other asset class

1	0.23	0.06	0.03	0.02	0.16	0.07	Ardian infra
0.23	1	0.55	0.6	0.46	0.71	0.67	Private infra
0.06	0.55	1	0.79	0.35	0.79	0.8	Equity
0.03	0.6	0.79	1	0.47	0.63	0.7	Listed Infra
0.02	0.46	0.35	0.47	1	0.35	0.23	Bonds
0.16	0.71	0.79	0.63	0.35	1	0.84	Private Equity
0.07	0.67	0.8	0.7	0.23	0.84	1	Private Credit
Ardian Infra	Private Infra	Equity	Listed Infra	Bonds	Private Equity	Private Credit	

Shows the quarterly return correlation of each asset class, with Infrastructure achieving the lowest correlation. **Source:** Ardian computations as of April 2026 on data from Bloomberg, MSCI, Cambridge up to Q3 2025. Information provided for illustration purposes only, no binding contractual force. Equity proxied using MSCI World TR, Bonds proxied using Bloomberg Global Aggregate Index TR, PE referring to Private Equity proxied using Cambridge Private Equity Quarterly Index, Infra referring to Private Infrastructure proxied using Cambridge Infrastructure Quarterly Index, Listed Infrastructure proxied using MSCI World Infrastructure TR, Private Credit proxied using Cambridge Private Credit Quarterly Index. Public indices performance reported as Gross performance. Private indices performance net of fees and carry.

5

Enabling megatrends

Finally, infrastructure is integral to economic transformation, driven by long-term structural trends and benefiting from strong policy support.

These characteristics effectively de-risk performance over time, giving infrastructure a different performance profile to traditional equities and bonds.

Taking a global approach

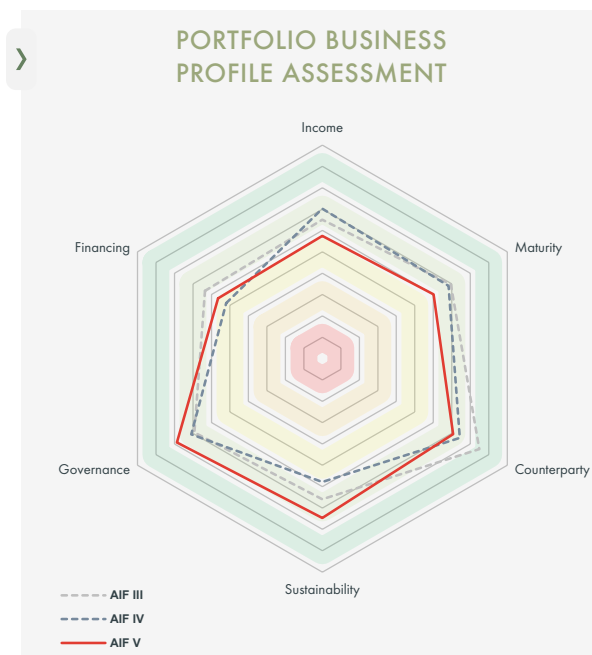
When allocating to private infrastructure, choosing a manager with dynamic and controlled portfolio construction is critical to ensuring resilience through diversification.

We believe in taking a global approach that considers all dimensions, with a consistent investment profile across generations. This means every asset should be assessed with respect to what it would add to or concentrate within an existing portfolio in terms of sectors, geographies or macroeconomic exposure. This ensures that risks are sufficiently spread and maximizes long-term yield.

The key dimensions to successful fund portfolio construction

- Income: including volume and price uncertainty, business development, management alignment;
- Governance: including governance rights, liquidity, influence;
- Maturity: including technology, execution risk, operational profile;
- Financing: including leverage level, structure complexity, condition uncertainty;
- Counterparty: including income concentration, supplier and partner relevance;
- Sustainability: including business model resilience, ESG, digital.

Designing a portfolio in such a way maximizes market benefits and enables consistent value creation over inflation periods. Each company's specificities diversify into an overall balanced portfolio without over-exposure to specific risks or sensitivities.



Shows the average business profile in each of Ardan Infrastructure Funds III, IV and V.

For us, dynamic and controlled portfolio construction focused on essential infrastructure means considering balance across a range of factors, including geographies, sectors, income streams, maturity and exposure to counterparties. Each asset is additive to the overall portfolio and offsets the risks of another.

Sectors

Our flagship infrastructure strategy achieves this at a sector level by focusing on three core verticals with different types of exposure: energy, transportation and digital infrastructure. Each reacts differently to macroeconomic factors.

Energy and transportation are typically well correlated to inflation, while digital infrastructure shows less indexation to inflation. Meanwhile, transportation assets are more sensitive to GDP shocks.

By balancing these sectors, we have limited the proportion of portfolio revenues directly exposed to GDP fluctuations to approximately 10-20% depending on different fund vintages. This approach is similar to the 'Total Portfolio Approach' that some US pension plans have begun to adopt over 'Strategic Asset Allocation'. Rather than stringent limitations capping exposure to certain sectors, managers should define target allocations but remain open to deviation, as long as the overarching investment objectives are achieved at portfolio level.



On the left: Verne Keflavik Campus, Iceland. On the right: Attero's Wijster facilities, The Netherlands.

Images source : Ardan's Infrastructure Brochure

At Ardian, our guiding principle is one of disciplined flexibility. Our experience through the COVID-19 pandemic, the Russia-Ukraine war, higher inflationary periods and changing geopolitical conditions has reinforced rather than altered this strategy. For us, a global approach is paramount, with different infrastructure markets, sectors and characteristics offering a collective opportunity for resilience and growth.

Geographies

Diversification across geographies also leads to a more resilient portfolio that benefits from different opportunity sets. European markets continue to be popular due to their high transaction volumes. The US, meanwhile, contributes a different set of contractual, market and sector exposures such as university car park concessions or on-airport logistics, which are not assets found in Europe.

Combining the two regions allows a portfolio to benefit from their different market structures rather than making a single regional bet. In practice at Ardian, we have invested in mobile towers and fiber-optic networks across the US, Mexico and Europe, while our energy portfolio extends across both Europe and the Americas.



Heathrow Airport, London

Image source : [Ardian Website](#)

Infrastructure and its value **for tomorrow**

For resilient portfolio construction, diversification is key. This applies both within an asset class and at portfolio level. Private markets – and infrastructure especially – can play a positive role in resilient portfolio construction, offsetting other risks and bringing a resilient risk adjusted return profile.

As infrastructure needs rise, there is a clear window for both managers and investors. Essential infrastructure is inseparable from the success of communities and economies, and the growth possibilities are accelerating, particularly in the energy transition and with the expansion of AI and high-compute needs. By curating portfolios in a disciplined way, investors can capitalize on that opportunity set.

DWS

Europe's Infrastructure Investment Agenda



With alternatives expertise that spans more than 50 years and EUR 105 billion in assets under management (as of 30 June 2026), we offer a diverse range of strategies and solutions across the alternatives spectrum. The Alternatives business includes private real estate (equity and debt), private infrastructure (equity and debt), liquid real assets (real estate/infrastructure, and commodity securities) and direct lending. Working from an integrated platform with a global network of investment specialists, we are committed to fulfilling our fiduciary obligation to deliver strategies and solutions that meet our clients' specific investment needs. Our global team invests on behalf of and services our global client base that includes individuals, governments, corporations and institutional investors.

Europe's Infrastructure Investment Agenda

Europe is undergoing a significant economic and policy transformation. For much of the past decade, the region was associated with modest growth, fiscal caution, and underinvestment in several areas of critical infrastructure. Today, global geopolitical fragmentation, energy security concerns, technological competition and the need to deliver decarbonisation have shifted the policy debate to one focused on strategic investment.

For infrastructure investors, this shift is a generational opportunity, with many of Europe's strategic objectives only possible through sustained infrastructure investment. Improving energy security requires investment in renewables, grid networks, storage, flexibility and interconnection. Restoring industrial competitiveness requires affordable and available power, modern logistics networks and resilient supply chains. Digital sovereignty and artificial intelligence require data centres, fibre networks, and reliable power. Defence readiness and broader strategic resilience require transport, energy, communications and logistics networks that can withstand geopolitical and operational shocks.

The result is that Europe's transformation is not simply a short-term cyclical recovery story or a relative valuation argument, but rather a long-term investment requirement that spans energy, digital infrastructure, transport, utilities, social infrastructure and industrial assets. Alongside this opportunity set, reforms are increasingly targeting the supply-side issues that have kept Europe behind other regional peers, namely a more complex business environment and capital markets. Given strained public budgets mean that governments are less able to undertake the levels of investment required, reforms are being undertaken to ensure that private markets play an important role in delivering this agenda.

European Transformation has become an infrastructure investment agenda

The centrality of Europe's transformation agenda has become visible in the combination of national fiscal packages and EU-level policy programmes that have emerged since the Covid-19 pandemic, the 2022 energy crisis and the shifts in Europe's security environment. The strength of the investment signal lies not in any single policy initiative, but in the breadth of policy alignment across Europe. Fiscal policy, industrial policy, energy policy and capital-market reform are increasingly pointing in the same direction: Europe needs to raise investment and channel capital into assets that drive competitiveness, resilience, energy independence, decarbonisation and technological sovereignty.

Germany is central to this shift. The reform of the country's fiscal framework and creation of a EUR500bn infrastructure fund mark a significant change in policy direction after years of strict fiscal discipline. The fiscal package is designed to support infrastructure and climate-related investment over a multi-year period, including transport infrastructure, hospitals, energy infrastructure, science, research and development, digitisation and disaster protection. Within broader German fiscal changes,

defence spending above 1% of GDP is also excluded from the debt brake, while the federal states have been given additional borrowing capacity – all of which stands to benefit infrastructure. Paired with this has been a raft of policy reforms to accelerate infrastructure delivery and mobilise private investment.

At the EU level, the same direction of travel is visible through REPowerEU, the Green Deal Industrial Plan, the Net-Zero Industry Act, the Clean Industrial Deal, the European Chips Act, InvestEU, InvestAI, the Competitiveness Compass, ReArm Europe and the Savings and Investment Union. These initiatives differ in design and funding mechanism, but they share a common objective: to mobilise capital towards sectors that are strategically important for Europe's long-term economic position. In practical terms, that means investment in energy systems, grid capacity, clean technology manufacturing, AI and digital infrastructure, semiconductors, defence supply chains, industrial modernisation and capital-market deepening.

REPowerEU remains a central policy foundation for reducing dependence on Russian fossil fuels and accelerating

This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions, and hypothetical models that may prove to be incorrect. Investments come with risk. The value of an investment can fall as well as rise and your capital may be at risk. You might not get back the amount originally invested at any point in time. Source: DWS International GmbH.

clean energy deployment. The Net-Zero Industry Act seeks to scale up EU manufacturing of clean technologies, including solar, wind, batteries and hydrogen, with an ambition for European manufacturing capacity to meet at least 40% of annual deployment needs for strategic net-zero technologies by 2030. The Clean Industrial Deal builds on this by linking decarbonisation with competitiveness, focusing on affordable energy, clean technology, circularity and industrial resilience. Together, these policies are designed to reduce external dependencies while supporting domestic investment in energy and industrial capacity.

The digital and innovation agenda is equally relevant. The European Chips Act aims to strengthen the semiconductor ecosystem and targets a 20% global market share by 2030. InvestAI is intended to mobilise EUR200bn for AI development, including a EUR20bn fund for AI

infrastructure. The Digital Decade framework supports investment in connectivity, digital skills, cloud, cybersecurity and public-sector digitalisation. These initiatives are explicitly tied to economic competitiveness and technological sovereignty, and they imply substantial demand for digital infrastructure and power infrastructure.

Capital-market reform is another part of the policy signal. The Savings and Investment Union seeks to mobilise Europe's large private savings pool, estimated in the Letta report at roughly EUR33trn, towards productive investment. InvestEU aims to mobilise over EUR372bn in investment during 2021-2027, while the EIB and national development institutions are increasingly being used to de-risk investment in strategic sectors. The policy objective is clear – Europe wants to convert domestic savings and institutional capital into long-term investment in innovation, infrastructure and industrial renewal.

Europe's strategic challenges are creating investable infrastructure demand

Energy Security...

...is now central policy.

- Energy transition now a strategic priority
- Investment is accelerating
- Focus shifts to system resilience, affordability and domestic supply

Digital Sovereignty...

...is becoming a core infrastructure theme.

- Reliance on external data, cloud and AI providers
- Policy supports domestic data centre and AI infrastructure build-out
- Growing focus on sovereign AI and data control

Economic Resilience...

...reflects the push to strengthen domestic capacity.

- Supply chain vulnerabilities
- Geopolitics increases risks
- Focus on reindustrialisation and security



European infrastructure **policy anchors** and **demand drivers**

Source: DWS Infrastructure Research, September 2026

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Electrification is becoming the central pillar of European Transformation

Electrification is becoming a central pillar of Europe's transformation because it links climate policy, energy security, industrial competitiveness and digital growth. The EU's 2026 Electrification Action Plan has made electrification an explicit policy objective rather than an indirect consequence of climate and renewable energy policies. The package strengthens investment signals across power networks, storage, buildings, transport and industry, while providing a governance framework that can help coordinate long-term capital deployment. The 2022 energy crisis demonstrated the vulnerability created by dependence on imported fossil fuels, particularly Russian gas. Since then, energy policy has increasingly been framed not only as a decarbonisation issue, but as a strategic resilience issue.

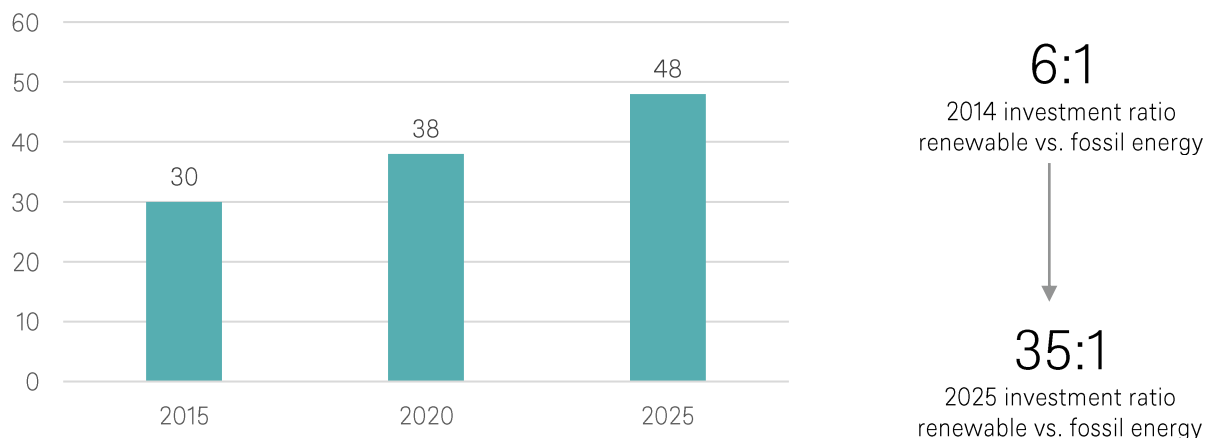
Renewable energy is central to this agenda because it is one of the few large-scale domestic energy sources available across much of Europe. Wind, solar and other low-carbon technologies can reduce exposure to imported fuels, support long-term energy security and provide the power foundation for industrial and digital activity. REPowerEU accelerated this direction by seeking to reduce dependence on Russian fossil fuels and speed up clean energy deployment. The Clean Industrial Deal and Net-Zero

Industry Act add an industrial dimension by supporting domestic manufacturing capacity in clean technologies and energy-intensive transition sectors.

However, the investment requirement goes well beyond renewable generation. A more electrified European economy requires transmission and distribution upgrades, grid reinforcement, interconnectors, storage, flexibility markets, demand-side management and digital grid technologies. Without these investments, renewable deployment may be constrained by grid bottlenecks, curtailment, connection delays and regional mismatches between generation and demand.

This is particularly important because electricity demand is likely to be supported by multiple structural drivers at once. Electric vehicles, heat pumps, industrial electrification, data centres, AI computing and potentially green hydrogen production all increase the load placed on power systems. As a result, grids and flexibility assets are becoming as strategically important as generation assets. For infrastructure investors, this broadens the opportunity set from wind and solar into batteries, grid services, distributed energy, charging infrastructure, district heating, power networks and energy efficiency.

Chart: EU Share of electricity production from renewables, % (LHS), EU fossil fuel to renewable energy investment ratio (RHS)



Source: European Commission, Ember, Energy Institute, IEA, DWS Investment GmbH, as of June 2026.

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Competitiveness & Resilience

Europe's competitiveness challenge has become more acute. Higher energy costs, slow productivity growth, permitting delays, fragmented regulation and insufficient investment have weighed on the industrial base. The response from policymakers is increasingly focused on competitiveness. The European Commission's Competitiveness Compass represents a significant shift in EU economic policy, placing competitiveness at the centre of the Union's agenda for the 2024-2029 period. Building on the recommendations of the Draghi Report, it identifies three strategic priorities; closing the innovation gap, aligning decarbonisation with economic competitiveness, and reducing strategic dependencies. Rather than viewing climate policy, industrial policy and economic growth as separate objectives, the Compass seeks to integrate them into a single framework designed to strengthen Europe's productivity, industrial base and long-term economic resilience.

Perhaps most importantly, the Competitiveness Compass recognises that Europe's ambitions cannot be achieved through public spending alone. Alongside sector-specific initiatives, it identifies financing competitiveness, simplifying regulation and deepening capital markets as core enablers of growth. For long-term investors, this signals continued efforts to mobilise private capital into strategic infrastructure projects while improving investment frameworks and reducing barriers to deployment. For example, speeding up permitting delays is a clear focus of the competitiveness compass that benefit infrastructure capital deployment.

The Savings and Investment Union is also an important part of the policy architecture. Europe has a large pool of private

savings, but much of it remains in low-yield bank deposits rather than being channelled into productive investment. The Savings and Investment Union aims to deepen and integrate capital markets, improve cross-border investment conditions, and encourage the flow of savings into long-term assets. Related initiatives, including the proposed European Savings and Investment Account and the Finance Europe label, are designed to broaden participation in European capital markets and increase the share of domestic savings allocated to European investment.

InvestEU, the EIB and national development institutions also play a role by de-risking projects and crowding in private capital. Public finance can support early-stage technologies, reduce project risk, improve bankability and provide catalytic capital in sectors where private investment is needed but perceived risk remains high. This is particularly relevant in areas such as green infrastructure, clean industrial technologies, hydrogen, grid infrastructure, energy efficiency and innovation-linked assets.

For infrastructure investors, the key point is that public investment should not be viewed as crowding out private capital. In many cases, it can create or enlarge the private opportunity set. Public capital can fund enabling networks, reduce permitting friction, provide demand visibility and improve the economics of adjacent commercial assets. Private capital can then provide long-term funding, operating expertise and disciplined ownership in sectors such as renewables, storage, data centres, fibre, transport, EV charging, logistics, district heating and energy efficiency.

Europe's relative strengths are becoming more valuable

In the current environment, several of Europe's relative strengths are becoming more valuable to investors.

The first is institutional resilience. Europe offers mature legal systems, established regulatory frameworks and a

rules-based investment environment. Stable, transparent and well-understood regulatory frameworks can support long-term underwriting, particularly in sectors such as utilities, transport, energy networks and communications infrastructure. In a more volatile geopolitical environment,

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this stability and transparency of market may become increasingly important.

From a long-term exposure perspective, Europe's energy transition, decarbonisation agenda, digital sovereignty objectives and capital-market reforms are not dependent on a single policy measure. They are supported by multiple EU and national initiatives, many of which are embedded in long-term targets. This provides investors with greater confidence that capital expenditure in areas such as grids, renewables, storage, clean industrial assets and digital infrastructure is aligned with policy priorities.

Europe also offers investors deep diversification. For much of the last decade, global capital was heavily concentrated in U.S. assets, supported by stronger U.S. growth, technology leadership and rising equity market concentration. Europe offers a different mix of exposures,

including regulated infrastructure, energy transition assets, transport, utilities, real estate, industrial platforms and digital infrastructure. This matters for investors seeking to diversify not only by geography, but by source of return, regulatory regime and structural growth driver.

Finally, Europe's existing infrastructure market depth makes it globally attractive. Europe remains one of the largest and most developed infrastructure markets, with transaction opportunities across energy, transport, communications, social infrastructure and utilities outnumbers those found in other regions. While North America gained relative momentum in recent years, partly due to the Inflation Reduction Act and the growth of U.S.-focused infrastructure strategies, Europe's renewed policy support and investment needs could help restore its relative attractiveness.

Investor Implications

Europe's transformation has several implications for infrastructure and private markets investors.

First, the opportunity set is becoming broader and more strategic. Infrastructure exposure in Europe is no longer limited to mature, regulated utilities and transport assets. The investable universe increasingly includes energy transition platforms, grids, storage, data centres, fibre networks, industrial infrastructure, logistics, social infrastructure, energy efficiency and resilience-linked assets. Many of these areas are supported by both structural demand and explicit policy priorities.

Second, infrastructure is increasingly positioned as an enabler of competitiveness. This matters for underwriting because infrastructure demand is being supported by strategic objectives that extend beyond short-term GDP or political cycles. Assets that help reduce energy dependency, support digital sovereignty, improve industrial productivity or strengthen resilience may benefit from sustained policy focus and public-private capital mobilisation.

Third, the convergence of digital and energy infrastructure creates new portfolio construction considerations. Data centres, AI infrastructure and cloud capacity are not only digital assets; they are also power-intensive assets tied to grid availability, renewable procurement, cooling systems

and energy efficiency. Similarly, energy systems increasingly depend on digital optimisation and automation. Investors may need to assess these sectors as connected ecosystems rather than discrete allocations.

Fourth, Europe's role as a diversification anchor is becoming more important. The region offers exposure to structural investment themes that differ from U.S. technology concentration and from faster-growing but often less mature emerging markets. For institutional investors seeking diversification across geography, regulation, sector exposure and sources of return, European infrastructure may offer a differentiated combination of maturity, policy support and long-term capital need.

Finally, execution will matter. Policy support improves the backdrop, but it does not eliminate risks linked to permitting, construction costs, regulation, political change, supply chains, technology evolution or capital-market conditions. The most attractive opportunities are likely to be those where policy alignment is combined with strong asset fundamentals, clear demand drivers, disciplined entry pricing and proven operational capability. Europe's investment agenda is substantial, but capturing it successfully will require selectivity rather than broad thematic exposure alone.

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With alternatives expertise that spans more than 50 years and EUR 105 billion in assets under management (as of 30 June 2026), we offer a diverse range of strategies and solutions across the alternatives spectrum. The Alternatives business includes private real estate (equity and debt), private infrastructure (equity and debt), liquid real assets (real estate/infrastructure, and commodity securities) and direct lending. Working from an integrated platform with a global network of investment specialists, we are committed to fulfilling our fiduciary obligation to deliver strategies and solutions that meet our clients' specific investment needs. Our global team invests on behalf of and services our global client base that includes individuals, governments, corporations and institutional investors.

Private Real Estate	Direct real estate investments covering core, core plus, value-added, and debt strategies
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Liquid Real Assets	Global and regional real estate securities Global infrastructure, securities Active commodities
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Eigen Advisory

Infrastructure as a Concept

E I G E N
A D V I S O R Y

Eigen Advisory is an independent, Zurich-based advisory firm for infrastructure and private markets, founded in 2026 by Claudio Ghisu. The firm advises institutional investors such as pension funds, insurers and family offices on the construction and oversight of their private markets portfolios, from strategy and allocation to manager selection, due diligence, co-investments and secondary advisory. Delivery is senior only. Analysis runs on a proprietary platform that supports the full fund investment cycle, from screening and EA Score-based assessment to look-through analysis and ongoing risk monitoring; clients can access the platform directly. Both the platform's dataset and the firm's judgment rest on the founder's more than twenty years of experience in private markets, including Co-Head Infrastructure and Investment Committee member at a leading asset manager and senior roles at global institutions. Claudio Ghisu also lectures on infrastructure as an asset class at a Swiss university. www.eigenadv.com

SECA YEARBOOK 2026 · INFRASTRUCTURE

Infrastructure as a Concept

Why classification, not allocation, is the real infrastructure question

CLAUDIO GHISU

Eigen Advisory AG, Zurich

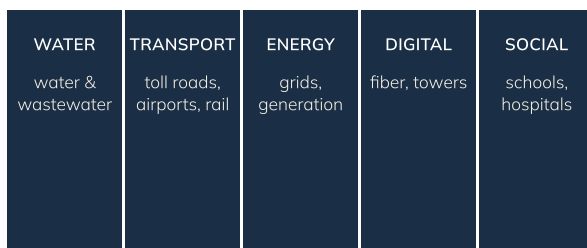
PROF. DR. JOHN DAVIDSON

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What is infrastructure? The traditional view starts with the physical object: something fixed to the ground that provides services a society cannot do without. From that view the familiar sectors follow: water, transport, energy, digital and social infrastructure. This view is not wrong, but it has two weaknesses. Firstly, it is static in its nature, while digitalization and sustainability requirements keep reshaping what a society cannot do without. Secondly, once infrastructure is viewed as an investable asset, the definition is no longer sufficient. Risk is priced by economic attributes rather than sector labels: essentiality, barriers to entry, capital intensity with low running costs, and predictable, often indexed cash flows. A fully contracted availability asset and a merchant power plant may share the label "energy", but they do not share the same risk.

FIGURE 1 Sector convergence: the map dissolves, the characteristics remain

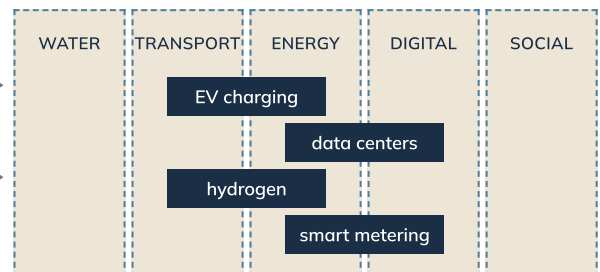
THE OLD MAP: FIVE SECTORS, CLEAN BORDERS



decarbonization

digitalization

THE NEW REALITY: ECONOMICS SET IN TWO SECTORS AT ONCE



INFRASTRUCTURE SERVICES CUT ACROSS EVERY SECTOR

energy-as-a-service for schools & hospitals · O&M and metering, from water networks to fiber

What still classifies: the source of value (essentiality and captivity).

What sets the position: the revenue model.

Own illustration (Eigen Advisory AG). Sector examples and border assets are illustrative and not exhaustive. Five-sector view: common market convention (cf. Global Infrastructure Hub); characteristics-based classification consistent with the TICCS business-risk pillar (Scientific Infra & Private Assets).

This article argues that the proper definition has therefore become a crucial practical question for the asset class from an investor's perspective. As sectors converge and next-generation assets blur the old boundaries, infrastructure is ceasing to be a fixed list of things and becoming a concept: a set of economic attributes. These attributes are not

simply present or absent: an asset may exhibit them to different degrees and may gain or lose them over time. In that sense, what matters is not the upfront, binary classification, but the degree to which an asset exhibits different economic attributes. That shift has consequences for underwriting, for vehicle selection and for the honest positioning of the asset class in a portfolio.

Nine questions instead of a label

The first level of classification sits at the border with real estate and private equity. For non-practitioners, infrastructure could be viewed as a close sibling of the two. However, when properly dissected, infrastructure attributes are different from those of the other mentioned asset classes. Asking the right questions and deciding based on the answers creates the necessary framework for a proper classification, instead of trying to label the asset upfront. The framework below does exactly this with nine test questions. Applied to a concrete asset, the answers tell you which asset class you underwrite rather than the broad sector name.

The example of a data center shows why it matters: the shell is closer to real estate, while specificity and moat depend on the users. A facility built for a single hyperscaler or a sovereign tenant can score as infrastructure (for the hyperscaler tenant, it depends on the contract); a retail co-location site competing for customers that can leave must earn its moat operationally and drifts toward private equity. The demand row can cut the same way, since the underlying service is competitive rather than essential.

The source of value defines the asset class; the revenue model, however, defines the position on the risk spectrum. Both can also change over the holding period, so the test must be re-run at underwriting, but also on follow-on occasions as part of a monitoring process. The classification is often ambiguous in practice, and a scoring model can therefore help, weighting the attributes according to investor-specific standards and turning the assessment into a usable result.

TEST QUESTION	INFRASTRUCTURE	REAL ESTATE	PRIVATE EQUITY
1. Source of value <i>What creates the value?</i>	Delivery of an essential service	Letting of space	Transformation of a company
2. Demand character <i>What happens to demand in a downturn?</i>	Inelastic: substitution of the essential service is difficult or even impossible	Cyclical: tenants can relocate or downsize	Competitive: customers can switch supplier
3. Source of the moat <i>Why can't a competitor replicate it?</i>	Monopoly, regulation, network position, prohibitive capex to replicate	Location scarcity, but buildings are replicable	No structural moat: must be earned operationally
4. Asset specificity <i>Could the asset serve another user?</i>	Single purpose, which is why it needs long-term contracts	Fungible space, re-lettable to third parties	Question does not apply to a company
5. Cash-flow visibility <i>How far ahead are revenues visible?</i>	15–30y contract, concession or regulatory period	3–10y leases; market risk at every expiry	3–5y business plan
6. Counterparty <i>Who actually pays?</i>	State, regulator or single offtaker, or many captive users with no realistic alternative (e.g. toll roads and airports)	Diversified private tenants	Many customers in open competition
7. Role of management <i>What does management do?</i>	Operate and optimize within a regulated or clearly defined framework	Manage, maintain and let	Transform: the main return lever
8. Character of the debt <i>How is the asset financed?</i>	Project finance: amortizing, secured on the asset but sized on cash flows; regulated utilities lever on the regulated asset base	Mortgage: asset-value-based, refinanced at market	LBO: EBITDA-based leverage
9. Terminal value <i>What is left at the end?</i>	Owned assets: perpetuity, with re-contracting risk when a revenue contract expires. Concessions: zero at expiry	Land plus residual building value	Exit multiple on a going concern

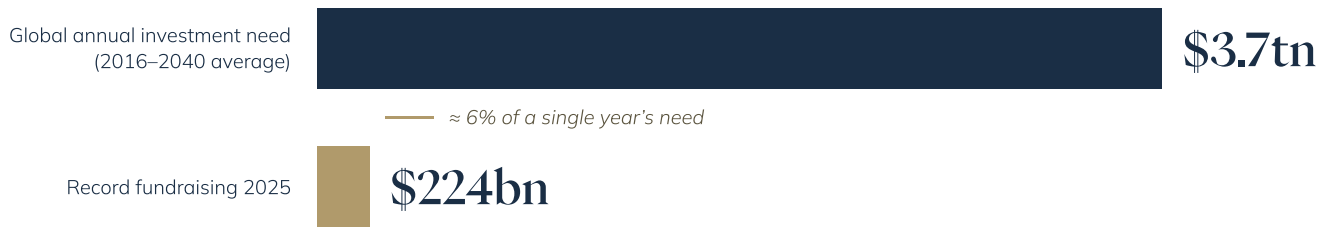
The Infra-Check: nine test questions to classify a real asset (Eigen Advisory AG).

A regime-driven asset class

The asset class's own history warns against excluding cyclicity as a risk source: each stage of the asset class's growth has created a dominating sector driven by a macro regime, from privatized utilities to the yield vehicles of the low-rate years to renewables and now digital infrastructure. That raises a heretical question for an asset class marketed on stability: if its growth has always been regime-driven, how cycle-independent can it really be? The honest answer distinguishes levels. The cash flows of a contracted asset may well be stable or even acyclical. Investment opportunities, however, are often raised and offered following a narrative supported by the prevailing regime. This comes together with entry pricing, financing terms and corresponding capital flows. The 2020s ran that experiment in real time: the US Inflation Reduction Act and the European Green Deal turned decarbonization into a subsidized regime, and renewables and energy-transition strategies surged to a leading share of new fund launches

within a few vintage years. The current cycle illustrates the point as well: roughly USD 1.4tn is managed in unlisted infrastructure, target allocations have risen to 6.2% of AuM with actual allocations of institutional investors about 100 basis points below target (Hodes Weill & Associates, 2026), and fundraising ran from a USD 95bn trough in 2023 through a flat 2024 to a record of roughly USD 224bn in 2025 (Preqin, 2025; With Intelligence, 2026). The swing itself carries the regime's signature: the rate shock explains the low years, the digital build-out the recent upswing culminating into a record. Two perspectives moderate the headlines. Measured against the world's estimated infrastructure investment need, averaging roughly USD 3.7tn per year between 2016 and 2040, even the record equals about six percent of a single year (Global Infrastructure Hub and Oxford Economics, 2017). And each regime has supplied its dominant sector with a supportive narrative (Shiller, 2017); whether capital follows the fundamentals or the narrative is a question every allocator should keep open. The distinction matters: what is offered at any point in time tracks the prevailing narrative more closely than the underlying universe does, and assets outside the current story remain part of the opportunity set.

FIGURE 2 The scale mismatch: private capital against the world's need



Sources: Global Infrastructure Hub & Oxford Economics (2017); Preqin (2025); With Intelligence (2026). Both bars are annual flows.

The revenue model is the risk model

Five contractual archetypes generate infrastructure cash flow, ordered by revenue risk:

- **Availability payments:** a public counterparty, from municipality to central government, pays for the asset being usable, regardless of demand. A school under a public-private partnership earns nothing from its pupils; the contract with the sponsoring authority creates the revenue ex nihilo.
- **Regulated tariffs:** a regulator sets allowed returns on a regulated asset base, as for water and electricity networks.
- **Long-term offtake:** a single counterparty contracts the output for decades, as in power purchase agreements or hyperscaler capacity leases.
- **User-pays concessions:** the right to charge users for a defined period, as for toll roads and airports; the concession secures the right, the investor carries the demand risk.
- **Merchant revenues:** output sold at market prices, as for merchant power plants and battery storage; visibility ends with the forward curve.

In practice, few assets live in a single archetype. An airport combines regulated aeronautical charges with merchant retail income; a wind farm sells part of its output under a power purchase agreement and the rest at market prices;

utilities pair a regulated network with competitive generation. The risk profile of an asset is usually a blend, and the risk exposure must be derived from its specific blend.

The more consequential insight, however, is that merchant-like risk can also hide inside contracts that look long-term. Hyperscaler capacity agreements, for example, may run for 10 to 15 years but still contain termination or ramp-down rights subject to a penalty. The break fee caps the customer's downside and makes the economic duration shorter than the stated tenor: if the tenant can hand back the capacity against a fee of, say, two years of rent, the economic term of a fifteen-year lease is whatever the tenant wants it to be, at a known price. Counterparty structure matters too: where the contract is signed by a ring-fenced subsidiary without a parent guarantee, the investment-grade logo is not necessarily backed by an investment-grade guarantee. Regulatory contracts deserve the same scrutiny, since the framework that creates the revenue can also change it: Finland cut allowed network returns mid-period by legislation in 2021 (S&P Global Ratings, 2021), Spain cut feed-in tariffs for solar plants already built, and the United States phased out core clean-energy tax credits barely three years after their introduction.

Equity with duration

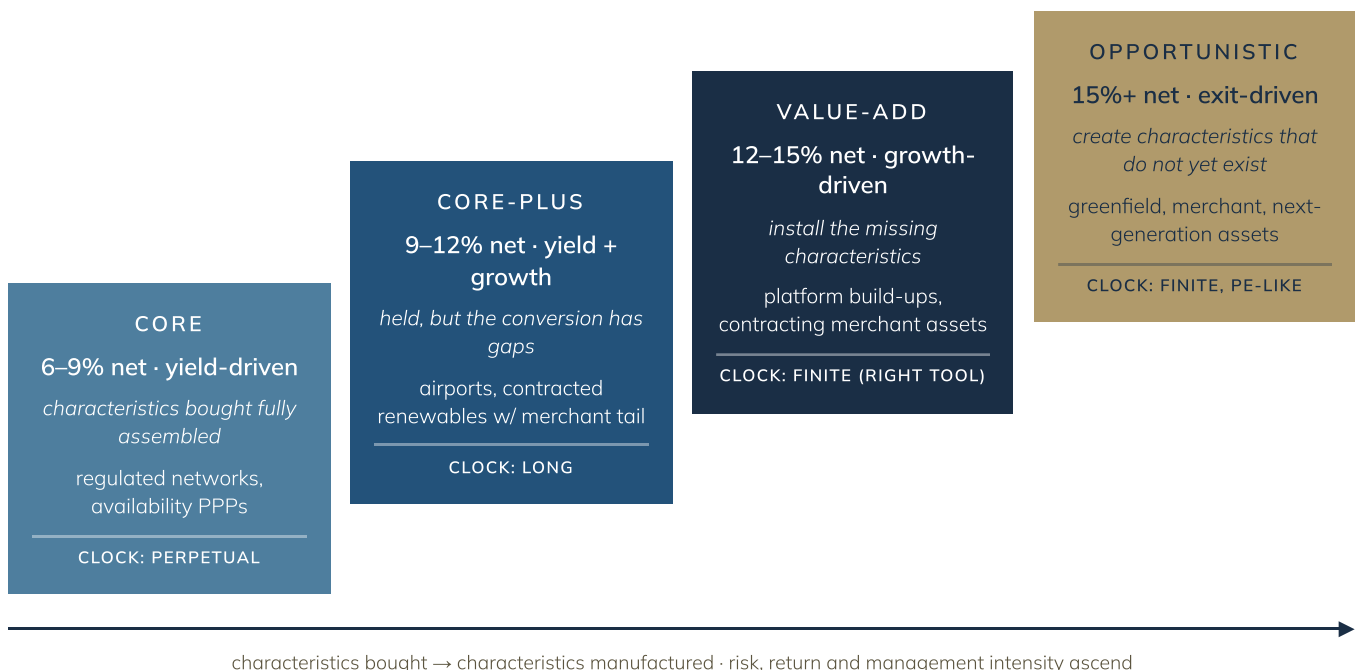
In the low-rate decade, infrastructure was sold as a substitute for fixed income, misleading investors into treating it as an almost risk-free asset class. However, a fixed-income instrument like a bond is a contractual, senior claim that converges to its face value. Infrastructure equity is the residual claim behind every lender and its "coupon", the yield component that made the fixed income comparison possible in the first place, is a distribution that can be cut, deferred or redirected to capex. In extreme cases, distributions are even paid to satisfy investors while the cash would be needed to upgrade the assets or to support refinancings. The dividends are steady in normal times yet never guaranteed, and precisely this proves the instrument is nowhere close to fixed income: its closest relative is a dividend-paying utility share, valued because its payout is steady without ever being promised. The 2022–2023 rate shock ran the live experiment: discount rates rose, valuations fell, levered assets faced refinancing stress. Losses with bond-like duration, but without a bond's recovery at par and without its liquidity, are equity with duration. Leverage completes the picture, and the infamous example of Thames Water shows where it ends: privatized debt-free in 1989, levered beyond 80% of its regulated asset base, with distributions to the owners at times exceeding post-tax profits (Allen and Pryke, 2013), until debt service crowded out the capital expenditure that keeps an essential service functioning and shareholders wrote off their equity. The reported stability needs its own asterisk: appraisal-based valuations smooth returns and bias correlations downward and alpha upward (Andonov, Kräussl and Rauh, 2021; Anson, 2024). A reported correlation with public equities of roughly 0.5, against about 0.8 for listed infrastructure, therefore, mixes economics with measurement, and when public markets fall while private marks lag, the infrastructure share of the portfolio rises mechanically, the denominator effect, pushing investors over policy limits precisely when long lockups make selling hardest. Even the inflation promise is conditional: the yield is inflation-linked only where contracts index it, and the hedge must be read in the clauses (Rödel and Rothballer, 2012).

The wrapper is not the asset

The most cited critique of the asset class is that closed-end infrastructure funds show private-equity-like cyclicity and depend on quick exits (Andonov, Kräussl and Rauh, 2021). However, this is best read as a measurement of an investment structure: a 10-year wrapper around a, say, 50-year asset produces exactly these dynamics, and the global financial crisis made the mismatch obvious. Closed-end vehicles were forced to transact into the worst window while open-ended funds, holding comparable core assets, were not under major selling stress, as long as investors did not redeem capital en masse. Where scale and internal management remove the wrapper, pension

funds earn some of their best net returns in the asset class (Carlo et al., 2023). The market has begun to repair the mismatch: continuation vehicles, funds that buy assets out of their own expiring wrappers, grew from five funds in 2018 to 130 in 2024 (Abuzov et al., 2025), and the open-end form in which Australian superannuation capital first institutionalized the asset class is enjoying a renaissance, though each of these structures creates its own set of complexities and comes at a price. Evergreen funds offer liquidity that the asset itself does not have, so redemptions come with queues, gates and notice periods, and whoever enters at the current net asset value may be buying at increased valuations that are largely unrealized. Co-investments look cheaper, but before fees their deals perform much like the funds they come from; the advantage is the fee saving, and it largely disappears once a dedicated co-investment fund charges its own fees and carry (Braun, Jenkinson and Schemmerl, 2020). And demand itself is a warning signal: heavily oversubscribed funds tend to deliver worse results (Haran, Lo and Milcheva, 2021). In private equity, chasing hard-to-access funds has its logic, because top managers tend to repeat their performance; in infrastructure, the same study finds persistence to be inconclusive, so oversubscription likely measures the heat of demand rather than the skill of the manager, and the hottest funds are raised when narratives and entry prices peak. The discipline is to choose the strategy first and let it determine the time horizon its execution requires, i.e. the intended holding horizon. A greenfield build or a value-add transformation has a shorter execution period and therefore does not require a perpetual vehicle.

FIGURE 3 Infrastructure strategies: buy the characteristics, or manufacture them



Own illustration (Eigen Advisory AG). Return ranges are indicative net figures.

Conclusion

Take a satellite constellation, a network of hundreds or thousands of small satellites that together provide broadband coverage from low orbit and put just three of the nine questions introduced at the beginning to it. The service is essential: connectivity that users cannot do without, and in many cases even mission-critical, from ships at sea and aircraft in flight to search-and-rescue and emergency services operating beyond the reach of any terrestrial network.

The moat is real, because orbital positions and radio spectrum are scarce and allocated by regulators. The individual satellites, however, are almost consumables: single-purpose machines that last perhaps five to seven years and then burn up on re-entry; the terminal value literally de-orbits. The durable parts of the system sit on the ground and on paper: the gateway stations and the spectrum rights outlast every satellite that uses them. The remaining questions sharpen rather than soften this verdict. The shadow of this next generation is stranding risk: the more specialized the asset and the shorter its technology cycle, the greater the danger that it stops earning long before it physically wears out. The five classic sectors cannot sort such assets, and as technology advances, not only the sectors converge but the asset classes themselves. What one wants to achieve with which exposure must follow from each investor's own risk-bearing capacity and objectives, not from a label or a narrative, and infrastructure holds no privileged position here over any other asset class. Strip away the wrappers, the fee layers, the valuation conventions and the marketing narratives, and what remains is a claim on essential-service cash flows with genuine, but equity-like, risk. That invariant is worth owning; almost everything that has disappointed investors was added on top of it. The practical discipline follows directly: underwrite the asset, not the narrative. And when things stop sorting themselves, the nine questions must do the sorting. The full nine-question check fits on a single page: readers are welcome to run their own assets through it, and the authors will gladly compare notes.

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Energy Infrastructure Partners

Wir investieren in Energieinfrastruktur,
um Mehrwert für unsere Investoren zu schaffen



ENERGY
INFRASTRUCTURE
PARTNERS

Mit einem kontinuierlichen Wachstum seit der Firmengründung und einem verwalteten Vermögen von EUR 7 Mrd. ist Energy Infrastructure Partners heute einer der grössten unabhängigen Vermögensverwalter Europas mit Fokus auf langfristigen Investitionen im Energiesektor. Unsere Expertise basiert auf einem umfangreichen Branchennetzwerk, breiter Transaktionserfahrung und Partnerschaften mit führenden Industrie- und öffentlichen Einrichtungen. Diese ermöglichen uns, aussergewöhnlichen, langfristigen Wert für unsere Investoren zu schaffen.



Wir investieren in Energieinfrastruktur, um Mehrwert für unsere Investoren zu schaffen.

Unsere Unternehmensgeschichte begann mit einer Vision:

Die Energieinfrastruktur zu einem investierbaren Sektor für Pensionskassen zu machen.

Rund 12 Jahre später haben sich mehr als 185 Schweizer Pensionskassen dafür entschieden, mit uns als Vermögensverwalter in systemrelevante Energieinfrastruktur zu investieren. Mit rund CHF 2.8 Mrd. verwalten wir die grösste Schweizer Energieinfrastruktur-Anlagegruppe.

Die Digitalisierung der Gesellschaft und die hohe Nachfrage nach Strom, das Ziel der Dekarbonisierung, der zunehmende Fokus auf Energieunabhängigkeit und -sicherheit – Energieinfrastruktur steht im Zentrum dieser Megatrends, die massive Investitionen erfordern. Wir ermöglichen institutionellem Kapital direkten Zugang zu Investitionsmöglichkeiten in systemkritische Infrastruktur.

~700

Vermögenswerte auf
Durchsichtsbasis im Portfolio

7 Mrd.

Euro verwaltetes
Vermögen¹

34^{TWh}

erzeugte erneuerbare
Energie in 2025

7.4 Mio.

vermiedene Tonnen Kohlendioxid (CO_{2eq}) in 2025

100+

Energie-Sektorspezialisten in EIPs Team

20+

Länder, in denen EIP
Energieinfrastruktur
verwaltet

EIPs ganzheitlicher Wertschöpfungsansatz

AUSRICHTUNG AUF ENERGIEMÄRKTE

Energy Infrastructure Partners spezialisiert sich auf Investitionen im Energieinfrastruktur-Sektor. Diese Fokussierung ermöglicht es uns, vertieftes Branchenwissen und ein ganzheitliches Verständnis für die komplexen Strukturen und Marktmechanismen des Energiesektors zu haben.

OPERATIVE UND TECHNISCHE EXZELLENZ

Wir investieren in erstklassige, systemkritische Vermögenswerte sowie in die Unternehmen, die sie bauen und betreiben.

REGULATORISCHE RAHMENBEDINGUNGEN

Wir verfügen über interne Expertise in regulatorischen und politischen Angelegenheiten, um die komplexen Wechselwirkungen zwischen dem Energiesektor und staatlichen Institutionen zu analysieren und zu bewerten.

EXPERTISE VON FINANZEN BIS ESG

Unsere Expertise erstreckt sich über die gesamte Wertschöpfungskette der Energieinfrastruktur-Investitionen – wobei alle relevanten Faktoren systematisch analysiert und berücksichtigt werden.

Konsequenter Anlageansatz über drei Generationen

	EIP I	EIP II	EIP III	Bespoke
GRÖSSE ¹	CHF 2.8 Mrd.	EUR 1.2 Mrd.	EUR 1.8 Mrd.	EUR 1 Mrd.
ZUGANG VIA ANLAGE-STIFTUNG	Ja	–	Ja	–
STATUS	Open-ended, momentan geschlossen	Geschlossen	Fundraising, geöffnet	Auf Anfrage
GEOGRAFIEN	Schweiz	Europa	Global – OECD	Auf Anfrage
ILLUSTRATIVE PORTFOLIO UNTERNEHMEN	Alpiq Electra Swissgrid Transitgas ...	Arkona Hermod Mirror Nysäter ...	Boralex Fluxys Plenitude Repsol ...	–
VINTAGE JAHR	2014	2018	2022	–

Blick in unser Portfolio



33 % | 2019 | CHF 750 MIO.

Alpiq (CH)

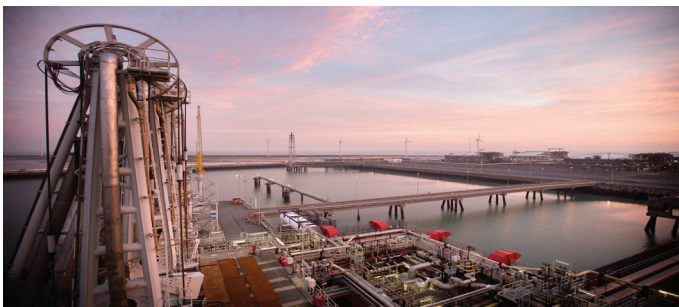
Beteiligung an einem führenden Schweizer Energieunternehmen. Das Unternehmen beinhaltet das zweitgrösste Wasserkraftportfolio der Schweiz ist jedoch breit diversifiziert über verschiedene Technologien.



18 % | 2014 | CHF 200 MIO.

Swissgrid (CH)

Aktionär an der Schweizer Stromnetzbetreiberin, gemeinsam mit BKW. Das Unternehmen ist für den Betrieb, Unterhalt, die Erneuerung und den Ausbau des 6'700 km langen Hochspannungsnetzes verantwortlich.



15.21 % | 2023 | EUR 650 MIO.

Fluxys (BE)

Beteiligung an einem der grössten europäischen Eigentümer und Betreiber von versorgungskritischer Energieübertragungsinfrastruktur in Form von Molekülen und Elektronen.



8.73 % | 2024, 2025 | EUR 800 MIO.

Plenitude (IT)

Beteiligung an einer global diversifizierten Plattform mit einem integrierten Geschäftsmodell, das erneuerbare Energieerzeugung, Einzelhandelsdienstleistungen für Privathaushalte und Unternehmen sowie Ladepunkte für Elektrofahrzeuge kombiniert.

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Quellen

Information per Juni 2026, ausser wenn anders erwähnt.

¹ NAV und nicht abgerufene Kapitalzusagen in EUR, per Q4 2025.

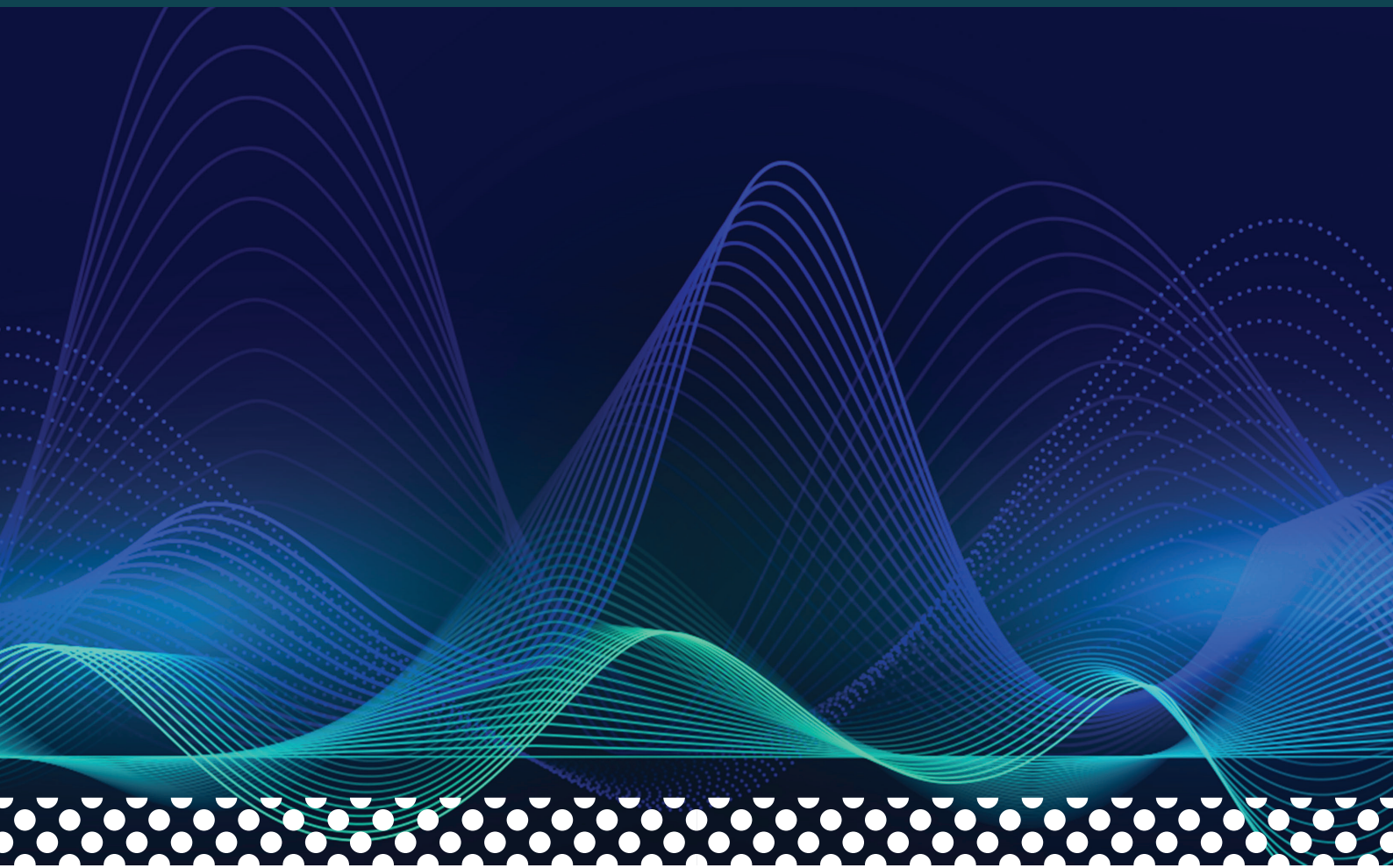
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IFM Investors

The mid-market advantage
in infrastructure investing



IFM Investors (IFM) traces its formation back to 1994, when our Australian pension fund owners set out to create an investor-owned fund manager where the profits and scale benefits would be shared with investors' members. To-day, this investor-owned model is the foundation of everything we do. It affects how we invest and how we manage our people and culture. IFM Investors is a pioneer in infrastructure investing on behalf of institutional investors globally with a proven track record of more than 27 years. We carefully target core infrastructure equity and debt across Australia, North America and Europe. We are proud of our track record and believe we have an opportunity – indeed a responsibility – to selectively grow the capability of our firm to improve the retirement outcomes of over 30 million workers globally represented by our like-minded investors. Established by all-profit-to-members Australian super-annuation funds, IFM Investors focuses on protecting and growing the long-term retirement savings of working people worldwide. IFM Investors' distinct ownership drives an alignment with investor objectives, a commitment to investing for the long-term, and respect for labour rights and environmental and social responsibility.



Abbie Sui
Director, Infrastructure
(Australia) – Portfolio
Management

The mid-market advantage in infrastructure investing



Aaron McGovern
Executive Director,
Infrastructure (Europe)

Private infrastructure fundraising surpassed the high watermark years of 2021-22 and reached nearly US\$300 billion in 2025¹. This record milestone reflects robust institutional investor confidence and increasing allocations to infrastructure as an asset class. We believe that private infrastructure has become an integral part of institutional investors' portfolios, offering a steady demand profile, inflation hedge, sustainable growth, and low correlation to traditional asset classes.

Well-aligned opportunity set: An expanding market

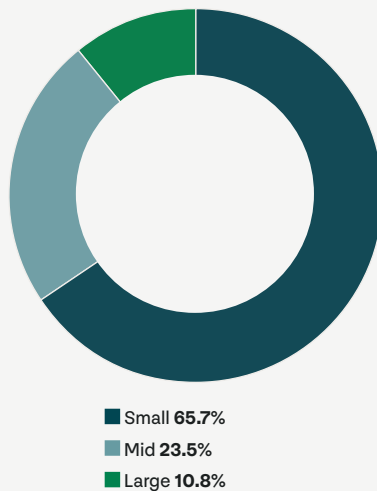
While large-cap infrastructure has attracted increased institutional capital, the mid-market remains central to deal activity. Over the last five years, infrastructure deals less than US\$1 billion accounted for just under half of the market in transaction value and approximately 89% of deals, underscoring the depth and liquidity of the segment (see Chart

¹ Source: Infrastructure Investor Fundraising Report Full Year 2025

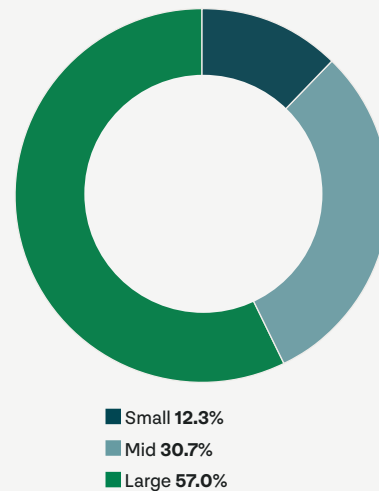
CHART 1

INCREASING FLOW OF OPPORTUNITIES WHICH REQUIRE SMALLER EQUITY CHEQUES TO FUND GROWTH

Number of deals by deal size



Aggregate deal value by deal size



Source: Preqin infrastructure deals (2021 – 2025), with the deal size representing the total transaction value including leverage. Small: less than US\$250 million; Mid: less than US\$1 billion but greater than US\$250 million; Large: greater than US\$1 billion.

1). For global investors seeking diversification and higher return potential while retaining the defensive characteristics of infrastructure, the mid-market offers an attractive and growing opportunity set.

Preqin's fund search data indicates that investor intentions are shifting further toward smaller commitments², highlighting growing interest in mid-market strategies. At the same time, the increasing size of infrastructure funds has created attractive pricing in the mid-market. As many infrastructure managers originally focused on the mid-market have migrated into the large-cap space as their fund sizes have grown, the mid and lower market have become comparatively underserved.

Enhancing long-term portfolios through stronger risk-adjusted returns

Chart 2 illustrates that generally mid-market infrastructure has consistently demonstrated higher risk-adjusted performance relative to the broader infrastructure market across multiple time horizons. The difference is most pronounced over three years, where mid-market infrastructure's Sharpe ratio was 1.37, more than twice the broader market's 0.58. These findings indicate that mid-market infrastructure can offer a more attractive risk-return profile with stronger capital preservation, which we believe makes it a compelling option for long-term infrastructure investment portfolios.

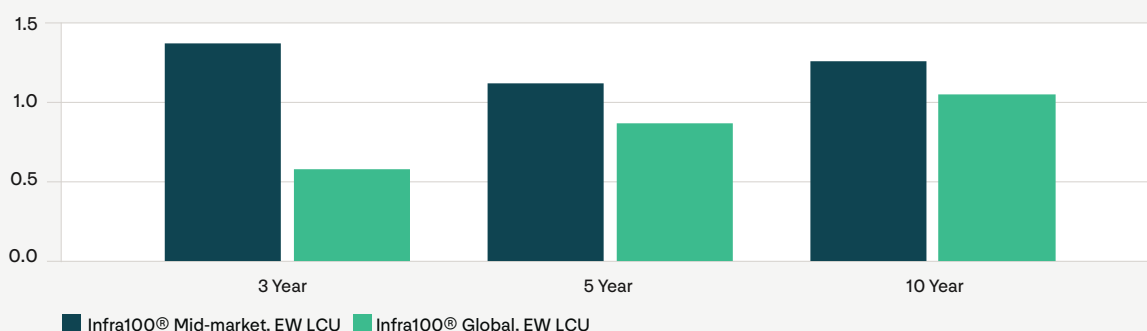


We believe mid-market infrastructure is well-positioned to benefit from the macro trends of digitalisation, deglobalisation and decarbonisation.

² Source: Preqin Global Report Infrastructure in 2026

CHART 2

SHARPE RATIO OF THE MID-MARKET INFRASTRUCTURE VERSUS BROADER INFRASTRUCTURE



Source: Scientific Infra & Private Assets (SIPA) as of 31 January 2026.

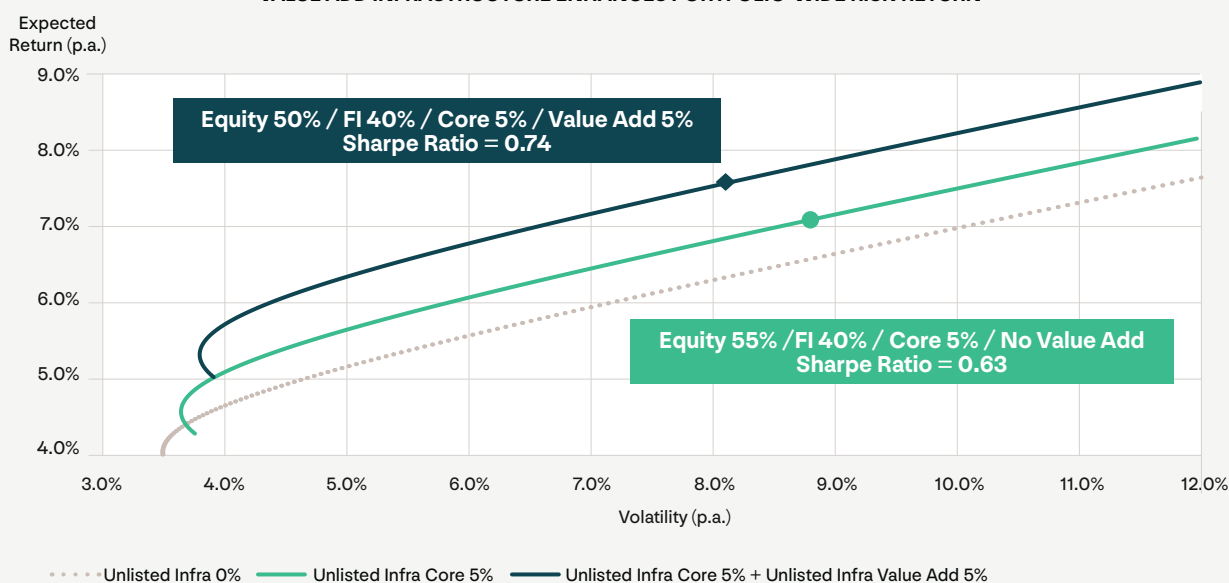
Improving mid-market exposure to improve portfolio efficiency

Mid-market also provides access to a broader set of infrastructure strategies, extending beyond core into other infrastructure sub-strategies and adjacencies. We believe these strategies complement traditional core infrastructure, enabling investors to construct portfolios that aim to balance defensive characteristics with growth potential. The following

analysis in Chart 3 indicates that incorporating unlisted core infrastructure into a traditional equity/fixed income portfolio can shift the efficient frontier upward and to the left, enhancing returns while reducing overall risk. Adding a 5% allocation to unlisted value add infrastructure increased the Sharpe ratio by 0.11, further enhancing the portfolio's risk-adjusted returns and reinforcing the benefits of diversification within the infrastructure asset class.

CHART 3

VALUE ADD INFRASTRUCTURE ENHANCES PORTFOLIO-WIDE RISK-RETURN



Notes: The chart reflects the risk-return profile of the portfolio based upon the performance from June 2001 to December 2025, with different allocations in listed equity (MSCI World 100% Hedged to USD Net TR USD), fixed income (Bloomberg Global-Aggregate Total Return Index Value Hedged USD), unlisted infrastructure core (SIPA Global unlisted infrastructure core, EW LCU) and unlisted infrastructure value add (SIPA Global unlisted infrastructure value add, EW LCU). The Sharpe Ratio is calculated using the performance in excess of the risk-free rate of returns (1.5% p.a.) for each portfolio divided by the standard deviation of the performance.

Combining infrastructure sub-strategies to improve diversification

While infrastructure sub-strategies – such as core, core plus, and value add – share certain common characteristics, their distinct value drivers offer complementary exposures. Access to opportunities across the infrastructure risk spectrum may allow investors to combine these differentiated return drivers within a single portfolio, potentially strengthening diversification and improving risk-adjusted returns. As shown in Table 1, core plus and value add infrastructure generally show lower immediate profitability than core infrastructure, but increased ability to generate higher returns through value creation initiatives.

Mid-market strategies also enable access to emerging infrastructure sub-sectors that typically begin at a relatively smaller scale but rely heavily on active near-term value creation levers, including technological upgrades, operational optimisation, and strategic repositioning. These opportunities may be attractive for investors seeking differentiated sources of alpha within their infrastructure allocations. By targeting these niche segments, mid-market strategies enable investors to complement traditional core infrastructure holdings with assets that combine defensive characteristics with higher return potential.

TABLE 1

UNLISTED INFRASTRUCTURE RISK FACTOR EXPOSURES BY SUB STRATEGIES

	Leverage		Size (US\$m)		Term spread		Profitability		Investment	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Global Infra	75.5%	56-94%	403	123-1,200	1.2%	1.2-1.7%	10.2%	6.6-16.2%	1.9%	0.1-5.5%
Core Infra	66.6%	45-88%	261	86-796	1.2%	1.1-1.7%	12.0%	7.8-19.9%	0.6%	0.0-2.9%
Core plus Infra	82.7%	64-97%	471	191-1,510	1.4%	1.2-1.6%	9.9%	6.4-14.1%	2.7%	0.4-6.4%
Value add Infra	82%	71-95%	705	234-2,816	1.4%	1.2-1.6%	7.7%	4.7-11.1%	5.3%	1.8-9.3%

Source: Scientific Infra & Private Assets (SIPA) as of 31 January 2026. Leverage: total liabilities over total assets; size: total assets; term spread: 20-year public bond yield minus 3-month public bond yield; profitability: return on assets before tax; investment: capex over total assets. The categorisation of core, core plus and value add adopted by SIPA is based on risk/return profiles of unlisted infra companies within the infraMetrics database. Companies with expected returns below the median are classified as core; those above the median but below the 75th percentile are core plus; and those above the 75th percentile are value add.

Positioned for resilience across market cycles

From our observations, heightened uncertainty amid elevated geopolitical risks and widening divergence in the growth outlook across major economies currently characterise the global economic landscape. In this context, mid-market infrastructure strategies focused on asset centrality with positive infrastructure adjacency and supported by clear value creation pathways naturally lend themselves to potentially resilient performance through cycles.

The projected acceleration of infrastructure investments, with global assets under management expected to approach US\$3 trillion by 2030³, further underscores the relevance of this resilience. Mid-market has accounted for a large share of transaction volume and deal activity in recent years, highlighting the depth of the opportunity set. For investors seeking to enhance portfolio diversification and improve risk-adjusted returns while retaining the defensive characteristics of infrastructure, mid-market can offer a compelling way to access this opportunity.

Contact our Client Solutions team

To discuss what the growing opportunity set in the mid-market could mean for your portfolio, please contact investorrelations@ifminvestors.com.

³ Source: Preqin Private Markets in 2030

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infrAM

The Operating Partner Model in Private Infrastructure



infrAM is an independent infrastructure asset management boutique based in Zurich, deliberately distinct from principal-led infrastructure funds. Operating as an extension of its clients' organizations, infrAM embeds into investment teams and takes responsibility across the entire lifecycle of an infrastructure investment – from acquisition and construction through operations to divestment. Serving both financial and industrial investors, infrAM connects technical, operational and financial priorities with deep expertise in the DACH region.

The Operating Partner Model in Private Infrastructure

Why the next phase of the asset class will be decided at asset level, not at fund level

Dr. Stefan Weissenböck

Founder & Managing Partner, infrAM GmbH, Zurich

Private infrastructure has grown up – and much has changed since SECA dedicated a booklet to the asset class five years ago (SECA, 2021). Assets under management have more than quadrupled over the past decade to a record level of roughly USD 1.3 trillion (BCG, 2025), and the capital requirement remains enormous: McKinsey estimates a global infrastructure investment need of USD 106 trillion through 2040, much of which will have to be met by private capital (McKinsey, 2026). At the same time, the tailwinds that carried the asset class through its first two decades – falling interest rates, expanding valuation multiples and cheap leverage – have faded. McKinsey describes the logical consequence clearly: in a maturing market, operational performance becomes the primary engine of returns (McKinsey, 2026).

For investors, this changes the investment focus: it is no longer only "which asset should I buy, and at what price?" but increasingly "who will actually manage this asset once I own it – and who makes sure that value creation truly happens?". This is where the Operating Partner model comes in.

What an Operating Partner is – and what it is not

The term originates in private equity, where operating partners were introduced to drive EBITDA improvement in portfolio companies alongside deal teams. Recent industry research shows how central this function has become: as financial engineering and multiple expansion fade as return drivers, leading GPs in private equity are systematically scaling their operational value creation capabilities (KPMG, 2025).

In private infrastructure, the model needs translation, because infrastructure assets are not typical companies. They are long-lived, capital-intensive, often regulated, frequently financed on a non-recourse basis through SPVs, and embedded in a dense web of stakeholders such as grantors, lenders, contractors, O&M partners, regulators and the public. Value is created (or destroyed) in construction claims, availability regimes, PPA negotiations, refinancings, lifecycle cost decisions and boardrooms – much of which never becomes visible in a quarterly report.

An Operating Partner in this context is a senior resource that is embedded in the ownership structure of an asset and takes real responsibility. The clearest way to define the model is by contrast with its neighbors on the ownership spectrum (Figure 1):

- Unlike a passive financial owner, the Operating Partner sits in the decision-making machinery of the asset and is close to – if not directly involved in – its day-to-day operational management.

- Unlike a classic advisor, the Operating Partner does not hand over a recommendation and walk away. It takes board mandates (executive or non-executive), assumes interim management roles where needed, and is accountable for execution.
- Unlike an industrial owner-operator, the Operating Partner does not replace the owner. It strengthens the owner's in-house team exactly where and for as long as support is needed – providing an extended workbench to the client, anchored at asset level.

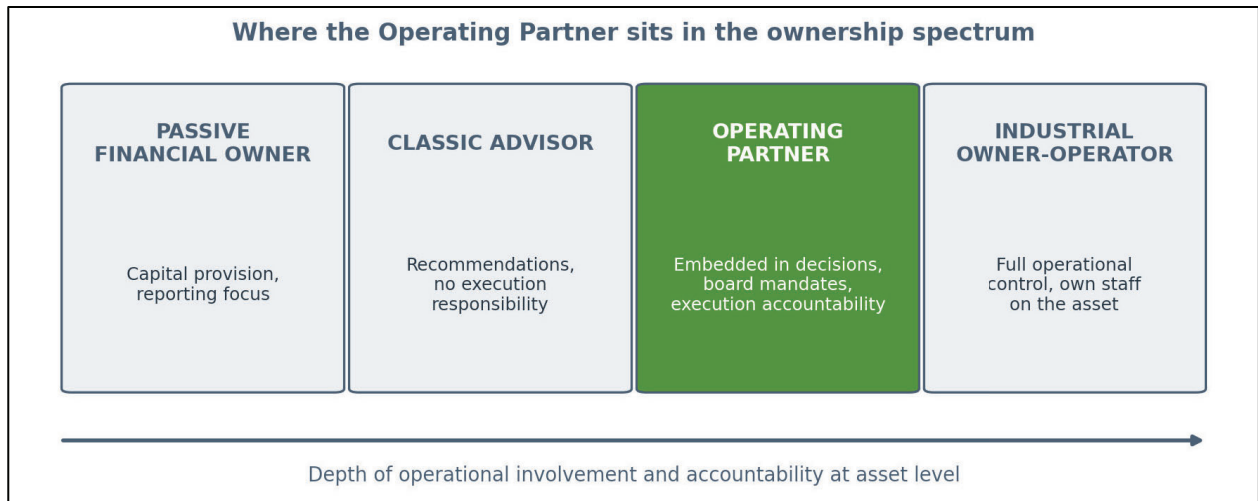


Figure 1: Positioning of the Operating Partner model (infrAM)

Why the model is gaining relevance now

Three developments make the Operating Partner model more relevant today than at any point in the asset class's history.

First, returns must now be made, not bought. With normalized interest rates and elevated entry valuations for quality assets, the arithmetic of infrastructure investing has changed. Fund-level research suggests that the average private fund shows no outperformance against market-based benchmarks – alpha, where it exists, is manager-specific and has to be earned (Scientific Infra & Private Assets, 2025). BCG likewise identifies enhanced operational value creation and more active asset management as defining features of the maturing market (BCG, 2025).

Data on private infrastructure itself points in the same direction (see Figure 2). Between 2014 and 2024, around 80% of returns came from the assets themselves – earnings growth, including inflation indexation, and cash yield – and only 20% from rising valuation multiples (Macquarie Asset Management, 2025). And that market tailwind fades the longer an asset is held: a rise in multiples from 13.0x to 14.8x EV/EBITDA adds 2.6% per year over a five-year hold, but only 0.7% over twenty years, all else being equal and before leverage. Given the long holding periods typical of infrastructure, returns therefore have to be earned at asset level – through cash flows, cost discipline and the ability to adapt the investment thesis as conditions change.

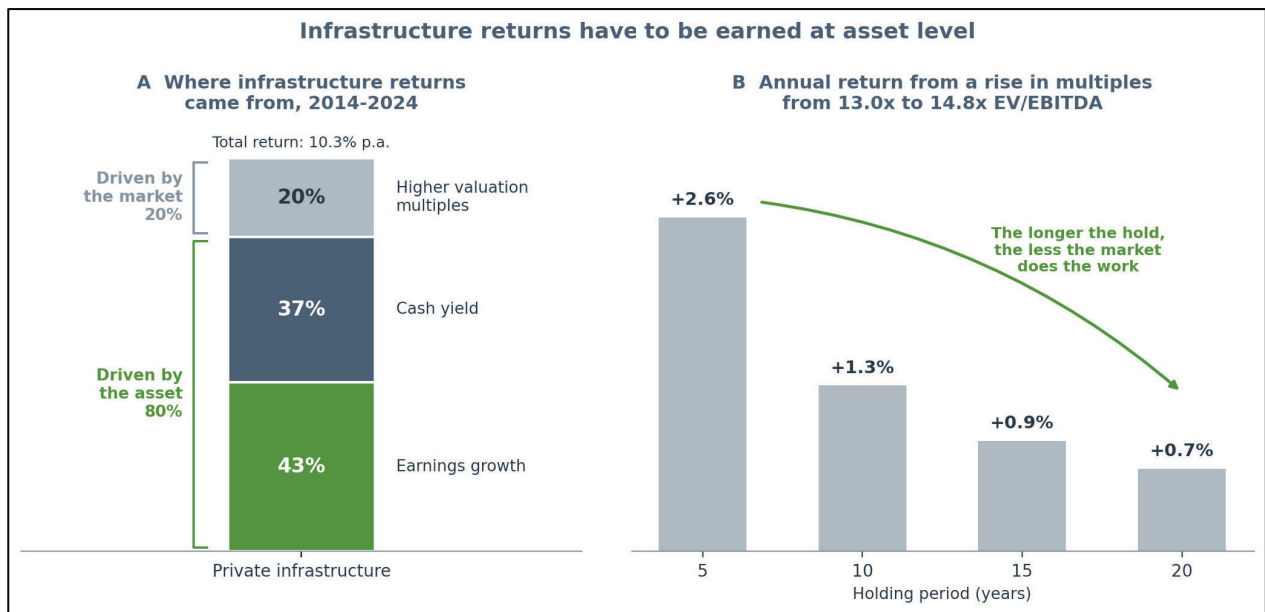


Figure 2: Sources of return in private infrastructure and the effect of holding period (based on Macquarie Asset Management, 2025; infrAM calculation)

Second, assets have become operationally harder. The energy transition, digitalization and changing mobility have pushed investors into segments where technical, commercial and regulatory complexity meet: battery storage co-located with solar parks, merchant exposure and PPA structuring, grid connection queues, data center power procurement, or road PPPs whose demanding availability regimes are locked in as early as the tender stage. Many of these assets also go through construction and revamping phases in which the difference between a good and a bad outcome comes down to contract management, interface discipline and stakeholder alignment – hands-on operational work, week by week, not a quarterly reporting exercise.

Third, in-house teams are structurally stretched. Institutional investors have built direct and co-investment programs faster than they have built asset management organizations. A pension fund with a handful of direct stakes rarely has the bench depth for a distressed contractor, a complex refinancing and a tender process at the same time. The choice is not between "internal" and "external" – it is between leaving gaps unmanaged and closing them with senior, accountable capacity.

What Operating Partners actually do: a lifecycle view

The practical content of the model is best described along the lifecycle of an infrastructure investment (Figure 3). The unifying principle is continuity: one accountable expert supporting the asset from acquisition or tender to exit, so that knowledge built in due diligence is not lost at closing, and lessons from operations feed back into the exit story.

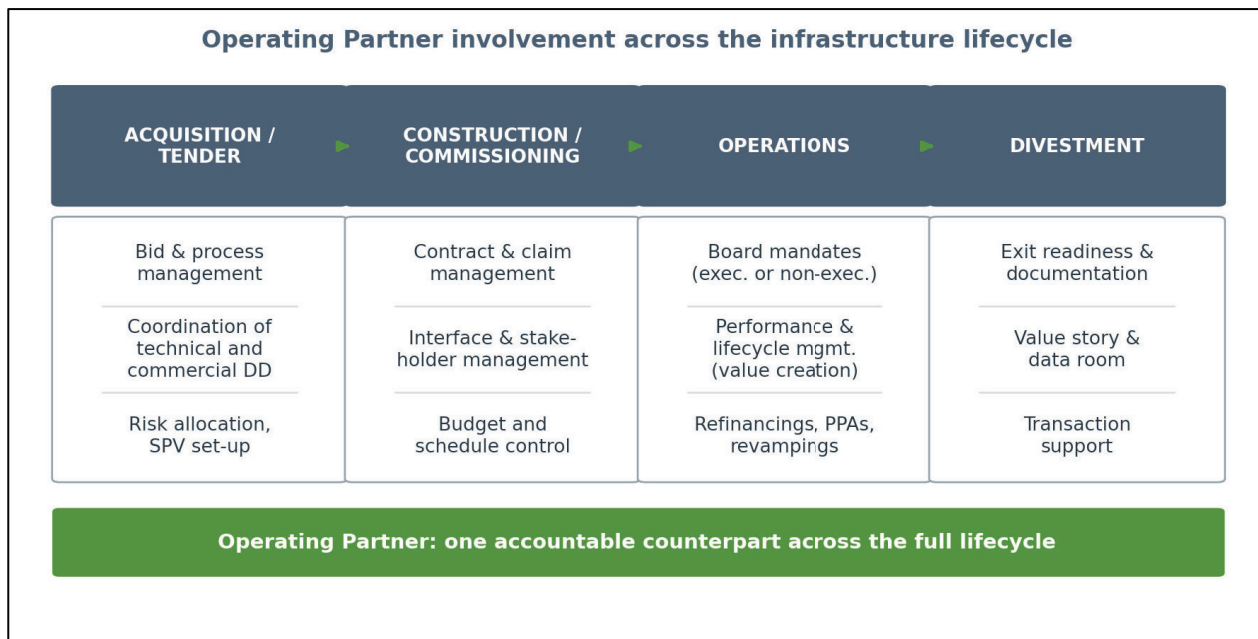


Figure 3: Operating Partner tasks across the asset lifecycle (infrAM)

Acquisition and tender stage. When engaged from the outset, the Operating Partner manages the bid process, integrates technical and commercial due diligence into a coherent risk map, and shapes risk allocation and SPV set-up. Crucially, the people who underwrite the operational assumptions are the same ones who will later have to answer for them. This discipline changes how aggressively business plans are written – and it distinguishes Operating Partners from deal-focused buy-side advisors, whose mandate typically ends at closing, with the fee paid and no stake in what follows.

Construction and commissioning. This is where infrastructure investments are most often damaged: research on large-scale infrastructure projects finds that nine out of ten run over budget (Flyvbjerg, 2014). Contract and claim management, interface management between EPC contractors and operators, budget and schedule control, and timely escalation to the board all require experienced, senior involvement – ideally while a problem is still building, not once it surfaces as a footnote in the board pack.

Operations. This is where value creation moves from the business plan into reality. The Operating Partner assumes executive or non-executive board mandates, drives performance and lifecycle management, and leads the special situations in which value is actively created or protected: refinancings, PPA and route-to-market strategies, revampings and, where necessary, financial restructurings. Over holding periods that often span one or more decades, the macro environment will shift more than once – and recent years have made this very clear: the pandemic, the war in Ukraine and the energy price shock that followed, disrupted supply chains, the sharp rise in interest rates and, most recently, the conflict around Iran and its effect on oil prices. Each of these shocks has undermined assumptions that looked robust at acquisition. In this environment, value is not created by executing yesterday's business plan, but by people with the mandate, the experience and the accountability to adapt it – the very core of the Operating Partner model.

Divestment. Exit readiness is an operational product. Clean documentation, a credible value story and a well-prepared data room are the result of years of disciplined asset management, not of a three-month sell-side sprint.

Governance and alignment: what makes the model work

In our experience, the Operating Partner model works best when three governance conditions are in place (Figure 4).

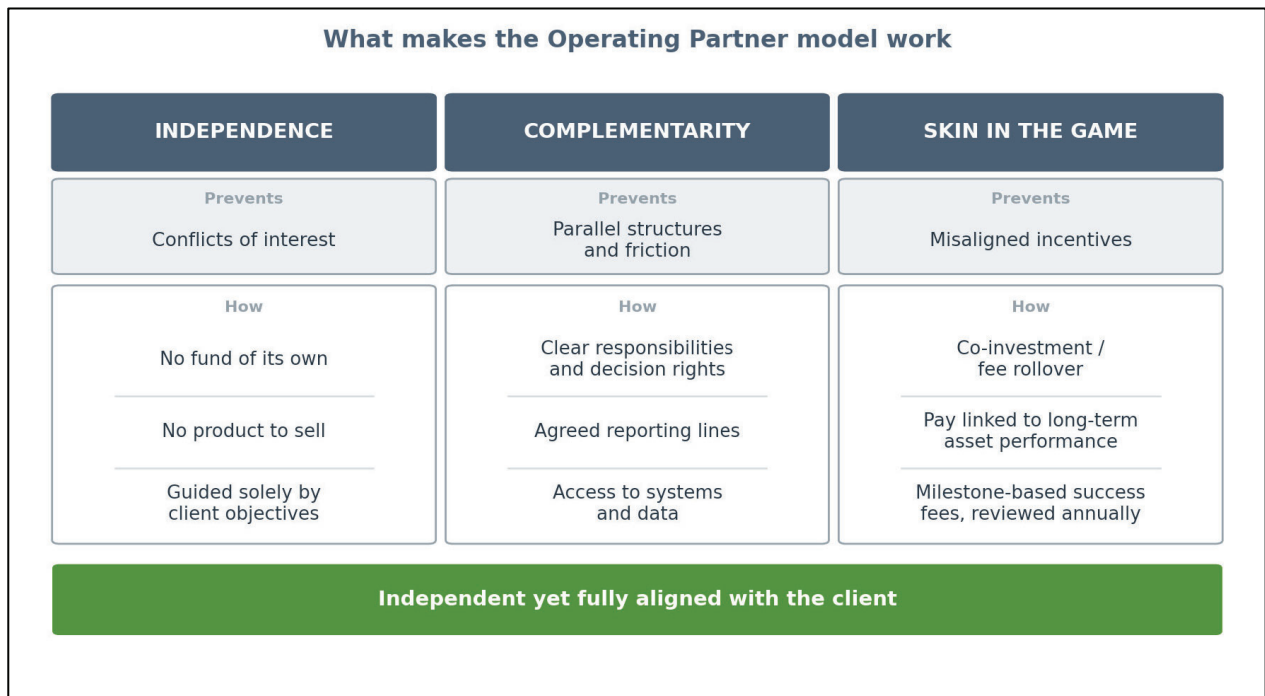


Figure 4: Governance conditions for the Operating Partner model (infrAM)

Independence. An Operating Partner that also runs its own fund, sells assets into the structures it advises, or is paid primarily for closing transactions has a conflict problem. Independence – no fund of its own and no product to sell – is what allows the Operating Partner to sit unambiguously on the owner's side of the table.

Complementarity, not competition. Where the owner has an in-house asset management function, the Operating Partner should act as an extension of that team at asset level – taking on the mandates, special situations and peak loads the internal team cannot absorb, rather than competing for its role. This requires clear interfaces from day one: defined responsibilities and decision rights, agreed reporting lines, and access to the owner's internal systems, data and reporting tools wherever needed to work efficiently. Set up this way, the Operating Partner strengthens the internal team instead of running in parallel to it.

Skin in the game. Alignment is strongest when the Operating Partner has a stake in the outcomes it helps to create. This can take several forms: co-investing alongside its clients (for example by rolling part of the success fee at acquisition over into equity), linking part of its remuneration to long-term asset performance, or success fees tied to specific milestones that are set and reviewed annually, such as a successful refinancing, a renegotiated PPA, a construction phase completed on time and on budget, or the value achieved at exit. What matters is that incentives reward value delivered over the holding period.

Conclusion

Private infrastructure is entering a phase in which the license to earn attractive returns is operational capability. Falling interest rates and rising valuation multiples will not carry the asset class the way they once did. With around 80% of returns already coming from the assets themselves and holding periods that often span decades, performance has to be earned at asset level: in tender documents and construction claims, in boardrooms and refinancings, and in the ability to adapt the business plan when the macro environment shifts, as it has repeatedly in recent years.

The capital is there, and so are the assets. What is scarce is senior, accountable capacity at asset level. The Operating Partner model is one answer to that scarcity. It is embedded in the ownership structure rather than advising from the outside, present across the full lifecycle from tender to exit, independent of funds and products, and aligned through co-investment and performance-linked incentives. It does not replace in-house teams but strengthens them, provided that interfaces, responsibilities and access are clearly defined from the outset.

For LPs building direct programs, for GPs stretching into more operational assets, and for industrial investors professionalizing their portfolios, the question is no longer whether to secure such capacity, but how soon, and how broadly.

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Note: Figures 1, 3 and 4 are graphics prepared by infrAM for this contribution. Figure 2 is based on data from Macquarie Asset Management (2025); panel B is an infrAM calculation derived from the average transaction multiples reported therein, calculated as $(14.8 / 13.0)^{(1/n)} - 1$ with n = holding period, at enterprise value level with constant EBITDA.



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infrAM is an independent infrastructure asset management boutique based in Zurich, deliberately distinct from principal-led infrastructure funds. Operating as an extension of its clients' organizations, infrAM embeds into investment teams and takes responsibility across the entire lifecycle of an infrastructure investment – from acquisition and construction through operations to divestment. Serving both financial and industrial investors, infrAM connects technical, operational and financial priorities with deep expertise in the DACH region.

Services

- Direct investments: project management during acquisition and tender stage; active, ongoing asset management including executive and non-executive board mandates; market entry support for LPs
- Co-investments: transaction analysis and acquisition support; ongoing monitoring post-acquisition
- Education: lectures, seminars, publications, speeches and discussions on infrastructure as an asset class

Sector focus

Energy and energy transition (wind, solar, battery storage, grids, hydrogen), transport and mobility infrastructure (highways, railways, bridges and tunnels, EV charging, service plazas), social infrastructure (schools, universities, healthcare, public buildings) and digital infrastructure (fiber networks, towers, 5G, data centers). Across sectors, infrAM prioritizes strong fundamentals and integrates ESG into investment and asset management decisions.

About the Author

Dr. Stefan Weissenböck, Founder & Managing Partner. Nearly 20 years of experience in infrastructure investing across financial investors, industry and academia. Previously SVP, Head of Asset & Portfolio Management and Member of the Management Team at IST Investment Foundation, and Member of the Investment Committee of IST3 Infrastruktur Global, a CHF 1bn open-ended infrastructure strategy, with responsibility for transaction execution, active asset management and long-term value creation. On the industrial side, he was responsible for bid and project management, risk analysis and financial modeling for large-scale PPP projects as well as controlling and asset management of a PPP portfolio at HOCHTIEF PPP Solutions in Essen, following contract management for a EUR 900m PPP project in Vienna. Master's degree in Civil Engineering from TU Vienna and PhD from ETH Zurich on the application of portfolio theory to infrastructure investments.

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Invest Europe

Invest Europe launches maiden pan-European
infrastructure activity data report



Invest Europe is the world's largest association of private capital providers. Invest Europe represents Europe's private equity, venture capital and infrastructure investment firms, as well as their investors, including some of Europe's largest pension funds and insurers.

€265bn raised for critical European infrastructure investment in 2020s, new report shows

- Invest Europe launches maiden pan-European infrastructure activity data report
- Private infrastructure funds invested €167bn in European companies or projects from 2020 to H1 2025

Brussels, Belgium, 09 December 2025, 1100 AM CET - Invest Europe, the association representing Europe's private equity, venture capital and infrastructure sectors, as well as their investors, has released [Building Europe's foundations: The role of private capital in infrastructure](#), its first ever report into fundraising, investment and divestment activity in the infrastructure funds sector in Europe. The study draws attention to the importance of private capital investment in critical European infrastructure and points to the burgeoning growth in the asset class, as investors and funds target strong investment potential aligned with European sustainable development goals, including the green and digital transitions.

- European infrastructure funds raised €265 billion from 2020 to H1 2025, including €41 billion in the first half of 2025. The figure nearly matches the €42 billion raised in all of 2024 and represents 91% of the average of the past five full years, indicating a significant step up in investor appetite for private infrastructure funds.
- Funds invested €167 billion into 1,039 infrastructure projects or companies over the full period, with some 17% of investment into new greenfield assets and the remainder in existing assets. Since 2023, renewable energy has been the largest investment sector, followed by telecoms focused on Europe's digital transition, while transport is the third biggest sector.

Building Europe's foundations: The role of private capital in infrastructure also digs into the geographic breakdown of fundraising and investment, activity by fund stage and size, and domestic and cross-border flows to present a broader picture of private capital activity in Europe.

Eric de Montgolfier, CEO of Invest Europe, commented:

- *"There will never be enough public money for Europe's green and digital transitions or transport upgrades. Yet, there are sizeable pools of private capital ready and willing to invest in critical infrastructure that can deliver outperformance and diversification, as well as yield and stability. In doing so, private infrastructure investment can address pressing climate and technology challenges and quite literally build a path for European growth and competitiveness."*

Invest Europe's infrastructure analysis drawn from data submitted by some 250 infrastructure fund managers active in Europe. There are strong contributions for France and Italy thanks to annual statistics already gathered by Invest Europe partner associations in those countries. Invest Europe expects the scope of report to improve and broaden as more managers across Europe submit their data for the report.

The report reflects Invest Europe's developing role as the voice of private infrastructure in Europe. Invest Europe has over 50 Infrastructure Roundtable members and looks forward to fully welcoming and integrating the [Long-Term Infrastructure Investors Association](#) members into the association from the start of 2026.

Click to download a copy of [Building Europe's foundations: The role of private capital in infrastructure](#).

-ENDS-

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NOTES TO EDITORS

About Invest Europe

Invest Europe is the association representing Europe's private equity, venture capital and infrastructure sectors, as well as their investors. We have over 650 members, split roughly equally between private equity, venture capital and limited partners - with some 110 associate members representing advisers to our ecosystem. Those members are based in 57 countries, including 42 in Europe, and manage 60% of the European private equity and venture capital industry's €1.247 trillion of assets under management. Businesses with private capital investment employ 11.2 million people across Europe, 5% of the region's workforce. For more information visit www.investeurope.eu

About Invest Europe's Infrastructure Roundtable

Infrastructure investments have emerged as crucial avenues for sustained growth, providing solid foundations for both public and private sectors. With more than 50 of its members active in the sector, Invest Europe recognises that it deserves increasingly specific support. The Infrastructure Roundtable supports relevant members in explaining and promoting the asset class through market and stakeholder education. [Find out more](#).

Marsh

Infrastructure's mid-market moment

MARSH

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Infrastructure's mid-market moment

By **Julia Schiffer**, Head of Infrastructure - Europe, Marsh Investments and Retirement



Mid-market infrastructure has evolved from a niche allocation into one of the most active areas in alternatives. Investors are increasingly drawn to the segment for exposure that seeks to offer more than core yield. As assets and services move closer to end users, smaller, more localized platforms are assuming a greater role across critical sectors, expanding the investable universe well beyond traditional large-scale assets.

This segment offers access to diverse, dispersed subsectors with potential for operational improvement, institutionalization and strategic scaling. Historically, some mid-market managers have outperformed larger peers, though with greater variability in outcomes. But mid-market infrastructure is not simply a thematic growth story: outcomes depend on the quality of the underlying business, revenue resilience, the credibility of the growth plan, and the manager's ability to deliver during ownership. It offers exposure to the next generation of essential assets, but one that demands selectivity and rigorous underwriting.

Defining the opportunity

Mid-market infrastructure generally refers to assets and businesses with enterprise values from roughly \$100 million to \$500 million at the lower end, and up to approximately \$1 billion at the upper end. With around 90% of infrastructure transactions valued below \$1 billion (source: Infralogic), the investable universe is both large and fragmented. Many mid-sized businesses remain founder- or family-owned, locally operated, or embedded within corporates as non-core subsidiaries.

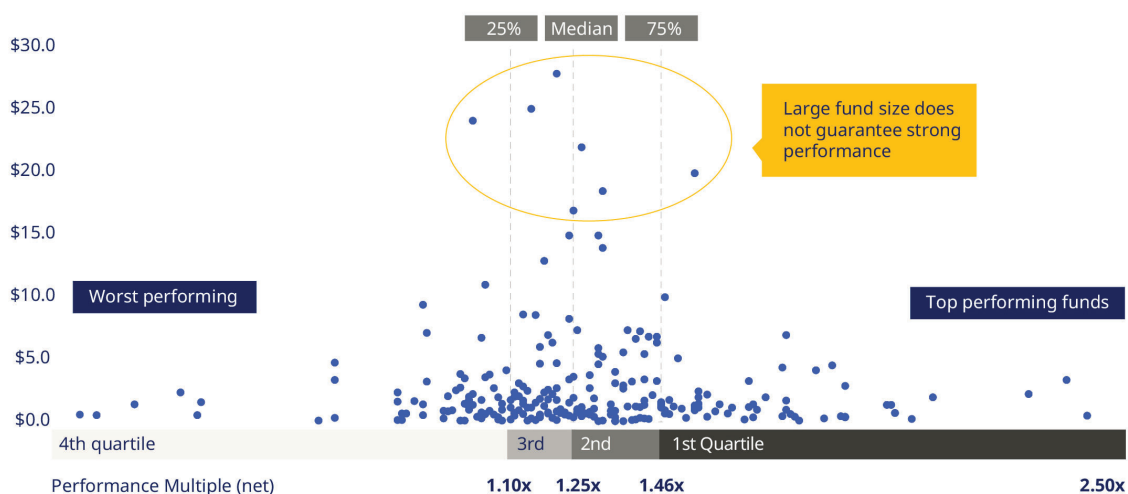
Regionally, most deal activity has occurred in Europe, with a bias toward greenfield-stage opportunities (source: Preqin). Compared with large-cap infrastructure, the mid-market spans a broader range of subsectors that are decentralized, operationally intensive and locally relevant, creating scope for active ownership to drive operational improvement and professionalization. For investors, this offers a way to diversify beyond traditional regulated utilities, airports and large-scale power assets while retaining many of the tangible characteristics of larger infrastructure assets.

The shift toward decentralized infrastructure

A central driver of this segment is the movement of infrastructure assets and services closer to end users. For years, institutional portfolios were dominated by large, centralized, regulated networks. The rise of smaller, localized platforms marks an important evolution in how essential services are delivered, supporting decarbonization, digitalization, resource efficiency and resilience. This is especially visible in energy and water, where site-based assets increasingly complement centralized systems, producing a model of infrastructure delivery that is more distributed rather than diminished.

For specialist managers with strong local networks and sector knowledge, the mid-market offers meaningful sourcing and scaling advantages. Because the market remains fragmented, transactions can be sourced through less intermediated processes, supporting more attractive entry valuations (source: Infralogic/Fiera analysis, EV/EBITDA multiples 2021–2025). Many mid-market businesses are earlier in their institutional development, creating scope for consolidation and multiple expansion through upgraded operations. Scaled mid-market platforms also often offer broader exit optionality than very large assets, which face a narrower universe of potential buyers.

Wide dispersion across smaller funds, although bigger is not necessarily better



Source: Infrastructure Investor database; Mercer analysis as of 31 December 2025. Analysis is based on third-party infrastructure funds with final closings between 2017 and 2024. Performance is measured using net performance multiple, as reported by Infrastructure Investor. Sample sizes: Core (59), Core-plus (90), Value-added (49) and Opportunistic (21). Outliers are not shown but are included in the statistics.

Why delivery matters more than thematic exposure

Small and mid-market infrastructure funds frequently target returns approximately 200 basis points above larger, traditional strategies, a spread identified across funds surveyed by Marsh in 2025. This premium has grown more relevant in a higher-rate environment, where investors favor total return, capital growth and controllable value creation over long-duration income streams whose present value is compressed by elevated discount rates.

However, the historical evidence is nuanced. Return dispersion across small and mid-market funds is meaningfully wide, and median performance does not consistently outperform larger peers. The picture improves at the top quartile: the strongest small and mid-market managers have largely exceeded returns from funds above \$5 billion in size. Vehicles at that scale typically no longer target the middle market and are increasingly exposed to the valuation and liquidity dynamics of large-cap infrastructure.

Cash realization outcomes have also been encouraging for many mid-market managers, though this should be read alongside wider dispersion in realized performance. Smaller assets may benefit from broader exit optionality and a wider buyer universe, but successful

realizations remain dependent on who is running the strategy. In short, choosing the right manager is the primary driver of mid-market outcomes. The segment may offer attractive return potential, but performance dispersion remains wide, so success depends on careful manager selection and rigorous due diligence rather than exposure to the segment alone.

While secular themes such as decarbonization, digitalization or energy security shape the landscape, returns are ultimately driven by how well a business is run. Thematic exposure alone does not ensure success: weak contractual structures, inadequate governance, technology risk or unrealistic growth assumptions can undermine even well-themed businesses. Conversely, strong outcomes often emerge from addressing specific local needs and delivering operational improvements, and the strongest capabilities aren't always found in the largest or most visible firms. Effective mid-market managers combine sector expertise and rigorous underwriting with the ability to operate in smaller, entrepreneurial environments. This means building trust with management teams, upgrading businesses operationally, and maintaining focus on revenue resilience and exit credibility. Dispersion is wide precisely because these capabilities are rare.

Underappreciated risks

A business with infrastructure characteristics does not inevitably become an institutional infrastructure platform. This is perhaps the most underappreciated risk in this segment. Smaller businesses often operate with shorter contracts, more variable revenues, and higher customer concentration than large-cap peers, and some sit in sectors where shifts in regulation, technology, financing costs or policy support can quickly alter the investment case.

Many mid-market businesses are also more asset-light, deriving infrastructure-like qualities from contracts, licences or market position rather than hard physical assets. This brings flexibility and easier exit or repositioning, but also lower barriers to entry, limited hard-asset collateral, and operational leverage that must be actively managed rather than assumed.

Scaling risk deserves particular attention: bolt-on acquisitions can be hard to integrate, management teams may struggle under new ownership, growth often requires more capital than expected, and operational improvements typically take longer to realize than underwriting assumes. The gap between a business with infrastructure-like characteristics and a mature, institutionalized platform is often wider — and costlier to bridge — than it appears at entry. The risk of overpaying for growth is equally real: in areas like energy transition and digital infrastructure, intensifying competition has tightened pricing, and the strongest thematic narratives can carry the greatest valuation risk when they lead investors to accept execution-dependent returns at core-like pricing.

The weaker outcomes Marsh has observed share common features: revenue models less resilient than underwritten, gains dependent on external conditions rather than controllable levers, and managers applying a large-cap playbook to businesses that need closer operational engagement. These are not isolated failures. They reflect structural tensions between the mid-market's appeal and the operational demands it places on managers, and understanding them is inseparable from portfolio construction, which requires not just manager selection discipline but a granular, look-through view of how risks aggregate across the portfolio.

Marsh's view: opportunity requires discipline

For long-term investors, the mid-market's breadth, depth and diversity warrant serious attention as a meaningful way to access the next generation of essential assets. For those seeking diversification from concentrated public-market exposures, returns driven by asset-level cash flows, contract quality and operating performance, rather than sentiment or multiple expansion, may offer genuine diversification at the total-portfolio level.

Realizing that potential requires a robust, look-through understanding of risk across geography, regulatory regime, sector and subsector, revenue model, contract tenor, inflation linkage, counterparty concentration, construction and technology risk, leverage, and the underlying drivers of value creation. Deployment pacing also matters, as shifts in transaction activity can materially influence entry points and outcomes. Co-investments and secondaries can play a complementary role, helping investors refine exposures, improve pacing and access high-conviction themes alongside primary fund commitments.

Megatrends may set the direction, but disciplined implementation and manager and investment selection will determine whether mid-market infrastructure becomes a durable driver of value creation. The opportunity is real; so are the demands it places on investors.



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Julia Schiffer is a Partner and leads Marsh's European infrastructure team from the Zurich office. Ms. Schiffer joined SCM Strategic Capital Management AG in 2010, which was acquired by Marsh in 2015. She has worked in the financial services industry for 20 years, beginning her career at Partners Group. In her role at Marsh, Ms. Schiffer oversees the identification, due diligence and selection of infrastructure investments, as well as the portfolio management of the funds and mandates Marsh manages in this asset class. She is a member of Marsh's Real Assets and Global Impact Investment Committees, and a member of the Marsh Infrastructure Rating Review Committee.

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Partners Group

Portfolio Company atNorth – a case study



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Partners Group Portfolio Company **atNorth**

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AI and high-density computing are reshaping demand for digital infrastructure. Global need for AI compute could rise more than 24-fold by 2030¹, far outpacing today's data center capacity and pushing annual investment by the biggest computing power providers towards USD 1 trillion by 2028². Meeting that demand requires new capacity built at speed. As an early investor in data centers, Partners Group identified the Nordics as an attractive region to build it. Cool climates, renewable power, and available land enable operators to deliver compute at approximately 40% lower total cost than Europe's main hubs³, contributing to a regional market projected to grow at 36% per year through 2030⁴.

From three data center sites to a five-country platform

When Partners Group acquired atNorth in January 2022, the company ran two data centers in Iceland and had just expanded into Sweden with one site – built at the height of COVID, while many peers paused, and delivered on time and on budget. That combination of execution and ambition gave us confidence atNorth could become a regional leader. Over the four years that followed, the partnership took atNorth to a footprint of 13 operational and under development data centers across Denmark, Finland, Iceland, Norway, and Sweden, with contracted EBITDA growing 14-fold by the time of Partners Group's exit in 2026.

A category leader built in four years



atNorth has grown from a regional operator into the leading pan-Nordic data center platform, with significant power and land secured for future growth. The company differentiates itself by offering access to renewable-powered, cost-competitive compute in Europe, with capacity that can be brought online on short timelines.



We now have the foundation to build at gigawatt scale across multiple Nordic locations – and that is exactly what we have been preparing for since Partners Group acquired the company.”

E. Magnús Kristinsson,
Chief Executive
Officer



Entry

January 2022

Exit

September 2026

2.5x

Multiple on capital invested (gross)

100+

International clients

USD 4 billion

Enterprise value at exit

Key transformation levers:

Capital and expertise: Alongside its equity investment, Partners Group raised c. USD 2 billion to fund expansion and helped build a platform capable of operating across five countries.

Building for the future: We applied our entrepreneurial ownership playbook, bringing in industry veterans to support execution of the growth strategy. This included building capacity organically and securing power and land ahead of demand. Today, atNorth holds 1.5 GW+ of secured power.

A differentiated customer portfolio: atNorth now serves an international customer base spanning hyperscalers, AI operators, and enterprises, drawn by the reliability of its infrastructure and fast delivery timelines.

A business rooted in environmental and community engagement

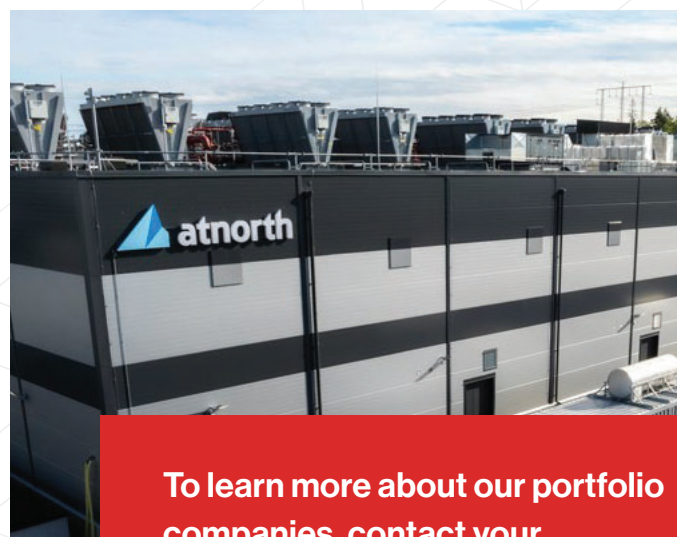
Strong local relationships are critical to any data center platform's growth. Two examples of atNorth's engagement stand out:

- atNorth recovers and reuses heat from its data centers. A Finnish retailer's store is now heated almost entirely by a neighboring site, while a Danish district-heating utility is expected to receive enough surplus heat to warm 8,000+ homes from 2028.
- atNorth's blueprint design for new data centers shortens build cycles and lowers costs by standardizing the use of renewable energy, heat reuse, and circular materials.

A transformational partnership

Partners Group's ownership transformed atNorth from a technically strong local operator into an AI-ready platform positioned to serve the growing shift to high-density compute. That evolution was the product of a genuinely entrepreneurial value creation plan: embedding an operating model and governance suited to a scaling business, developing next-generation infrastructure, and securing power and land ahead of demand.

The result is a platform with cash-generating live sites and a growth runway backed by substantial development and sales pipelines. Together, these foundations underpinned a compelling equity story: Partners Group's exit valued atNorth at USD 4 billion and generated a gross multiple of 2.5x on invested capital for our clients.



To learn more about our portfolio companies, contact your Partners Group Representative.

About Partners Group

Partners Group is one of the largest firms in the global private markets industry, with around 2,000 professionals and over USD 186 billion in assets under management, inclusive of all Partners Group affiliates. The firm has investment programs and custom mandates spanning private equity, private credit, infrastructure, real estate, and royalties. With its heritage in Switzerland and its primary presence in the Americas in Colorado, Partners Group is built differently from the rest of the industry. The firm leverages its differentiated culture and its operationally oriented approach to identify attractive investment themes and to build businesses and assets into market leaders.

Source: Forefront (2026) and Partners Group (2026). This case is for illustrative purposes only. There is no assurance that similar investments will be made. The selected investment represents a sample of Infrastructure investments that Partners Group made on behalf of its investors. The example shown may be part of several Infrastructure and open-ended products, managed by Partners Group. AI at present is utilized by Partners Group for certain internal administrative tasks and to augment employee connectivity. AI has not yet been adopted by Partners Group USA as part of the investment origination or decision-making process. 1 Source: Goldman Sachs, with data compiled as of 08 May 2026. Note: Data as of 05 May 2026 and is subject to change based on potential updates to source database. Analysis is based on modeled AI agents simulating workflows across AI-exposed occupations to estimate minimum token requirements per AI agent and to size total global monthly token consumption through 2030. 2 Source: S&P Capital IQ, with data compiled as of 08 May 2026. Note: Data as of 08 May 2026 and is subject to change based on potential updates to source database. Analysis reflects realized and consensus forecasts for annual capital expenditures across U.S. hyperscalers – including Amazon (AWS), Google, Meta, Microsoft, and Oracle – U.S. neoclouds – including CoreWeave and Nebius – and China hyperscalers including Alibaba and Tencent. 3 Compared to Frankfurt, London, Amsterdam, Paris, and Dublin. Source: Gartner, IMF, Eurostat, Altman Solon. 4 Source: Partners Group, Altman Solon.

PGUS01091 | September 2026

**PARTNERS
GROUP**
Built Differently to Build Differently

PATRIZIA

The infrastructure opportunity in Emerging Asia



PATRIZIA: Investmentmanager für internationale smart Real Assets

PATRIZIA bietet seit mehr als 40 Jahren Investitionsmöglichkeiten in smart Real Assets für institutionelle, semi-professionelle und private Anleger, mit Fokus auf Immobilien und Infrastruktur. Die Investmentlösungen von PATRIZIA basieren auf den „DUEL“-Megatrends – Digitalisierung, Urbanisierung, Energiewende sowie modernes Leben – und nutzen die Chancen, die sich aus diesen transformativen globalen Veränderungen ergeben. PATRIZIA managt derzeit ein verwaltetes Vermögen von ungefähr 56 Mrd. EUR (AUM) und beschäftigt rund 800 Mitarbeiter an 26 Standorten weltweit.

PATRIZIA hat sich seit seiner Gründung dem Ziel verschrieben, einen positiven Beitrag zu leisten. Seit 1992 engagiert sich das Unternehmen in enger Zusammenarbeit mit dem Bunten Kreis in Deutschland für die Nachsorge schwerstkranker Kinder. Seit 1999 hat die PATRIZIA Foundation mehr als 800.000 Kindern und Jugendlichen weltweit Zugang zu Bildung, Gesundheitsversorgung und einem sicheren Zuhause verschafft, um ihnen ein besseres, selbstbestimmtes Leben zu ermöglichen. Weitere Informationen finden Sie unter www.patrizia.ag und www.patrizia.foundation



PATRIZIA INVESTMENT STRATEGY & DATA INTELLIGENCE | SEPTEMBER 2026

Radu Mircea, Head of Investment Strategy
Juan Manuel Gotsis, Senior Strategist

The infrastructure opportunity in Emerging Asia

Focus Note

Introduction

Emerging Asia¹ is fast becoming one of the world's most compelling infrastructure investment destinations. Strong urban population growth and rapid economic development are driving long-term infrastructure demand, with annual investment needs estimated at around US\$500 billion through 2040.²

Across the region, governments are seeking to close infrastructure gaps while supporting growth and improving resilience. Policy priorities centre on mobilising private capital through regulatory reform, public-private partnerships, targeted incentives and improved access to long-term financing, reflecting both fiscal constraints and the scale of required investment.

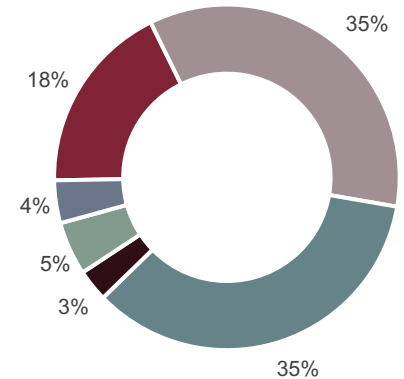
Energy infrastructure sits at the core of the opportunity. A fossil-fuel-heavy power mix, rapidly rising electricity demand and ambitious climate commitments point to a material acceleration in capital deployment in energy systems, placing Emerging Asia at the centre of the global energy transition.

Chart 1: Estimated share of global infrastructure spend through 2040

18%

Emerging Asia¹

- Emerging Asia
- China
- Developed Markets
- Emerging Europe
- Latin America
- Africa



Source: PATRIZIA, Swiss RE Institute

Emerging Asia will require sustained capital deployment to close infrastructure gaps, raise living standards and support credible decarbonisation pathways – particularly in fast-growing economies with restricted public resources.

Structural Drivers of the Emerging Asia Opportunity

Share of Global Population³

27%

Strong demographic and macro tailwinds

Emerging Asia is home to over a quarter of the world's population and is projected to be one of the fastest-growing regions economically and demographically in the coming years

Fossil Fuel Share⁴

76%

High fossil fuel dependency

Emerging Asia generates 76% of its power from fossil fuels sources. With energy demand set to expand, investment in the energy transition is critical to lowering global emissions

Investment need²

\$500bn
pa

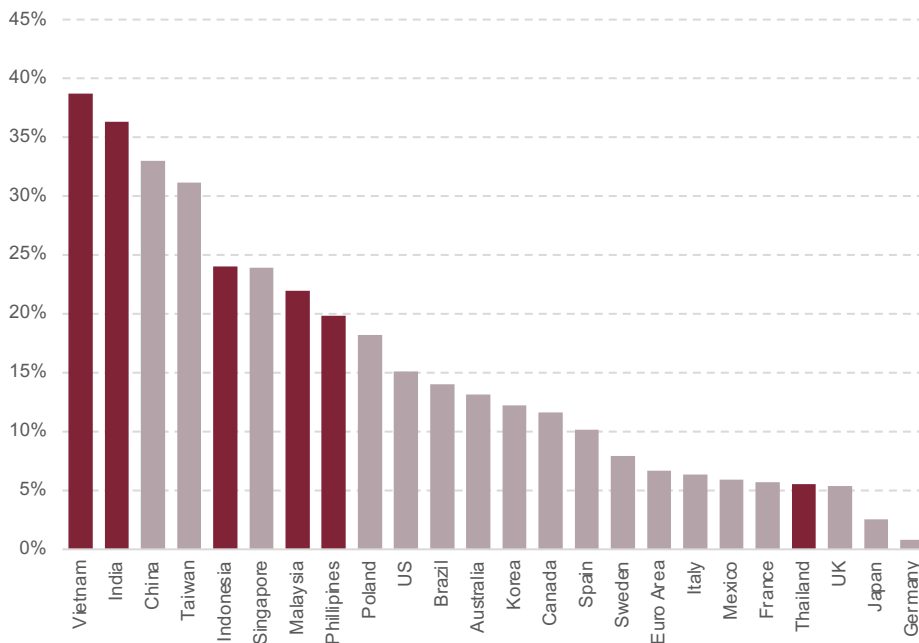
Elevated infrastructure investment needs

US\$500bn is forecast to be invested annually in infrastructure across Emerging Asia through 2040, reflecting the region's demographic, economic, and decarbonisation demands

Notes: (1) For the purposes of this report, references to Emerging Asia exclude China (2) Swiss RE Institute - Closing the infrastructure gap (3) Oxford Economics (4) International Energy Agency.

Emerging Asia's economies outperformed those in Europe and the Americas

Chart 2: Accumulated Real GDP growth since the pandemic (2019 - 2025)



Source: PATRIZIA, Oxford Economics, Macrobond

Asia Pacific is the fastest growing region in the world, responsible for around 60% of global growth.¹

Regionally, emerging markets (EMs) have outperformed advanced economies (AEs). Since the 2000s, growth in Asian EMs has been underpinned by demographic tailwinds, capital deepening, gains in human capital, and productivity growth.²

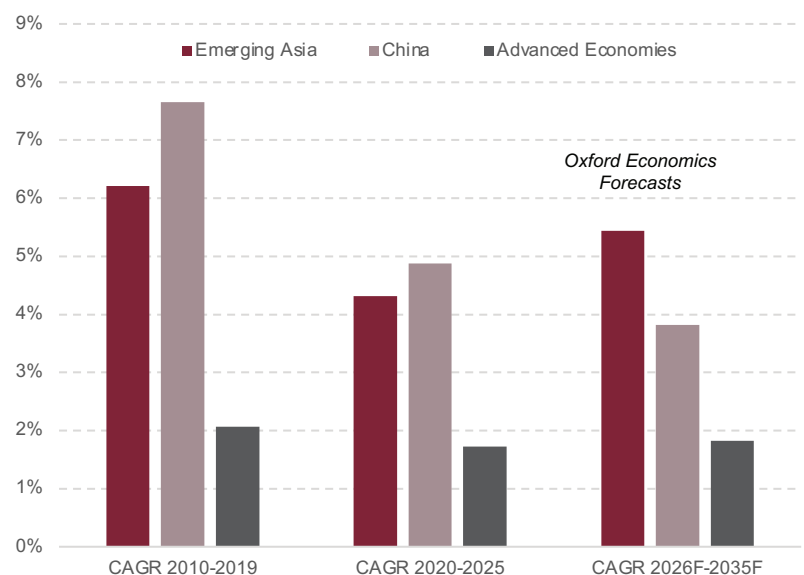
Recently, EM Asia's economies vastly outperformed major economies in Europe and the Americas, demonstrating resilience in the face of global shocks (Chart 2).

Regional growth momentum is broadening toward South and Southeast Asia

For much of the past four decades, China has been the dominant source of Asian and global growth. Today, China faces cyclical pressures from a prolonged property-sector downturn and strategic tensions with the United States, alongside structural headwinds from weaker demographics and diminishing returns on investment. As a result, growth is expected to moderate.

By contrast, major economies in South and Southeast Asia are earlier in their development cycles and benefit from more favourable demographic trends. US-China rivalry has also accelerated supply-chain diversification (China+1), helping to attract foreign direct investment into the region. Together, these factors support expectations that Emerging Asia will substantially outperform both China and Advanced Economies in percentage growth terms over the next decade (Chart 3).

Chart 3: Real GDP growth per year



Source: PATRIZIA, Oxford Economics Forecasts, Macrobond

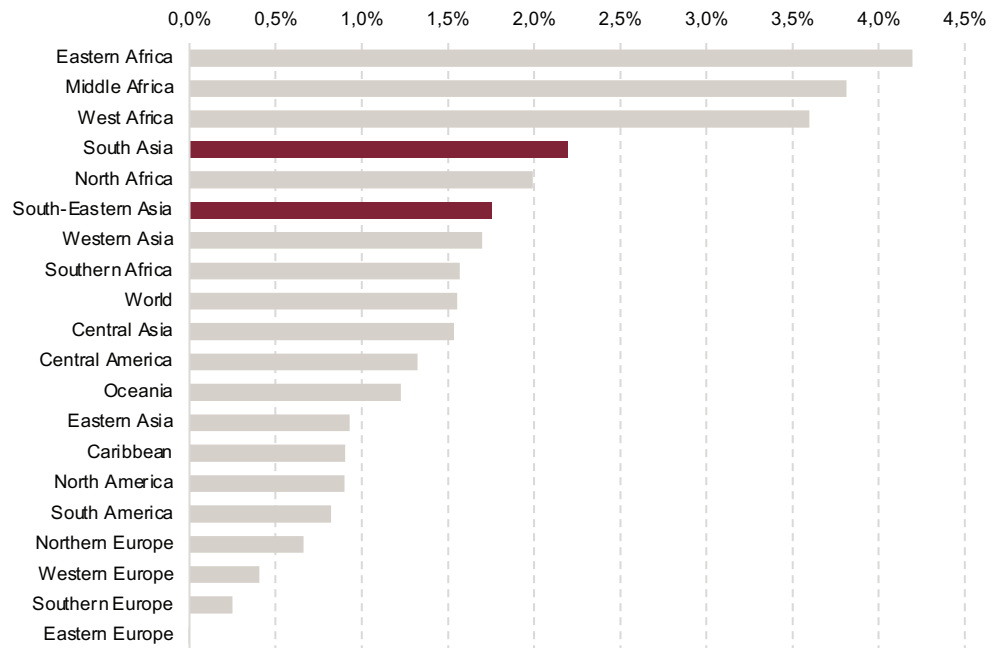
Notes: (1) IMF – Regional Economic Outlook for Asia and the Pacific 2025 (2) Che et. al 2025

Urbanisation and middle-class growth will drive infrastructure demand

Alongside strong economic growth, Emerging Asia is undergoing rapid urbanisation. South and Southeast Asia are expected to see the fastest urban population growth rates over the next decade outside of Africa (Chart 4), increasing pressure on urban infrastructure and services.

At the same time, rapid middle-class expansion¹ is lifting demand for infrastructure. Rising incomes and living standards are supporting higher consumption of energy; for instance, the International Energy Agency has identified cooling needs as one of the fastest-growing sources of energy demand in the region.²

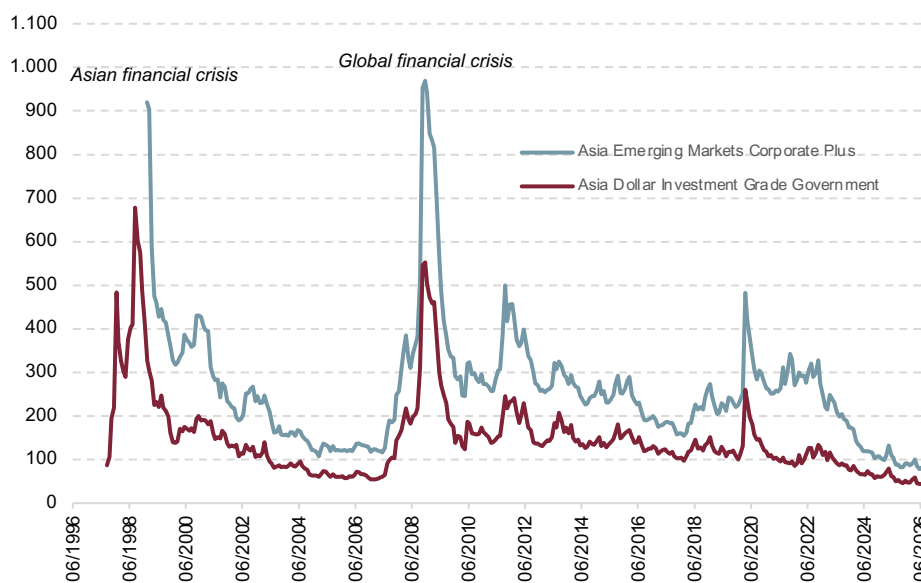
Chart 4: Forecasted urban population growth in 2026-2035 (CAGR)



Source: PATRIZIA, United Nations, Macrobond

EM Asia's credit spreads shrink as risk perception improves

Chart 5: Asian fixed-income indices, option-adjusted spreads (in bps)



Source: PATRIZIA, ICE BofAML, Macrobond

Investing in emerging markets inherently carries greater risks, typically reflected in wider sovereign and corporate credit spreads. Historically, these spreads have widened materially during episodes of acute financial stress, including the Asian Financial Crisis and the Global Financial Crisis.

However, many emerging Asian economies now benefit from stronger external balances and more robust macro-prudential frameworks, contributing to historically low credit spreads. This backdrop is supportive of infrastructure investment through improved capital availability and lower financing costs.

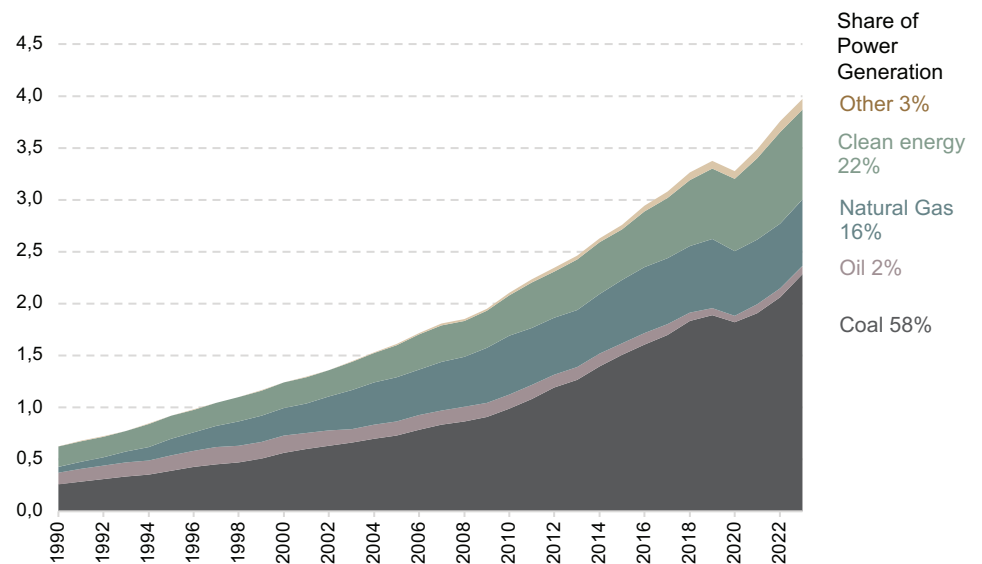
Notes: (1) Oxford Economics - The future of the middle class in emerging markets (2) International Energy Agency - World Energy Outlook 2025

The decarbonisation challenge in Emerging Asia is immense

As Emerging Asia's economies have expanded, electricity generation has had to increase sharply to meet demand (Chart 6). This demand has been met largely through coal-fired generation, resulting in a carbon-intensive energy mix and creating increasing tension with the region's stated decarbonisation objectives.

At the same time, energy security remains a key concern. Major economies such as India, Thailand, Vietnam and the Philippines remain heavily reliant on imported energy, heightening exposure to external price and supply shocks. The challenge is therefore twofold: scaling renewable generation to meet rising demand while progressively replacing an existing coal-heavy power mix.

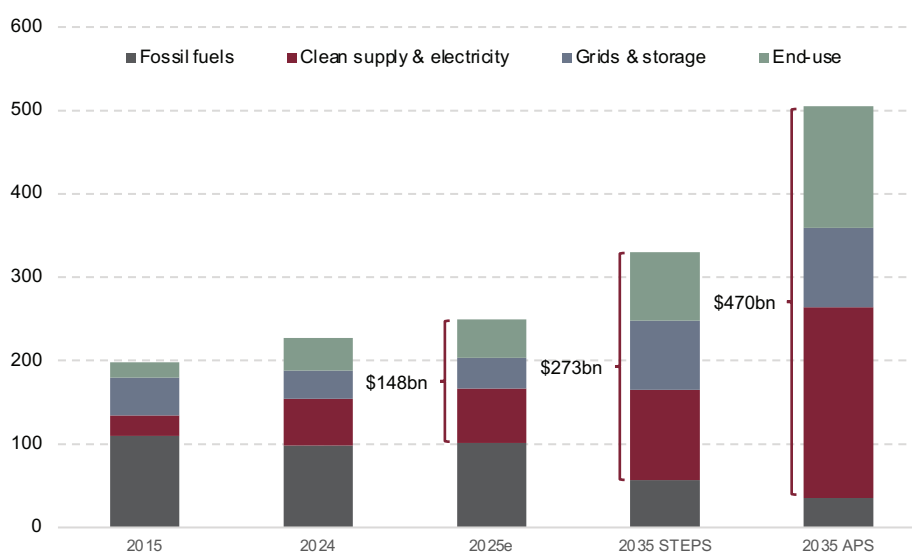
Chart 6: Non-OECD Asia (ex. China) power generation by source (in TWh)



Note: Clean energy includes Hydropower, Wind, Solar, Nuclear and Geothermal. Other includes Biofuels and Waste. Share of total power generation is for the year 2023.
Source: PATRIZIA, International Energy Agency

Meeting climate pledges will demand a three-fold increase in clean energy investments

Chart 7: Annual energy investments for India and Southeast Asia combined under IEA scenarios (in USDbn)



Clean energy investment across Emerging Asia is set to scale up materially over the next decade. Under existing policy settings, the International Energy Agency (IEA) expects annual clean energy investment in the region to nearly double from current levels by 2035 (Stated Policies Scenario - STEPS).

However, delivering on announced climate pledges would require a far more ambitious investment trajectory. In this case, the IEA estimates that clean energy investment would need to more than triple by 2035 (Announced Pledges Scenario - APS), implying substantially higher capital deployment across renewables, grids, storage and other enabling infrastructure relative to the baseline outlook.

Note: Figures represent annual energy investment for India and Southeast Asia combined, in billion USD (2024 real terms). The chart shows investment in 2015 and 2024 (historical), 2025e (IEA preliminary estimate), and modelled investment in 2035 under two IEA scenarios. The IEA uses scenario modelling to explore how energy systems and investment needs could evolve under different policy, technology and market assumptions; scenarios are not forecasts but internally consistent pathways to compare choices and outcomes. STEPS (Stated Policies Scenario) reflects investment consistent with today's enacted and announced policies, while APS (Announced Pledges Scenario) assumes full and timely implementation of all announced national energy and climate pledges. End-use represents the incremental cost of choosing energy-efficient or clean technologies over baseline options. Clean energy investments = Clean supply & electricity + Grids & Storage + End-Use.
Source: PATRIZIA, International Energy Agency - World Energy Investment 2025

Country snapshots for main target markets

Emerging Asia is united by a common need for infrastructure investment to support economic growth, urbanisation and decarbonisation. However, countries differ in their level of economic development, institutional frameworks and risk characteristics, making a detailed understanding of local market dynamics essential when evaluating investment opportunities. The snapshots below provide a highly condensed overview of each market's economic profile and infrastructure priorities.

INDIA

1,464

Population in millions

2,703

GDP per capita in USD

6.2 % pa

GDP growth (F) 2026-35

5.0 out of 10

Overall economic risk*

Home to the world's largest population and the fastest-growing major economy, India combines favourable demographics with a policy agenda centred on infrastructure investment, digitalisation and economic development. Meeting the country's long-term growth ambitions will require substantial investment in transport and energy infrastructure, including continued expansion of renewable power and grid capacity.

INDONESIA

286

Population in millions

5,060

GDP per capita in USD

4.6 % pa

GDP growth (F) 2026-35

4.4 out of 10

Overall economic risk*

Indonesia is Southeast Asia's largest economy and a resource-rich market benefiting from stable growth and ongoing development reforms. Significant infrastructure gaps in transport, logistics and power systems, alongside plans to reduce reliance on coal and expand renewable energy, are expected to drive substantial capital requirements over coming decades.

MALAYSIA

36

Population in millions

13,125

GDP per capita in USD

4.4 % pa

GDP growth (F) 2026-35

4.2 out of 10

Overall economic risk*

Malaysia is a diversified, trade-oriented economy and an important destination for foreign direct investment, particularly in technology and manufacturing sectors. While its infrastructure base is relatively advanced, investment remains focused on energy transition objectives, grid modernisation, digital connectivity and improving resilience to urban and environmental challenges.

PHILIPPINES

117

Population in millions

4,171

GDP per capita in USD

5.1 % pa

GDP growth (F) 2026-35

4.5 out of 10

Overall economic risk*

Supported by a young workforce and service-led economy, the Philippines is among the faster-growing markets in Southeast Asia despite persistent infrastructure constraints. Priorities include upgrading transport networks, expanding renewable energy capacity and strengthening climate resilience across an archipelagic geography exposed to natural hazards.

THAILAND

72

Population in millions

8,057

GDP per capita in USD

2.0 % pa

GDP growth (F) 2026-35

4.3 out of 10

Overall economic risk*

Thailand is a relatively mature export- and tourism-oriented economy with well-developed infrastructure by regional standards. Continued investment is focused on enhancing transport networks, improving connectivity beyond Bangkok and supporting a transition towards a cleaner and more diversified energy system.

VIETNAM

102

Population in millions

5,066

GDP per capita in USD

6.5 % pa

GDP growth (F) 2026-35

4.5 out of 10

Overall economic risk*

Vietnam has emerged as a major manufacturing hub integrated into global supply chains, underpinned by strong economic growth and sustained foreign investment. Infrastructure priorities centre on expanding power generation, strengthening transmission networks and supporting industrial development while accommodating a growing share of renewable energy.

Source: PATRIZIA, World Bank, Oxford Economics Forecasts (*) | Note: Economic Risk Evaluator scores by Oxford Economics range from 1 to 10, with 1 being the lowest risk.



Concluding remarks

- **Emerging Asia faces a major infrastructure gap**
Closing it is critical to sustain growth and meet decarbonisation targets
- **Strong macro fundamentals drive demand**
Rapid GDP growth, urbanisation, and a rising middle class fuel demand for transport, energy, and digital infrastructure
- **Investor opportunity is compelling**
Exposure to emerging markets can deliver above-average growth and diversification while providing social benefits like better healthcare, education, and climate-resilience
- **Shared needs, different markets**
Emerging Asia shares a common need for infrastructure, yet each market has distinct characteristics, making local knowledge and robust investment processes essential
- **Energy transition is urgent**
Coal-heavy grids and soaring demand create a massive need for renewables, storage, and transmission, opening billions in funding gaps for private capital
- **Institutional capital is essential**
Public funding alone cannot meet the region's needs, mobilising private investment is critical to expand access to essential services and deliver inclusive growth

PATRIZIA has been providing investment opportunities in smart real assets for institutional, semi-professional, and private investors for more than 40 years, focusing on real estate and infrastructure. PATRIZIA's investment solutions are driven by the "DUEL" megatrends - digital, urban, energy and living transitions - and capitalise on the opportunities arising from these transformative global shifts. PATRIZIA currently has approximately EUR 56bn in assets under management (AUM) and employs around 800 professionals across 26 locations worldwide.

For more information, visit www.patrizia.ag



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September 2026 | PATRIZIA SE

Reichmuth & Co Investment Management AG (Reichmuth Infrastructure)

Transportinfrastruktur im Wandel
Investitionschancen im europäischen Mid-Market

REICHMUTH & CO

Reichmuth Infrastructure ist ein paneuropäischer Infrastruktur-Asset-Manager und Teil der Reichmuth & Co Gruppe. Das Unternehmen fokussiert sich auf Infrastrukturinvestitionen im europäischen Mid-Market in den Bereichen Energie, Transport, Aviatik und Kreislaufwirtschaft. Aktuell verwaltet Reichmuth Infrastructure rund CHF 1,9 Milliarden über vier diversifizierte Investmentfonds und segregierte Mandate. Das interdisziplinäre Team besteht aus 28 Mitarbeitenden mit langjähriger Erfahrung im Bereich Infrastrukturinvestitionen, einem breiten Branchennetzwerk sowie etablierten Partnerschaften mit verschiedenen Industrieunternehmen.



ANLAGEKLASSE PRIVATE INFRASTRUCTURE

Transport- infrastruktur im Wandel

Investitionschancen im
europäischen Mid-Market





Einleitung

Im SECA-Sammelband 2023 haben wir unter dem Titel «Auf dem Weg zu Net Zero – Sektortrends bei Infrastrukturinvestitionen» die Transformation der europäischen Infrastrukturlandschaft breit beleuchtet – von der Energieerzeugung über die Kreislaufwirtschaft bis hin zum Verkehr. Drei Jahre später hat sich der Fokus vieler institutioneller Investoren weiter geschärft: Während erneuerbare Energien in zahlreichen Portfolios bereits stark vertreten sind, rückt der Transportsektor als «sleeping giant» der Infrastrukturanlageklasse zunehmend in den Vordergrund.

Die Zahlen sprechen eine klare Sprache. Gemäss einem Bericht der Europäischen Umweltagentur verursacht der Verkehr rund 25 Prozent der Treibhausgasemissionen in der Europäischen Union; davon entfallen etwa 70 Prozent auf den Strassenverkehr. Gleichzeitig beziffert die EU die jährliche Investitionslücke für Energie-, Digital- und Transportnetze auf dreistellige Milliardenbeträge. McKinsey

schätzt den Kapitalbedarf in Europa bis 2030 auf über eine Billion Euro – mehr als die Hälfte davon für saubere Verkehrslösungen und erneuerbare Energien. Staatliche Budgets allein reichen nicht aus. Privates Kapital wird damit vom optionalen Ergänzer zum unverzichtbaren Motor der europäischen Verkehrswende.

Dieser Beitrag vertieft den Blick auf die Transportinfrastruktur im europäischen Mid-Market-Segment. Er zeigt, warum der Sektor heute mehr denn je im Fokus steht, wo konkrete Investitionschancen liegen und wie spezialisierte Direktinvestoren – am Beispiel von Reichmuth Infrastructure – institutionellen Anlegern Zugang zu diesem Marktsegment eröffnen. Die Kernthese lautet: Die Transformation des Transportsektors durch Elektrifizierung, Dekarbonisierung und Modernisierung ist nicht nur ein klimapolitischer Imperativ, sondern eine der attraktivsten strukturellen Investitionschancen der kommenden Dekade.



Marc Moser,
Head Client Solutions
Switzerland



Makrotrends: Warum Transport heute mehr denn je im Fokus steht

Vier Megatrends prägen derzeit die europäische Transportlandschaft – zwei auf der Nachfrageseite, zwei auf der Angebotsseite.

Aus Sicht von Reichmuth Infrastructure beeinflussen insbesondere Bevölkerungswachstum und der Modal Shift hin zu klimafreundlicheren Verkehrsträgern die Nachfrage. Auf der Angebotsseite treiben der Erneuerungsbedarf veralteter Infrastruktur sowie der technologische Wandel zur Dekarbonisierung die Entwicklung des Sektors.

Urbanisierung, Reshoring und steigende Mobilitätsnachfrage

Europas Gesamtbevölkerung wächst kaum noch – laut Eurostat (EUROPOP2025) erreicht die EU-Bevölkerung ihren Höchststand von rund 453 Millionen bereits 2029 und schrumpft danach auf 445 Millionen bis 2050. Der eigentliche Treiber steigender Transportnachfrage ist daher nicht die schiere Bevölkerungszahl, sondern ein Zusammenspiel anderer Kräfte: fortschreitende Urbanisierung, die in Ballungsräumen den Bedarf an leistungsfähiger Infrastruktur konzentriert; geopolitisch getriebenes Reshoring, das innereuropäische Güterströme intensiviert; sowie der E-Commerce-Boom, der neue Anforderungen an Logistik und Last-Mile-Delivery stellt. Europas Transportinfrastruktur ist bereits heute stark ausgelastet – nicht trotz, sondern unabhängig von Bevölkerungsentwicklung. Jede zusätzliche Nachfrage trifft auf knappe Kapazitäten und treibt den Investitionsbedarf in Fahrzeuge, Terminals und Netze. Gleichzeitig verändert sich die Art der Nachfrage: Unternehmen und Endkunden verlangen zunehmend nach emissionsarmen Transportlösungen – nicht zuletzt, weil sie selbst Treibhausgasemissionen berichten und bepreisen müssen.

Klimaziele und der Road-to-Rail-Shift

Der European Green Deal von 2019 und die Smart and Sustainable Mobility Strategy der EU setzen einen klaren Rahmen: Bis 2050 sollen die verkehrsbedingten Emissionen um 90 Prozent sinken. Der Hochgeschwindigkeitsverkehr auf der Schiene soll deutlich wachsen, und mehr Güterverkehr soll von der Strasse auf die Schiene verlagert werden. Die ökologische Logik ist überzeugend: Der Güterverkehr per Schiene verursacht rund 80 Prozent weniger CO₂ pro Tonnenkilometer als der Transport per LKW¹. Dennoch werden in Deutschland erst etwa 20 Prozent der Güter per Bahn transportiert – in der Schweiz und in Österreich liegt der Anteil 1,5- bis 2-mal höher². Der politische Rückenwind für den Road-to-Rail-Shift ist entsprechend stark und schafft über Jahrzehnte planbare Investitionsimpulse.

Unterinvestition und Modernisierungsstau

Jahrzehntelange Unterinvestition hat in weiten Teilen Europas einen erheblichen Modernisierungsstau hinterlassen. Das pro-

minenteste Beispiel ist die Deutsche Bahn: Sie beziffert ihren Kapitalbedarf auf rund 150 Milliarden Euro. Die Pünktlichkeitsrate lag nach Jahren der Vernachlässigung unter 63 Prozent. Veralterte Flotten, überlastete Knotenpunkte und Engpässe im Güterverkehr prägen das Bild – nicht nur in Deutschland. Der Elektrifizierungsgrad der Schienennetze variiert stark: In der Schweiz sind beinahe 100 Prozent der Strecken elektrifiziert, in Teilen Osteuropas deutlich weniger³. Die Erneuerung und Elektrifizierung bestehender Netze, der Ersatz von Rollmaterial und die Digitalisierung der Betriebssteuerung sind kapitalintensiv und langfristig – und damit prädestiniert für institutionelles Kapital.

Geopolitik: Reshoring verändert Transportflüsse

COVID-19 und die jüngsten handelspolitischen Verwerfungen – einschliesslich der US-Zollpolitik – haben Reshoring und Nearshoring in Europa beschleunigt. Produktionskapazitäten werden verstärkt auf den Kontinent oder in geografisch nähere Standorte verlagert. Für die Transportinfrastruktur hat dies spürbare Konsequenzen: Die Abhängigkeit von Überseehäfen nimmt tendenziell ab, während innereuropäische Güterbewegungen und transkontinentale Verbindungen an Bedeutung gewinnen. Dadurch verschiebt sich die Nachfrage von klassischen Hafenanbindungen hin zu kontinentalen Transportachsen, da mehr Produkte innerhalb Europas bewegt statt über See importiert oder exportiert werden. Gleichzeitig entstehen in Osteuropa neue Frachtrouten Richtung Rotes Meer und Ostsee, was zusätzliche Investitionsoportunitäten für die Erneuerung der dortigen Transportinfrastruktur eröffnet.

Regulatorischer Rückenwind und die Rolle des privaten Kapitals

Das Transeuropäische Verkehrsnetz (TEN-T) und die Connecting Europe Facility (CEF) lenken öffentliche Mittel in grenzüberschreitende Korridore und prioritäre Vorhaben. Die Finanzierungslücke bleibt dennoch erheblich. Angesichts begrenzter staatlicher Haushalte kann privates Kapital einen wesentlichen Beitrag leisten, um die erforderlichen Investitionen bereitzustellen. Institutionelle Investoren – darunter Pensionskassen aus Asien und den USA – richten ihren Blick zunehmend auf Europa, gestützt durch den verlässlichen Regulierungsrahmen, den EU Green Deal und nationale Förderprogramme. Europa wird damit nicht nur als stabiler Markt, sondern auch als strategischer Wachstumsraum wahrgenommen.

Eine Einordnung über den Energiesektor verdeutlicht das Potenzial: Der Transportsektor weist heute Parallelen zu jener Phase auf, in der private Investitionen im Energiesektor deutlich an Bedeutung gewannen. Staatlich geprägte Strukturen, sinkende Marktanteile etablierter Anbieter, eine vergleichsweise junge Liberalisierung und langjährige Unterinvestition bilden ein ähnliches Ausgangsbild. Vor diesem Hintergrund dürfte privates Kapital auch im Transportsektor eine zentrale Rolle spielen, um Modernisierung, Dekarbonisierung und Kapazitätsausbau zu ermöglichen.

¹SBB Cargo

²Allianz pro Schiene; Eurostat

³SBB Statistikportal

Vier Subsektoren im Transportsektor – wo liegen die Chancen?

Im Transportsektor lassen sich im Wesentlichen vier Subsektoren unterscheiden: Schiene, Strasse, Wasserstrassen/Binnenschifffahrt und Aviatik. Nicht jeder Subsektor eignet sich gleichermassen für institutionelle Allokationen mit Core+-Charakter.

Entscheidend sind langfristige Verträge oder konzessionsähnliche Strukturen, hohe Markteintrittsbarrieren, Cashflow-Sichtbarkeit und ein vertretbares Obsoleszenzrisiko.

Schiene: Schwerpunkt der Mobilitätswende

Die Schiene ist der natürliche Schwerpunkt einer Clean-Transport-orientierten Strategie. Sie profitiert unmittelbar vom Road-to-Rail-Shift, von Elektrifizierungsprogrammen und vom Ersatz veralteten Rollmaterials. Investitionsfelder reichen von Lokomotiven und Wagen über Instandhaltungsdienstleistungen bis hin zu terminalnaher Logistik. Moderne Züge sind kapitalintensiv, ihr Einsatz ist planbar und durch langfristige Verkehrsverträge oder Verfügbarkeitsbasierte Vergütungsmodelle gut abgesichert. Sale-and-Leaseback-Strukturen erhöhen die Visibilität der Cashflows zusätzlich.

Ein konkretes Beispiel ist die Beteiligung von Reichmuth Infrastructure an der TRI Group, einem führenden Anbieter von Ersatz-, Sonder- und Verstärkerverkehren im deutschen Schienenpersonennahverkehr. Mit einer Flotte von rund 200 Schienenfahrzeugen unterstützt TRI öffentliche Auftraggeber und Eisenbahnverkehrsunternehmen insbesondere während Bau- und Sanierungsphasen. Gerade in Zeiten grosser Netzmodernisierung – wie sie Deutschland derzeit durchläuft – wird diese Flexibilität systemrelevant: TRI trägt dazu bei, dass Pendler- und Regionalverkehr auch während der Modernisierung des Schienennetzes und bei anderweitigen Ausfällen zuverlässig funktioniert.

Ebenso zentral ist die Instandhaltung bestehender Schieneninfrastruktur. Reichmuth Infrastructure ist an einem Unternehmen beteiligt, das auf die Instandhaltung von Schienen in Europa spezialisiert ist. Mithilfe moderner Frästechnologie werden beschädigte Schienenabschnitte bearbeitet und nahezu in den Originalzustand zurückversetzt. Dies verlängert die Lebensdauer der Anlagen, reduziert Materialverbrauch und CO₂-Emissionen und folgt dem Prinzip der Kreislaufwirtschaft: instand setzen statt ersetzen. Nachhaltigkeit beginnt hier nicht beim Neubau, sondern bei der intelligenten Erneuerung des Bestands. Technologisch sind pragmatische Übergangslösungen entscheidend. Auf nicht elektrifizierten Last-Mile-Strecken bleiben Dual-Mode- oder Bi-Traction-Lokomotiven mit dieselbasierten Modulen in vielen Fällen vorerst notwendig. Aus ökologischer und sozioökonomischer Sicht können solche Assets dennoch einen relevanten Beitrag zur Dekarbonisierung leisten, wenn sie den Wechsel von der Strasse auf die Schiene ermöglichen. Der neue Fonds unter SFDR-Artikel 8 zielt darauf ab, Transportaktivitäten auf Schiene und Wasser zu dekarbonisieren und die Assets für künftige Transportanforderungen weiterzuentwickeln – ohne auf unausgereifte Antriebstechnologien zu setzen.

Binnenschifffahrt und Wasserstrassen

Die Binnenschifffahrt zählt zu den emissionsärmsten Transportmodi und bietet attraktive Profile für den Güterverkehr auf Europas Wasserstrassen. Modernisierungsbedarf besteht bei Flotten, Hafeninfrastruktur und emissionsärmeren Antrieben. Mit aktuellen Propulsionssystemen und Schiffdesigns liegen die Betriebskosten bereits unter denen älterer dieselbetriebener Alternativen – bei gleichzeitig geringerem Obsoleszenzrisiko. Für Investoren mit Fokus auf Clean Transport sind Wasserstrassen eine natürliche Ergänzung zur Schiene, sofern langfristige Nutzungs- und Abnahmestrukturen greifen.

Aviatik: Brückentechnologie und essenzielle Dienstleistungen

Die Aviatik verlangt eine differenzierte Betrachtung. Nachhaltige Flugkraftstoffe (Sustainable Aviation Fuels, SAF) und modernere Triebwerkstechnologie sind Brücken auf dem Weg zu emissionsärmerem Luftverkehr – auch wenn die Dekarbonisierung schwerer und langstreckiger Verkehre wirtschaftlich anspruchsvoll ist.



voller bleibt als die Elektrifizierung leichter Strassenfahrzeuge. Eine resiliente Nische ist das Leasing moderner Flugzeugtriebwerke. Reichmuth Infrastructure hat zunächst acht moderne Triebwerke erworben, die als Ersatztriebwerke an Fluggesellschaften verleast werden – darunter Varianten für die Airbus-A320neo-Familie sowie Triebwerke für den A330ceo. Der Markteintritt erfolgte bewusst in einer Phase struktureller Knappheit: Die Zahl ausgelieferter Flugzeuge übersteigt die verfügbaren einsatzfähigen Triebwerke; Produktionsverzögerungen und begrenzte Wartungskapazitäten treffen auf hohe Nachfrage. Das Ergebnis sind steigende Leasingraten, hohe Auslastung und attraktives Exit-Potenzial. Geplant ist der Ausbau des Portfolios auf rund 30 Triebwerke. Herstellerunterstützte Wartungsprogramme und bonitätsstarke Leasingnehmer erhöhen die Planbarkeit. Der Track Record umfasst drei Aviation-Finanzierungen und zwei erfolgreiche Exits in den letzten zwei Jahren.

Ein weiteres Beispiel jenseits klassischer «Bricks and Mortar»-Infrastruktur ist Sentinel, eine Hubschrauber-Leasing-Plattform mit Fokus auf öffentliche Infrastrukturaufgaben wie Suche und Rettung (SAR), Brandbekämpfung, Notfallversorgung und kritische Logistik. Für die Einordnung als Infrastruktur sind weniger

die physischen Eigenschaften eines Assets entscheidend als dessen Investitionscharakteristika: langfristige Verträge, hohe Cashflow-Sichtbarkeit, Inflationsschutz und substanzielle Markteintrittsbarrieren. Hubschrauber-Leasing entspricht zwar nicht dem traditionellen Infrastrukturverständnis, kann diese Kriterien jedoch erfüllen, sofern langfristige Leasing- oder Konzessionsstrukturen mit bonitätsstarken Kontrahenten zugrunde liegen und essenzielle Dienstleistungen erbracht werden.

Angrenzende Bereiche: selektiv und diszipliniert

Nicht jede angrenzende Opportunität trägt Infrastrukturencharakter. EV-Charging etwa profitiert zwar von politischem Rückenwind, birgt jedoch erhebliches Merchant-Risiko und ausgeprägte Technologierisiken, da sich Ladetechnologien rasch weiterentwickeln. Reichmuth Infrastructure hält sich hier bewusst zurück. Im Mid-Market ist die Disziplin entscheidend, Technologiewetten und Obsoleszenzrisiken konsequent auszufiltern und in bestehende, bewährte Assets zu investieren.

Der Mid-Market-Vorteil: Warum Grösse nicht alles ist

Die interessantesten Opportunitäten im europäischen Transportsektor liegen vorwiegend im mittleren Marktsegment.

Bilaterale Transaktionen bieten häufig attraktivere Bewertungen und grössere Strukturierungsfreiheit als kompetitive Auktionen bei Mega-Deals – etwa über Earn-outs oder Reinvestitionsverpflichtungen der Verkäufer. Das Segment ist für die meisten grossen Infrastrukturfonds zu klein; die Folge ist weniger Bieterwettbewerb und ein direkterer Zugang zu Eigentümern und Managementteams.

Spezialexpertise ist in diesem Segment eine zentrale Voraussetzung. Besonders bei Investitionen in Rolling Stock ist die Komplexität hoch: Länderpakete, Antriebssysteme, Last-Mile-Module sowie Vertragsstrukturen mit oder ohne GDP-Risiko unterscheiden sich erheblich. Bei Assets mit Nutzungsdauern von 30 Jahren und mehr müssen Investoren die zugrunde liegende Technologie, regulatorische Rahmenbedingungen und Entwicklungsrisiken fundiert beurteilen können. Ungeprüfte

Technologietrends können zu Fehlallokationen führen. Mid-Market-Investoren benötigen deshalb ein tiefes Assetverständnis, Nähe zu den operativen Gesellschaften und eine laufende Beobachtung technischer Entwicklungen in den relevanten Transportmärkten Europas.

Aus Governance-Perspektive ist die enge Abstimmung mit den Managementteams der operativen Gesellschaften wesentlich. Entscheidend ist eine gemeinsame langfristige Perspektive auf Betrieb, Investitionsbedarf und Weiterentwicklung der Assets. Als Infrastrukturinvestor mit langlebigen Anlagen verfolgt Reichmuth Infrastructure einen langfristigen Ansatz, der auf nachhaltigem Betrieb und operativer Weiterentwicklung basiert – nicht auf kurzfristiger Wertsteigerung mit anschliessendem Verkauf.

Geografisch bleibt Zentraleuropa der Kernmarkt; gleichzeitig wächst das Opportunitätsfeld in Osteuropa. Dort sprechen die Fundamentaldaten für die Erneuerung der installierten Transportassetbasis – von Rolling Stock bis zu geleastem Equipment für neue Frachtrouten. Wer lokale Marktkennntnis, bilaterale Origination und operatives Hands-on-Management kombiniert, kann im Mid-Market Risiko-Rendite-Profil erzielen, die in den überlaufenen Mega-Deal-Segmenten schwer zu finden sind.

Reichmuth Infrastructure: Direktinvestor mit Transportfokus

Reichmuth Infrastructure ist Teil der Reichmuth & Co Privatbankengruppe und wurde 2012 als paneuropäischer Infrastruktur-Asset-Manager gegründet.

Das Unternehmen ist Direktinvestor – General Partner und Manager –, kein Dachfonds und kein Intermediär. Über 14 Jahre Investitionserfahrung, mehr als CHF 1,9 Milliarden verwaltetes Kapital in Direktinvestitionen, rund 28 Spezialisten und etwa 26 aktive Beteiligungen bilden die Basis. Das Portfolio erstreckt sich über Transport und Mobilität, Aviatik, Energie sowie Kreislaufwirtschaft. Seit der Gründung wurde über Fonds und Einzelanlagevehikel in insgesamt 14 Transport-Assets investiert.

Die Investitionsphilosophie ist klar umrissen: Fokus auf Kern-Assets mit langfristigen Verträgen oder Konzessionen und stabilen Cashflows; hohe Markteintrittsbarrieren; Inflationsschutz; ESG-Due-Diligence für jede einzelne Investition. Es wird in bestehende, bewährte Assets investiert – nicht in Venture-Capital-ähnliche Technologiewetten. Dual-Mode-Lokomotiven als Brückentechnologie ja; unausgereifte Antriebsexperimente und EV-Charging mit Merchant-Risiko nein. Jede Investition wird auf zentrale Infrastrukturcharakteristika geprüft: essenzielle Dienstleistungen, Markteintrittsbarrieren, stabile und vorhersehbare Cashflows, Inflationsschutz und Werthaltigkeit der Anlagen.

Die Portfoliobeispiele belegen die Bandbreite dieses Ansatzes. Die TRI Group sichert den Schienenpersonennahverkehr in Modernisierungsphasen. Das Schieneninstandhaltungsunternehmen verlängert die Lebensdauer bestehender Netze nach dem Kreislaufprinzip. Sentinal stellt Hubschrauber für Suche und Rettung, Brandbekämpfung und kritische Logistik bereit – soziale Infrastruktur mit öffentlichen Kontrahenten. Das Triebwerkportfolio adressiert einen strukturellen Angebotsengpass in der kommerziellen Aviatik und basiert auf herstellergestützter Wartung sowie einem nachgewiesenen Exit-Track-Record.

Mit dem Reichmuth Next Gen Mobility hat das Unternehmen einen dedizierten Transportfonds lanciert – den vierten Infrastruktur-Direktfonds der Plattform. Die Strategie ist Core+/Value-add, der Fokus liegt auf dem europäischen Mid-Market und den Sektoren Schiene, Strasse, Schifffahrt und Aviatik. Der Fonds ist als SFDR-Artikel-8-Produkt klassifiziert und zielt darauf ab, die Energiewende zu unterstützen. Ergänzt wird die Fondslandschaft durch segregierte Mandate und Einzelanlagevehikel – massgeschneidert für institutionelle Investoren mit spezifischen Allokationswünschen.

Der operative Ansatz folgt einer Operating-Partner-Mentalität: grosse Minderheits- oder Mehrheitsbeteiligungen an Infrastruktur-Betriebsgesellschaften, Kapital zur Plattformexpansion, Wertsteigerung über operative Exzellenz und disziplinierte Zukäufe. Mobile Transportassets – etwa Rolling Stock – bieten gegenüber fixer Netzinfrastruktur den Vorteil, bei veränderten Marktbedingungen physisch verlagert werden zu können. In einem Umfeld von Reshoring, Zollunsicherheit und sich verschiebenden Güterströmen ist diese Flexibilität ein strategischer Pluspunkt.



Reichmuth Infrastructure

Reichmuth Infrastructure positioniert sich in diesem Feld als erfahrener, spezialisierter Direktinvestor: seit 2012 am Markt, mit klarem Fokus auf Clean Transport im europäischen Mid-Market, disziplinierter ESG-Integration und einem Track Record über Schiene, Instandhaltung, Aviatik und angrenzende essenzielle Dienstleistungen. Privatkapital ersetzt öffentliche Verantwortung nicht, kann jedoch wesentlich dazu beitragen, die europäische Verkehrswende flächendeckend finanzierbar zu machen. Investoren, die mit fokussierter Sektorexpertise und partnerschaftlichen Strukturen investieren, können risikoadjustierte Erträge erschliessen und zugleich zur Entwicklung der Mobilitätsinfrastruktur von morgen beitragen.

Transportinfrastruktur als Portfoliodiversifikator

Für die Portfoliokonstruktion institutioneller Investoren zählt nicht allein die Einzelrendite, sondern der Beitrag zur Resilienz des Gesamtportfolios.

Transportinfrastruktur weist teilweise andere Nachfrage- und Ertragsstreiber auf als klassische Energieinfrastruktur und kann damit einen wertvollen Diversifikationsbeitrag leisten. Während Energieanlagen häufig stärker von regulatorischen Tarifen und Strompreisen geprägt sind, profitieren Mobilitätsinvestitionen von langfristigen Verkehrs- und Infrastrukturtrends, Kapazitätsengpässen und dem Modernisierungsbedarf bestehender Netze.

Viele institutionelle Investoren – insbesondere Pensionskassen – sind in erneuerbaren Energien bereits substanziell alloziert. Gleichzeitig nehmen entsprechende Exposures in vielen Infrastrukturportfolios weiter zu. Transportinfrastruktur kann daher einen attraktiven Diversifikationsbeitrag leisten. Historisch waren zahlreiche Anleger im Transportsektor unteralloziert; eine gezielte Satelliten-Ergänzung zur bestehenden Energiealloka-

tion ermöglicht es, den Dekarbonisierungstrend breiter abzubilden, ohne bestehende Sektorcluster-Risiken weiter zu erhöhen.

Cashflow-Sichtbarkeit entsteht über langfristige Verkehrsverträge, Verfügbarkeitsmodelle, Sale-and-Leaseback-Strukturen und Leasingverträge mit bonitätsstarken Kontrahenten. Inflationsschutz ist über indexierte Vergütungen und reale Sachwerte angelegt. Die Korrelation zu traditionellen Assetklassen bleibt gering – ein Argument, das in Phasen volatiler Aktienmärkte und unsicherer Realzinsen an Gewicht gewinnt. Für Schweizer Pensionskassen liegt die typische Zielquote Infrastruktur bei rund 5 bis 10 Prozent des Gesamtportfolios; Transport eignet sich als gezielte Beimischung innerhalb dieser Quote, abgestuft nach Risikobudget und Governance-Kapazität.

Geopolitische Unsicherheit verstärkt das Argument zugunsten europäischer Transportassets: verlässlicher Regulierungsrahmen, physische Nähe, greifbare Realwerte und ein Investitionsbedarf, der über Jahrzehnte anhält. Wer Sektoren, Länder, Vertragsprofile und spezialisierte Manager bewusst streut, reduziert ausserdem das Risiko ungewollter Überschneidungen – ein wachsendes Problem bei Megafonds mit teilweise identischen Assets.

Fazit

Die europäische Transportinfrastruktur steht an einem Wendepunkt. Klimaziele, Modernisierungstau, geopolitisch getriebenes Reshoring und begrenzte öffentliche Haushalte erzeugen gemeinsam einen langfristigen Investitionsbedarf – und damit eine strukturelle Opportunität für privates Kapital. Der Sektor weist Parallelen zum Energiesektor vor dessen privater Transformationswelle auf: unterinvestiert, teilweise liberalisiert, politisch priorisiert und kapitalintensiv. Für professionelle und institutionelle Investoren ist Transportinfrastruktur mehr als eine thematische Wette auf Dekarbonisierung. Sie ist eine strategische Allokation mit eigenen Risikotreibern, langfristiger Cashflow-Sichtbarkeit und Diversifikationsnutzen gegenüber energiegeprägten Infrastrukturportfolios. Der europäische Mid-Market bietet dabei bessere Zugangswege und Bewertungen als die überlaufenen Mega-Deal-Segmente – vorausgesetzt, der Manager verfügt über tiefe Asset-Expertise, bilaterale Origination und eine langfristige Operating-Partner-Mentalität.

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Schroders Capital

Why infrastructure debt is a 'real diversifier'

Schroders capital

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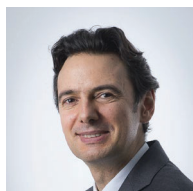
In Focus

Why infrastructure debt is a 'real diversifier'



October 2026

Marketing material for professional clients and qualified investors only.



Jerome Neyroud
Head of Infrastructure Debt, Schroders Capital

In a new interview, Jerome Neyroud explores how, in a market shaped by geopolitical volatility and renewed inflationary pressures, investors are reassessing their options to construct resilient income allocations. In this context, infrastructure debt offers a differentiated, diversifying source of yield.

Is infrastructure debt a genuine diversifier from corporate direct lending, or simply the same credit risk in a different wrapper?

Infrastructure debt is a real diversifier.

The starting point is that infrastructure debt and corporate direct lending are exposed to quite different economic risks.

Corporate borrowers are generally more closely linked to the business cycle. Their revenues, margins and credit quality can be affected by changes in consumer demand, input costs or broader economic growth.

Infrastructure assets, by contrast, tend to be driven more by long-term secular trends and essential demand. The asset class spans sub-sectors including utilities,

renewables and energy transition, transportation, digital infrastructure and social infrastructure. In many cases, revenues are supported by long-term contracts, regulated frameworks or concession agreements. The underlying assets also tend to have high barriers to entry and long economic lives.

Why are you particularly interested in the sub-investment-grade part of the market?

Historically, infrastructure debt was associated mainly with long-duration, investment-grade lending, particularly for insurers seeking predictable cashflows. Today, however, the market encompasses a broad spectrum of opportunities across risk, return and duration profiles (see table below).

Figure 1: Infrastructure debt offers a range of exposures

	IG and Crossover	Sub-Investment Grade	High Yield
Implied rating (avg.)	BBB/BB+	BB-	B
Duration (avg.)	5 - 7 / 10yrs 10 - 30yrs	5 - 7yrs	3 - 7yrs
Seniority	Senior	Senior & subordinated	Senior & subordinated
Spread over base rate	150 - 325bps	400 - 600bps	750bps+
Investor allocation bucket	Fixed income alternative	Alt credit / private debt	Alt credit/ private debt
Maturity of debt segment	Mature	Established, growing	Underserved, growing
Main market participants	Banks / Institutional investors / Infra debt funds	Infra debt funds	Infra debt funds

Source: Schroders Capital, 2026. For illustrative purpose only. There is no guarantee that forecasted figures will be achieved. Not to be considered a recommendation to buy or sell.

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At one end of the market are senior, investment-grade loans suited to investors seeking to prioritise portfolio resilience, such as insurers seeking liability-matching characteristics and highly predictable cashflows.

At the other are shorter-duration, sub-investment-grade or junior debt opportunities that can offer materially enhanced yields while still benefiting from the defensive characteristics associated with infrastructure assets.

The attraction of sub-investment-grade infrastructure debt is that investors can target higher spreads while retaining many of the underlying characteristics that make infrastructure attractive. Investors may take on greater complexity, development or structuring risk, but the financing is still backed by essential assets with high barriers to entry and relatively resilient demand.

That makes the risk different from simply moving down the credit spectrum in corporate lending. The key is understanding why an asset is sub-investment-grade, which risks investors are being paid to take and what protections are built into the financing structure.

What makes the European infrastructure mid-market segment attractive?

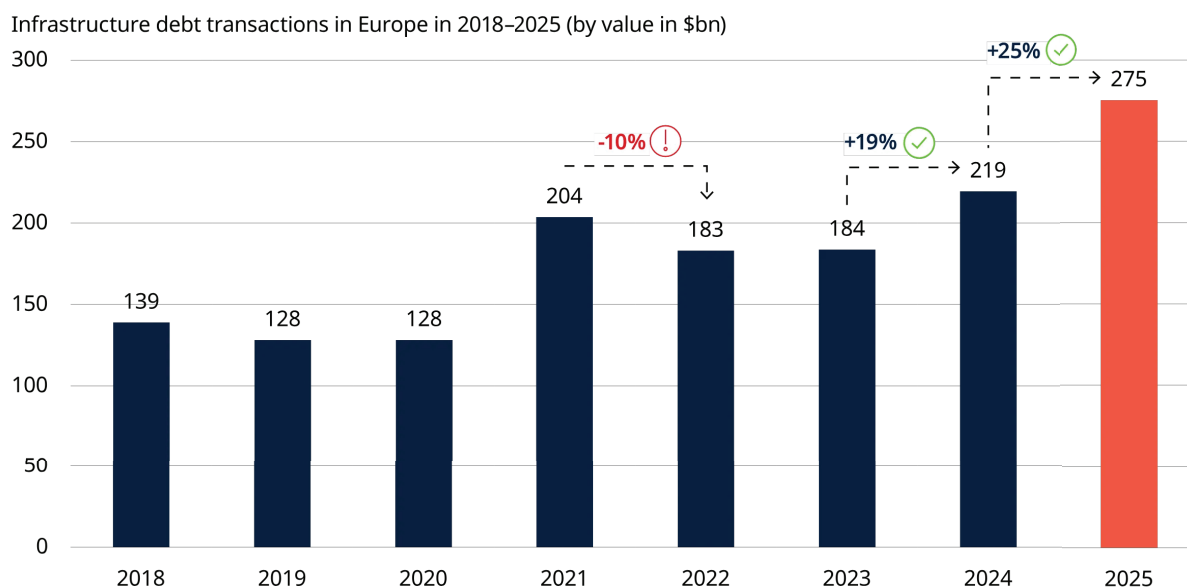
The mid-market can offer a very different dynamic from the largest infrastructure financings.

At the upper end of the market, deals can be heavily intermediated and competition can be intense. Financing terms are often more commoditised because many lenders are competing for the same assets.

In the mid-market, transactions are more likely to require specialist sourcing, detailed structuring and close engagement with sponsors. There are fewer natural lenders for some of these deals, which can create scope to negotiate better economics and secure stronger protections for lenders.

Europe is particularly interesting because it has a deep infrastructure market across energy, transport, digital and social assets, but it is also fragmented by country, regulation and financing need. That creates opportunities for managers with local networks and the ability to originate transactions directly.

Figure 2: Rising demand for infrastructure debt financing in Europe



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Source: Infralogic, 2026.

How does the credit risk and income profile of infrastructure debt compare to comparable corporate credit?

Infrastructure assets are typically essential to economic activity and daily life. They operate within high barriers to entry, supported by high replacement costs, regulatory protections or long-term concession agreements. As a result, they frequently exhibit stable demand characteristics and robust operating margins. Historically, this has translated into strong credit performance.

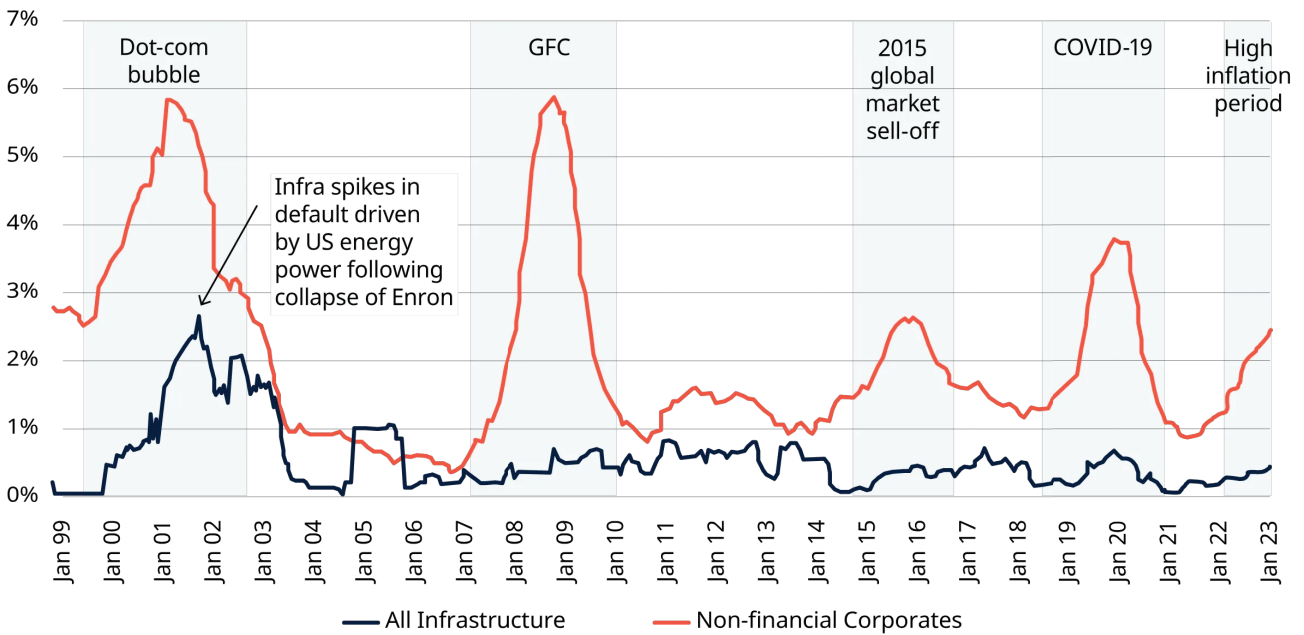
Rating agencies have historically consistently observed lower default rates and higher recovery rates for

infrastructure-related lending relative to broader corporate credit. At Schroders Capital, we have more than a decade-long track record and have seen consistently strong credit stability across more than 200 transactions.

From an income profile perspective, and despite its defensive characteristics, infrastructure debt continues to provide attractive spreads over public corporate debt markets – and even compared to corporate direct lending with a similar risk profile. These spreads are supported by structural factors including transaction complexity, illiquidity premia, bespoke bilateral negotiation and the specialist expertise required to originate and manage investments effectively.

Figure 3: Infrastructure debt has proven resilience across various credit cycles

Trailing 12-month default rates: Infra vs. non-financial corp. (in %, 1999–2023)



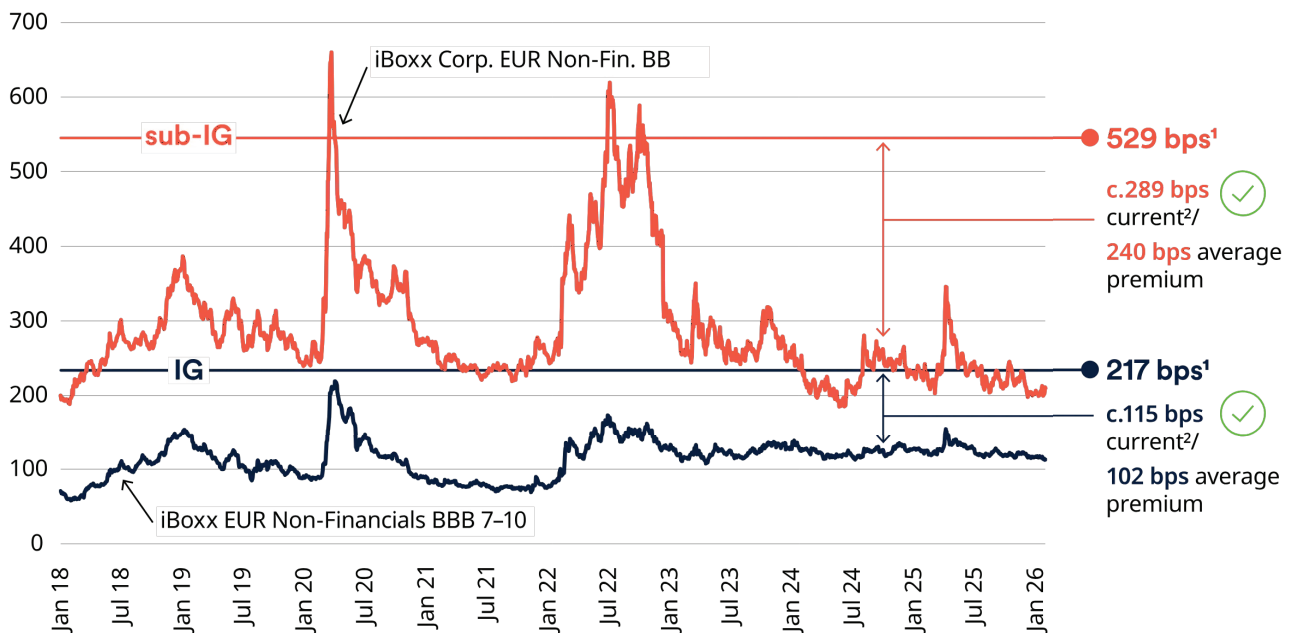
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Past performance is not a guide to future performance and may not be repeated. Source: Schroders Capital, 2026. S&P Global Ratings Credit Research & Insights. January 1999 through January 2023.

Figure 4: Infrastructure debt has proven resilience across various credit cycles

All-in spreads for IG and sub-IG Infrastructure debt strategies vs. listed comparable indices (in bps, 2018–26)

Avg. all-in spread (bps – including upfront fees)



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Past performance is not a guide to future performance and may not be repeated. Source: Schroders Capital, 2026. ¹As of February 2026, on a weighted average and all-in basis on all portfolio, including realised all-in spread shown for repaid deals. ²Average spread premium over February 2026.

Data centres are attracting large amounts of capital. How do you approach that market?

Data centres are a good example of why the label “infrastructure” is not enough on its own.

Artificial intelligence and cloud adoption are driving strong demand for digital infrastructure, but investors still need to distinguish between assets that behave like essential infrastructure and those that carry much greater technology, development or merchant risk.

We look closely at location, connectivity, power availability, customer quality and the contractual structure. A well-located asset that is close to end users, with strong connectivity and long-term contracted demand, can have very different characteristics from a speculative development where value creation is based primarily on future demand assumptions.

Power is becoming particularly important. The ability to secure reliable electricity supply can determine whether a project is viable, especially as data-centre capacity expands.

“Simply having capital is not enough. The ability to source selectively, structure appropriately and say no when the risk is not being priced properly is increasingly valuable.”

As more capital enters infrastructure debt, does the advantage of specialist managers become more or less important?

More important – and potentially, much more so.

Infrastructure debt is becoming more mainstream, but it remains a highly specialised asset class. Every transaction can involve a different combination of regulation, contracts, technology, construction risk and capital structure.

Origination matters because the best opportunities are not always widely auctioned. Structuring matters because lender protections can have a significant effect on downside outcomes. Sector knowledge matters because two assets that appear similar at first glance can have very different risk profiles.

The market is also evolving quickly. Investors are moving into areas such as energy storage, data centres, newer transport infrastructure and more complex sub-investment-grade financings. Those opportunities can be attractive, but they also require a deeper understanding of the asset.

As the asset class grows, competition will increase. In that environment, simply having capital is not enough. The ability to source selectively, structure appropriately and say no when the risk is not being priced properly becomes increasingly valuable.

Conclusion

The current market environment reinforces the case for investment strategies delivering resilient income returns. Investors are navigating a world characterised by higher geopolitical uncertainty, elevated inflation risks and increased dispersion across private credit markets. In that context, the combination of contractual cashflows, floating-rate and potentially premium income, strong downside protection and exposure to essential assets becomes particularly valuable.

Of course, infrastructure debt is not a wholesale replacement for fixed income, or even broader private credit, allocations. However, we believe it represents a compelling core allocation within private credit and/or real assets portfolios delivering diversified income. With an expanding risk-return continuum, infrastructure debt now also offers double-digit returns for higher return seeking investors.

Important Information

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SFP Infrastructure Partners

“Infrastructure investing is about patience.
Infrastructure secondaries are about information.”



SFP Infrastructure Partners

SFP Infrastructure Partners (“SFP IP”) was established in 2021 and is an investment specialist focused exclusively on infrastructure secondaries. It forms part of the Swiss Finance & Property Group and benefits from the operational and governance framework of the Group’s FINMA-regulated entities. SFP IP provides investors with exposure to infrastructure through LP-led and GP-led secondary investments, with a primary focus on Europe and North America and a selective allocation to Asia-Pacific. The strategy targets portfolios diversified across infrastructure sectors, geographies, managers, vintages and risk profiles, with a focus on core and core-plus assets and a selective allocation to value-add opportunities. The investment universe includes sustainable energy, communications, transport and logistics, utilities and social infrastructure. SFP IP focuses primarily on operational or substantially de-risked assets, which typically benefit from resilient demand and, where applicable, long-term contracted or inflation-linked cash flows. Investments are generally made at a later stage of the asset or fund lifecycle, providing greater visibility into portfolio composition, operating performance and cash flows. Acquiring assets or fund interests at attractive valuations, often at a discount to NAV, can support attractive risk-adjusted returns while reducing blind-pool and J-curve risk. The strategy may also offer earlier distributions, shorter duration and diversification across sectors, geographies, managers and vintages. SFP IP’s senior team has been active in infrastructure secondaries since 2013 and has more than a decade of dedicated market experience. The team comprises more than 10 professionals and has access to complementary expertise across investment management, risk, legal, compliance, finance and operations. The senior investment professionals previously worked together at Partners Group and have extensive experience in infrastructure investing, portfolio construction and asset oversight across multiple regions and sectors.

In infrastructure secondaries, access to the right relationships and information is key, as highlighted by Infrastructure Investor in April 2026¹. We would also argue that being conflict-free and fully focused on infrastructure secondaries is an advantage. It gives counterparties greater comfort and reduces concerns around information flow, particularly compared to managers that also invest directly in equity or debt strategies. At the same time, deep experience and established relationships are essential to accessing the right opportunities and being able to act quickly. These capabilities take at least a decade of active participation in the market to build and are ultimately demonstrated through a proven track record and longstanding relationships across the infrastructure secondary ecosystem.

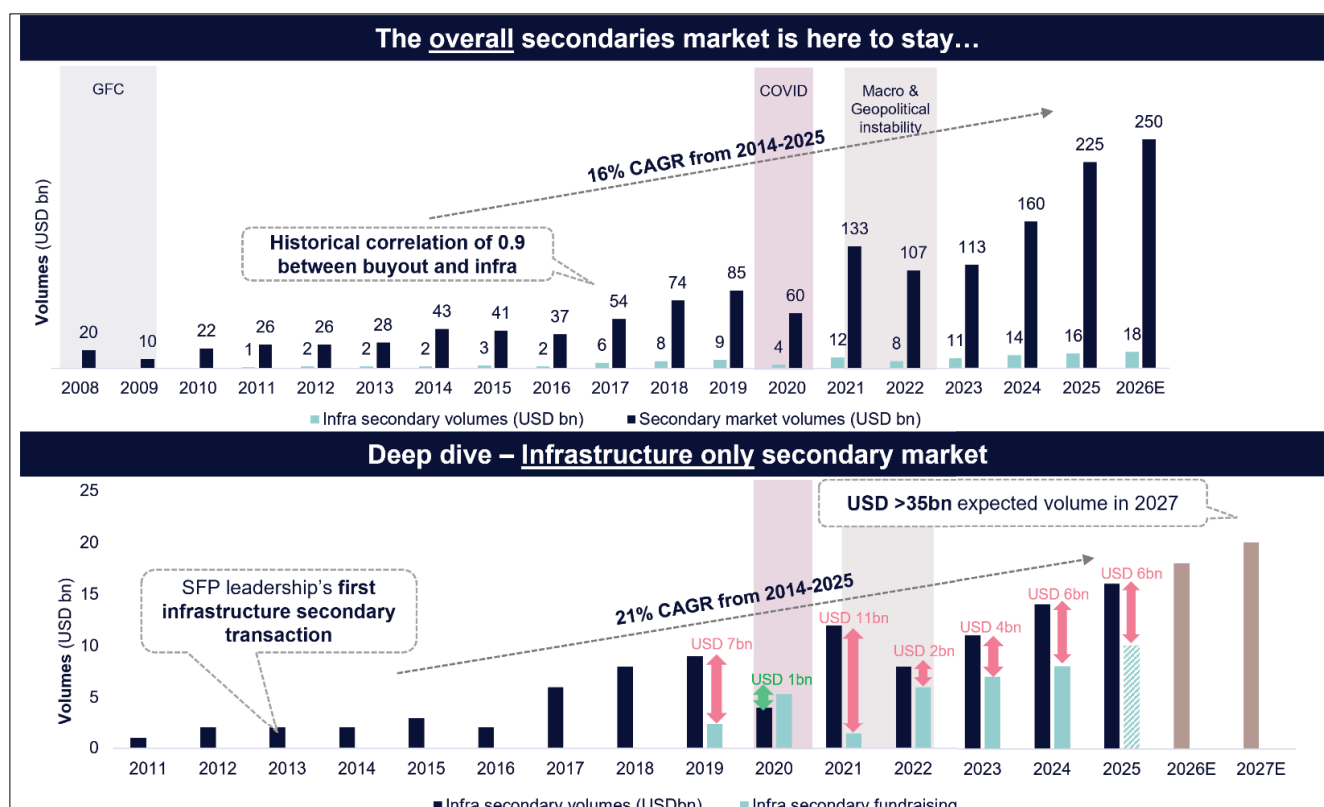
This white paper shares our view on the fast-growing infrastructure secondary market and explains the different types of secondary transactions and their benefits and risks for investors, in particular in a portfolio construction context.

The Market

The overall institutionalized secondary market has existed since roughly the early 2000s and has developed into an established liquidity provider within private markets over the past decades. The infrastructure secondary market, in particular, began to gain real traction around 2017, evolving out of the broader buyout secondary market.

Since then, and especially in the years following the COVID-19 pandemic—marked by rising interest rates, geopolitical uncertainty, and the war in Ukraine—the secondary market, and infrastructure secondaries in particular, have proven to be a reliable source of liquidity in an otherwise more constrained fundraising environment. This has supported continued growth in the segment, with estimated secondary transaction volumes reaching a new record of up to \$240 billion in 2025 (Jefferies, 2026), representing a CAGR of approximately 16% since 2014. While the infrastructure secondaries market still accounts for only a fraction of the overall secondaries market, representing around 10% of total secondary transaction volumes as of today (across all private markets asset classes such as buyout, real estate and private debt), it has grown above the overall secondary market at a CAGR of approximately 21% over the same period (Various, 2026).

¹ (PEI Infrastructure Investor, 2026)



Source: Various (2026). SFP Infrastructure estimates based on transaction volume data from various secondary market data providers. Volume figures represent annual averages across secondary market data available.

One key driver of this expansion is the continued growth of the infrastructure asset class itself. Total capital raised for infrastructure investments has more than tripled during the last 10 years (PEI Infrastructure Investor, 2026). As a general rule of thumb, around 5–10% of committed capital typically returns to the secondary market with a lag of approximately 4–5 years. This points to a growing and structurally expanding pipeline of secondary deal flow in the years ahead, further enhancing the attractiveness of the market.

Investment types / secondaries

Historically, the secondary market consisted exclusively of so-called LP-led transactions. The primary purpose of these transactions was to provide liquidity in an otherwise illiquid asset class. As private market funds are typically structured as closed-ended vehicles, LPs² are generally unable to exit their commitments prior to the fund's termination at the end of its fixed term.

The emergence of the secondary market changed this dynamic by allowing investors to sell their fund interests before maturity at a negotiated price between buyer and seller. The first dedicated secondary funds were raised in the 1990s and several market participants claim to have pioneered the asset class. At that time, the market was focused exclusively on private equity/buyout, as infrastructure had not yet emerged as a distinct asset class.

As infrastructure investing evolved from the broader private equity and buyout universe during the late 2000s, the first standalone infrastructure secondary transactions began to systematically occur

² Limited Partners (“LPs”) are the external investors in a private market fund, while the General Partner (“GP”) is the fund manager responsible for making investment decisions and managing the fund’s capital on behalf of the LPs.

in the early 2010s. This period also marked the beginning of the infrastructure secondary activities of the team that would later form SFP Infrastructure Partners.

In those early years, LP-led transactions were effectively the only form of secondary transaction available. The market was solely focused on facilitating transfers of existing fund interests between limited partners and secondary buyers, with the more complex GP-led transaction structures only emerging at a later stage as the market matured. However, the market for GP-led transactions has grown rapidly, and today the split between the two transaction types is roughly 50/50. Even the most conservative estimates suggest that in the meanwhile GP-led transactions account for more than 40% of total secondary transaction volumes (Source: Greenhill). Given the rise of GP-led transactions, a conflict-free approach is becoming increasingly important for secondary managers, as GPs are becoming more reluctant to share underlying asset-level information with secondary groups that may be viewed as potential competitors due to additional business lines like direct investing³. In the following, we provide a brief overview of both transaction types before discussing their respective risk-return profiles and portfolio management considerations in the next section.

LP-led secondary

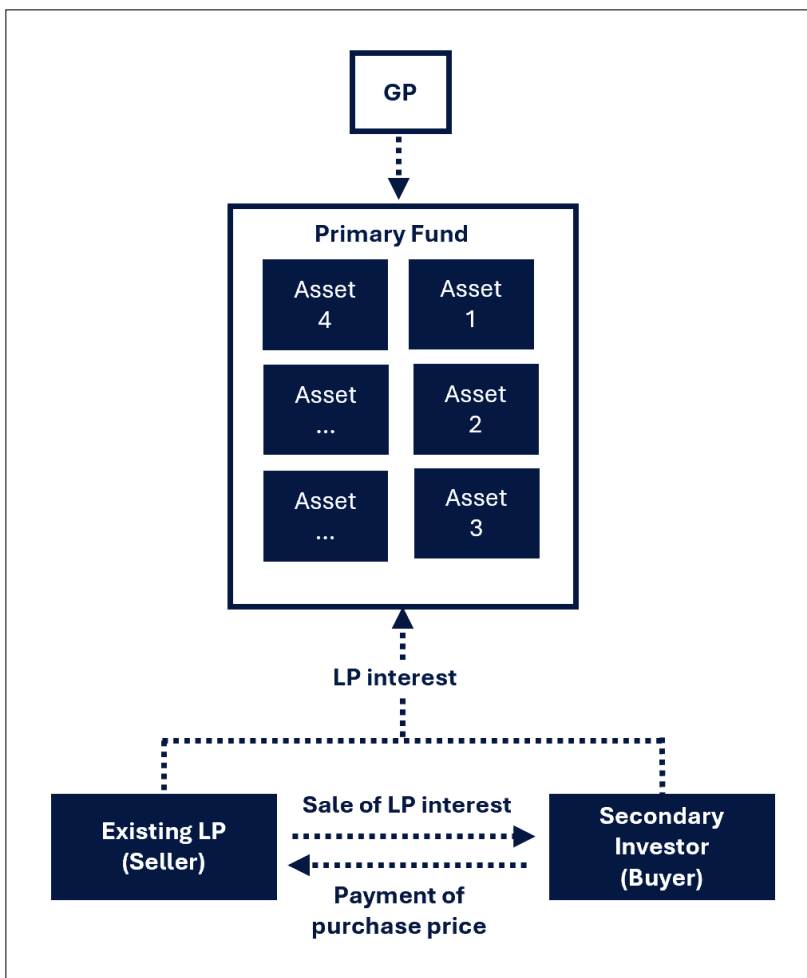
An LP-led secondary transaction refers to the sale of an existing limited partner's (the seller) interest in a private market fund to a secondary investor (the buyer). The buyer acquires the seller's economic rights in the fund, including future distributions, as well as the obligation to fund any remaining unfunded commitments, typically at a price negotiated between the parties and often expressed relative to the fund's reported net asset value (NAV).

These transactions are primarily driven by the liquidity and portfolio management needs of institutional investors. Reasons for selling may include portfolio rebalancing, shifts in strategic asset allocation, regulatory or capital constraints, liquidity requirements, or broader balance sheet management considerations. Importantly, the decision to sell is generally independent of the underlying asset quality or fund performance.

It needs to be mentioned that those transactions are complex due to the several parties involved (buyer, seller and the GP) and the number of underlying assets that need to be valued. Hence, the buyer universe consists of professional institutions with specialized teams that can safeguard confidential information and efficiently assess private markets assets.

This secondary type rose in awareness in particular during the Global Financial Crisis as it allowed institutions to rebalance their portfolios. After that it became a rather normal tool and lost its black sheep status, which was largely due to GPs' reluctance to see investors sell their positions. As of today, LP-led transactions are a core building block of the secondary market across private equity, infrastructure, real estate, and private credit.

³ Direct investments refer to investments made directly into an asset's equity or debt securities, as opposed to (indirect) investments into a portfolio company alongside a GP.



Illustrative LP-led secondary structure. Source: SFP Infrastructure Partners

GP-led secondary

Fast forward to the increasing importance of infrastructure within the secondary market, the first GP-led transactions in the infrastructure space began to emerge meaningfully around 2017/2018. One early example in infrastructure included a Corsair Capital-led process involving Gateway Infrastructure Partners, which was restructured into several continuation vehicles during this period (Infralogic, 2018).

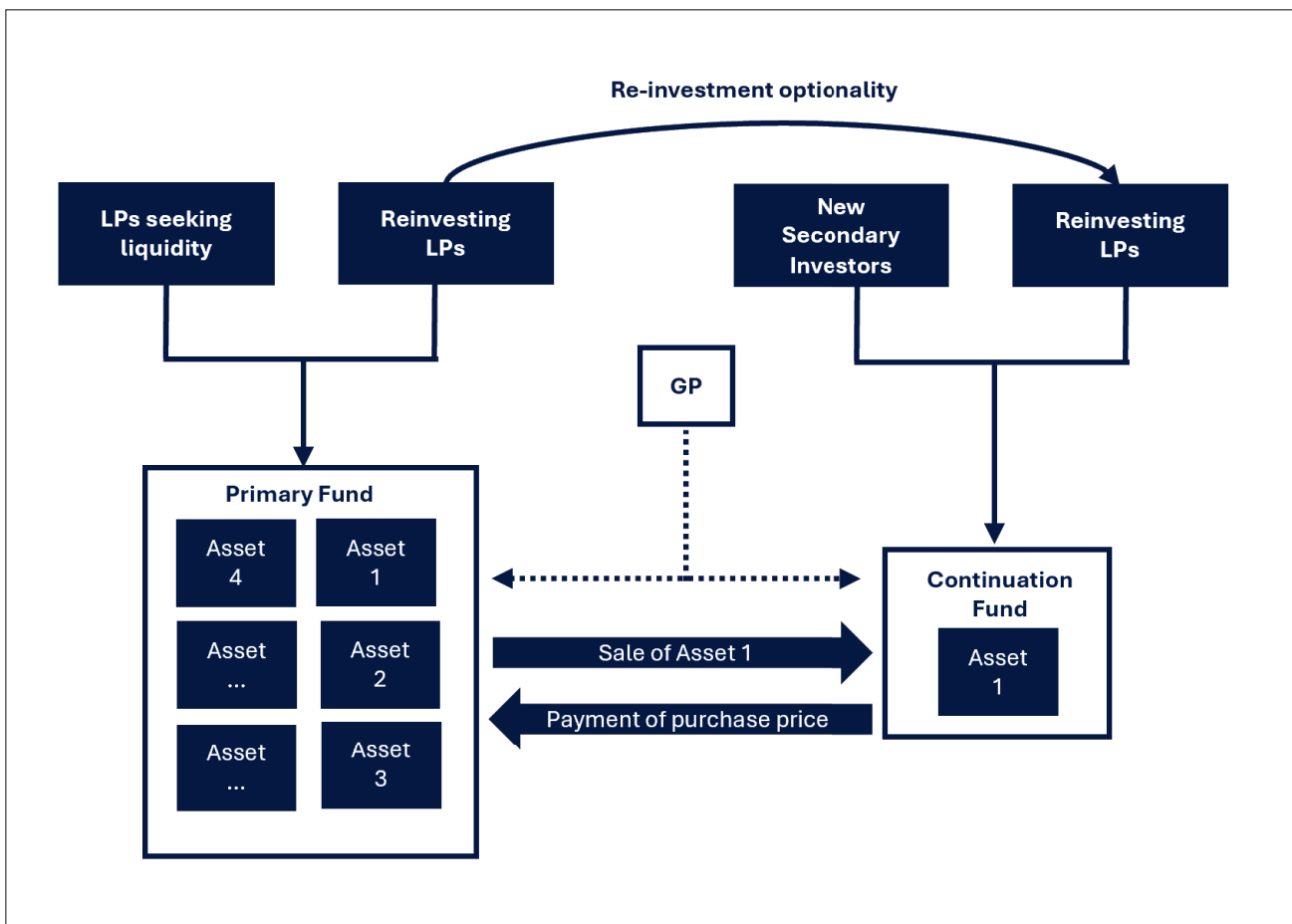
A GP-led secondary transaction is initiated by the fund's general partner, rather than by selling limited partners, with the objective of extending the holding period of selected portfolio assets that ideally have performed exceptionally well under the GP's current ownership. In this structure, assets are typically transferred into a continuation vehicle or similar structure, allowing the GP to retain management of the assets beyond the original fund term while offering investors optional liquidity or the ability to roll their interests into the new vehicle.

Existing limited partners are generally given a choice between receiving cash proceeds, rolling their interests into the new structure, or a combination of both. Incoming secondary investors provide the liquidity required to facilitate the transaction and acquire exposure to the secondary interests to be transferred. The transaction price is typically established through a competitive auction run by an independent third party among experienced secondary buyers, the so-called lead buyer(s), to ensure effective price discovery and market alignment. Any alternative approach to determining the price would inevitably raise significant questions regarding the integrity of the overall process, as it would create, or at least be perceived as creating conflicts of interest on the part of the respective GPs.

Compared to LP-led transactions, GP-led transactions are theoretically even more complex as they require the creation of a new structure, raising questions not just about price and asset quality but also about alignment and terms of the involved parties and new structure. However, over time, they have become an increasingly important segment of the secondary market and a viable third exit route alongside traditional M&A or IPO processes. While the expansion of GP-led secondaries has been accelerated by the increasing liquidity needs in the current market environment, it should be viewed more broadly as a natural evolution and further specialization of the secondary market.

Breakout: types of GP-led secondary transactions

Since the first GP-leds the market has not just experienced rapid growth in transaction volumes but also a rapid evolution in the different forms of GP-leds. The most prominent structure is the single-asset continuation fund, that involves just one asset to be sold by the GP. Over time, however, multi-asset continuation funds, comprising two or more assets, in some cases even more than 10, have become popular as well. Another form of GP-led secondary transaction are so called Annex Funds, that contain minority strips in multiple assets, with the selling primary fund retaining part of its original exposure alongside the new Annex Fund. Importantly, each of these three broad GP-led categories encompasses a variety of particular transaction structures and the secondary market is continually evolving. For secondary investors it is therefore essential to understand the implications of each particular transaction structure. For the purpose of this paper, however, we summarize all of them as GP-led secondary transactions and leave a more detailed discussion of the various subcategories and adjacent structures, such as tender offers, for future research.



Illustrative (single-asset) GP-led secondary structure. Source: SFP Infrastructure Partners

Similarities and risks of both transaction types

GP-led and LP-led secondary transactions both allow investors to acquire interests in assets alongside a GP that has already managed those assets for an extended period. This distinguishes secondaries from primaries and co-investments, which provide exposure to assets newly acquired by a GP. As a result, secondaries have a fundamentally different risk-return profile. Because the GP already has an established track record with the underlying assets, investors can evaluate historical performance to assess the likelihood of future success. This is particularly important in GP-led transactions, where the objective is often to invest in assets characterized as "more of the same", referring to assets that have reached a stage in their lifecycle where value creation is expected to come from continuing an already successful strategy rather than implementing transformational changes or major strategic shifts. Consequently, execution risk, operational risk, and uncertainty around management's capabilities are generally lower than for newly acquired assets or assets requiring significant changes to their strategy. The assets also offer greater potential for near-term valuation gains, as the GP's value creation strategy is already well underway rather than requiring implementation over several years.

Secondary transactions enable the quick deployment of capital because most of the investment is funded at closing through the acquisition of an existing interest in a fund or portfolio company. Any remaining unfunded or reserves for follow-on investments typically represent only a small proportion of the total transaction value. The investment into a pre-defined portfolio or asset also minimizes or eliminates the blindpool risk incurred by primary investors, which do not know upfront into which assets their money will ultimately be invested.

Another important difference from primary and co-investments is that secondary transactions can be executed at prices that differ from their latest reported NAV. Acquiring assets below NAV can provide for an immediate valuation uplift at closing, which shortens, or in some cases even eliminates, the J-curve typically associated with primaries and co-investments. Secondary market pricing is determined by the balance of supply and demand among buyers and sellers rather than by a contemporaneous revaluation of the underlying assets. As a result, prices that deviate from NAV reflect market liquidity, investor sentiment, and transaction dynamics as much as changes in intrinsic value. For investors able to hold assets through the remainder of the GP's ownership period, temporary dislocations in secondary market pricing may therefore present attractive investment opportunities.

Although GP-led and LP-led secondaries share the defining characteristics of providing efficient exposure to a GP's existing assets and facilitating liquidity in the otherwise illiquid and opaque market for private market fund and company interests, they are distinct in several important respects, with meaningful implications for portfolio construction.

LP-led characteristics

LP-led secondaries provide exposure to well-diversified fund interests and typically offer a more defensive risk-return profile, characterized by broad diversification and high visibility into mature portfolios. They offer staggered cash flow profiles with distributions from dividends and exits of the underlying assets rather than cash flows concentrated in one period. Large LP-led portfolios typically contain numerous assets at different stages of their lifecycle and with varying projected holding periods, creating a broad range of cash flow streams that are diversified across both timing and distribution type. As typical infrastructure funds often distribute cash yield, infrastructure LP-leds can offer cash flow streams that are even more diversified than those of traditional private equity LP-leds, as the underlying private equity funds typically generate distributions only through exits or partial asset disposals. Because investors enter after a fund's final close through the LP-led secondary market rather than the primary market, an LP-led's expected holding period is shorter, which enhances the investment's IRR. This effect can be particularly pronounced when underlying portfolio assets generate distributions early after entry of the secondary investor, for example from near-term exits or recurring dividends of yielding infrastructure assets.

Returns are primarily driven by ideally acquiring fund interests at discounts to NAV, combined with continued NAV appreciation and accelerated distributions from well-performing underlying assets.

From a portfolio management perspective, LP-led secondaries provide immediate diversification across sectors, and geographies while allowing investors to deploy capital efficiently and manage the portfolio's vintage year balance. They are therefore well suited as a portfolio construction tool for investors who want to quickly build up diversified and stable exposure to private markets.

Their principal limitations are that upside potential may be constrained, particularly where portfolios are held significantly above cost or are already substantially realized, so that the potentially higher IRRs come at the expense of lower TVPIs. In addition, increasing competition has compressed discounts in many segments of the market. The latter is particularly important because discounts have historically been a defining feature of LP-led secondary transactions. In response to increasing competition and pricing pressure, some market participants have increasingly employed deal-level leverage to bid more aggressively while still generating attractive returns on equity. However, the use of leverage fundamentally changes the risk-return profile of these investments while reducing the amount of equity capital deployed by the secondary investor. We therefore recommend

distinguishing between unlevered LP-led transactions, which exhibit all the traditional characteristics of LP-led secondaries, and levered LP-led transactions, where returns are driven less by discounts to NAV and more by financial leverage. Hence, the main investment characteristic becomes rapid access to a leveraged portfolio of diversified cash flow streams.

Breakout: GP-leds the unwanted trash?

A common perception among investors who are new to GP-led secondaries is that assets transferred as part of a GP-led transaction are of lower quality or represent investments that could not be successfully exited through a traditional IPO or M&A process. Historically, only a limited number of GP-led transactions were initiated to provide liquidity for assets that had reached the end of their holding period and faced challenges in finding an attractive exit route. Transactions driven by a lack of reasonable rationale or concerns regarding quality typically struggle to attract lead investors. Professional secondary investors are highly selective when deciding which GP-led transactions to pursue. As described previously, they negotiate the key economic and governance terms, determine an appropriate structure and pricing, all of which will ultimately be scrutinized by other secondary investors when evaluating whether to participate. As a result, lead investors are strongly incentivized to structure attractive and compelling opportunities, as transactions that do not meet market expectations will fail to attract sufficient capital to achieve a successful closing. Given the strong deal flow in infrastructure secondaries, experienced lead investors can be highly selective and focus primarily on high-quality assets with compelling investment characteristics. They therefore play a critical role not only as liquidity providers but also as an important quality filter.

Further evidence that GP-led transactions deliver benefits to underlying investors can be found on the buyout side, where the longer track record and greater availability of data provide a more robust basis for comparison. Here, GP-led transactions and continuation vehicles have demonstrated more consistent performance, i.e. lower return dispersion, while also generating earlier DPI and showing the potential for outperformance relative to primary buyout funds in certain vintages (Evercore PCA, 2026).

GP-led characteristics

GP-leds allow investors to acquire exposure to selected assets that a GP wishes to continue owning beyond the original fund's life. These transactions are typically more concentrated and depend heavily on the quality of the underlying assets, the GP's value creation plan, and the alignment of interests between the GP, as well as existing and new investors. While this concentration increases underwriting complexity, it also creates the potential for higher returns by providing exposure to high-quality assets with significant remaining growth and margin expansion potential. Accordingly, asset-level growth and margin expansion form the main return drivers for GP-led secondaries.

The lead investor in a GP-led transaction not only sets the price for the transaction but also negotiates the economics of the continuation fund and ensures the GP's alignment with secondary investors. The objective is to structure the transaction so that it is sufficiently attractive to additional secondary investors and secure the capital necessary for a successful closing. This is essential, as the lead investor will typically provide only 30–50% of the required equity capital and is generally neither able nor willing to fund the transaction in its entirety. Typical features include substantial GP commitments, most notably the rollover of 100% of the GP's post-tax carried interest crystallized as part of the transaction, management fees lower than those charged by primary funds, and tiered carried interest structures with three to four performance hurdles, including TVPI-based hurdles. The negotiated economics realign the GP with

the new secondary investors and ensure a continuation fund structure suited to the asset's cash flow profile and expected maturity.

From a portfolio construction perspective, GP-led transactions provide access to trophy assets managed by experienced GPs that may otherwise be difficult to access. They enable investors to increase exposure to proven winners and support a tailored portfolio construction approach, allowing investors to allocate capital precisely across specific sectors, geographical regions, and risk profiles. As a relatively new transaction type, for the first time investors can selectively invest in the best performing sponsor-owned private market assets and build portfolios around these “crown jewels”. This can be especially attractive for critical infrastructure assets with scarcity value. For example, where regulation limits the number of similar assets within a particular region, it would otherwise be impossible to build concentrated exposure to the sector.

However, these benefits come with additional risks, including concentration risk, governance considerations, and potential conflicts of interests. Consequently, successful GP-led investing requires deep asset-level due diligence and careful assessment of transaction structure and GP alignment. For secondary investors with the right skill set, still, GP-leds have become a key area of focus due to the potential to invest in star assets with strong visibility on continued outperformance.

Given their different but complementary characteristics balanced secondary portfolios often combine both strategies: LP-led transactions provide diversification and portfolio stability, while GP-led transactions enhance return potential and increase exposure to high-conviction assets and managers. A balanced allocation across both strategies allows investors to combine the defensive characteristics of diversified mature LP-led portfolios with the alpha-generating potential of high-quality GP-led continuation funds.

Conclusion

The rise of infrastructure secondaries over the past several years is a direct consequence of the continued growth and institutionalization of the broader secondaries market and infrastructure as an asset class. Hence it was somewhat predictable. From a portfolio construction perspective, infrastructure secondaries have evolved significantly. Historically, they represented a niche investment strategy primarily focused on generating attractive IRRs, but were constrained by limited market size, lower scalability, and limited money-multiples. The growth of the market, combined with the increasing prevalence of GP-led transactions, has fundamentally changed this dynamic by addressing many of these limitations.

Today, the combination of GP-led and LP-led infrastructure secondary transactions provides investors with a flexible portfolio management tool. Infrastructure secondaries can help investors efficiently bridge deployment gaps, accelerate capital deployment, and potentially enhance portfolio performance. At the same time, subject to the respective allocation framework, they can serve as a one stop solution to gain or maintain infrastructure exposure in a diversified manner.

By offering immediate exposure, increased cash flow visibility, reduced J-curve effects, lower return volatility, and efficient diversification, infrastructure secondaries have become an increasingly attractive component of institutional infrastructure portfolios. For investors whose allocation frameworks allow for such flexibility, infrastructure secondaries can serve as a highly effective complement to traditional primary infrastructure investments.

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Stepstone

Data centers and the AI-energy nexus



StepStone Group ("StepStone") is a publicly listed global private markets investment firm focused on providing customized investment solutions, advisory and data services to our clients. The Firm offers comprehensive coverage of the entire private market spectrum: Private Equity, Private Debt, Real Estate, Infrastructure & Real Assets and leverages its strong local presence in all global markets with over 320 global investment specialists. As of December 2025, the firm oversees over US\$811 billion of total capital responsibility, including more than US\$220 billion of assets under management. In 2025, StepStone allocated more than US\$75 billion across fund investments, secondary investments, and co-investments on behalf of some of the world's most influential and sophisticated investors. In 2016, StepStone and Swiss Capital Alternative Investments AG, one of the leading private debt solution providers in Europe entered into a strategic partnership. In connection with this partnership, StepStone launched StepStone Private Debt ("SPD"), which combines StepStone's global capabilities and significant institutional client network with StepStone Private Debt's deep expertise in private debt strategies. Swiss Capital Alternative Investments AG was formed in 1998 by an experienced team of professionals with established reputations across different sectors of the financial industry with a focus on Alternative Investments and Corporate Finance activities.

POWER PLAY:

Data centers and the AI-energy nexus

APRIL 2026

Introduction

In early 1848, Swiss settler John Sutter was building a water-powered sawmill on the American River in Coloma, California, when his carpenter, James Marshall, found flakes of gold glistening in the streambed. Sutter and Marshall swore a pact of secrecy about their discovery and agreed to become partners. But news of the find soon spread far and wide, triggering the seven-year California Gold Rush, during which 300,000 gold-hungry prospectors swarmed the area to make their fortunes.

Although an estimated \$2 billion in gold was extracted during this period, most of the prospectors went home either empty-handed or worse off than when they arrived. James Marshall never reaped the financial rewards of the boom, and John Sutter—in a bitter irony—was forced into bankruptcy after prospectors overran his land, looted his property, and stole his livestock.

The real winners of the Gold Rush were entrepreneurs like Samuel Brannan, publisher of *The California Star* newspaper. Spotting a lucrative opportunity beyond the gold itself, Brannan bought vast quantities of picks and shovels and marked them up by as much as 400%. In the process, Brannan became California's first millionaire without ever getting his hands dirty.

History has a funny habit of repeating itself. More than 170 years on, a modern-day Gold Rush is unfolding—not on the goldfields of California, but in the corridors of Silicon Valley. When OpenAI released ChatGPT in 2022, it sparked a global frenzy that has entrepreneurs, engineers, and investors jostling for position in the artificial intelligence (AI) race.

The AI Gold Rush may be less chaotic than its 1848 forerunner, but there are similarities: opportunities are being unearthed and swiftly seized, and value is being created and captured. Companies are racing to adopt AI-driven business models, investors are injecting billions into AI startups, and almost everyone has an opinion on where this technology is headed.

The ink is still wet on the story of AI, but the opening chapter has made one thing clear. AI's ravenous appetite for compute has made the power sector a key protagonist. AI feeds on compute, and power enables this entire infrastructure.

As AI-based apps proliferate, the compute-intensive AI models that power them rely on thousands of clustered GPUs in data centers, which need exponentially more energy than the technologies that preceded them.

The power ecosystem is scrambling to meet data centers' ravenous appetite for energy—all against the backdrop of the green transition and net-zero commitments. But the amount of energy needed to power today's generative AI applications already exceeds what renewable sources alone can deliver.

To stand a chance of keeping up with demand on this scale, massive investment is needed across the value chain. These opportunities go well beyond the AI firms and the hyperscale data center operators, into an extensive array of "picks and shovels" opportunities.

The invasion of Iran in February 2026 has shone a spotlight on energy supply chains and their downstream industry structures. Globally, countries have varying levels of energy independence, from those that produce fossil fuels domestically to those that have a high level of renewable power integrated into their grid.

The focus on energy supply chain independence and sovereignty is set to escalate, accelerating the implementation of renewable and nuclear energy in many countries. Ultimately, more power to the grid is a positive for the AI-energy nexus; indeed, this shift could catalyze government action to reduce "time to power."

In this paper, we focus on the broad array of investment opportunities that are being created by AI power demand. The foundational role of power in this dynamic will be an enduring theme, aligning it well with the longer investment timeframe of private markets investors. Coupled with the complexity of its supply chain and the regulatory and sovereignty considerations involved, the AI-energy nexus is opening opportunities for market participants from lenders to real estate investors and from private equity to venture capital to unlock one of the most transformative innovation cycles of our lifetime.

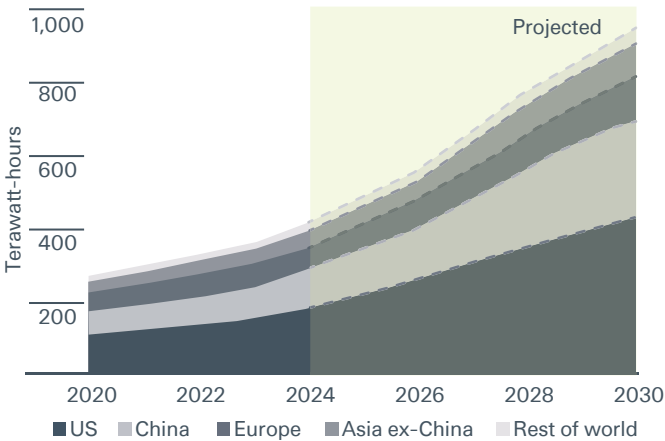
Hunger games

Meeting skyrocketing demand for AI means scaling data centers—and fast. As data centers become larger and more powerful, access to electricity has become the new currency of digital infrastructure. But with power demand outpacing supply (and projected to keep rising) and existing grid infrastructure already struggling to cope, the global data center industry now faces a severe power shortage.

Turbocharged by the intensive power demands of generative AI applications and workloads, today’s data centers are stretching already strained grids to their breaking point. By 2030, the IEA estimates that global electricity demand from data centers will climb to around 945 terawatt-hours (TWh) per year (Figure 1). This represents a staggering increase of almost 128% from the 415TWh consumed by data centers in 2024.

Regionally, the US—home to Northern Virginia, the “data center capital of the world”—is projected to see the largest increase in electricity demand, followed closely by China. Together, the two countries are projected to account for nearly 80% of global growth. However, across both countries, there are striking differences in the readiness of the existing grid and in the capacity to expand it. Against this backdrop, electricity

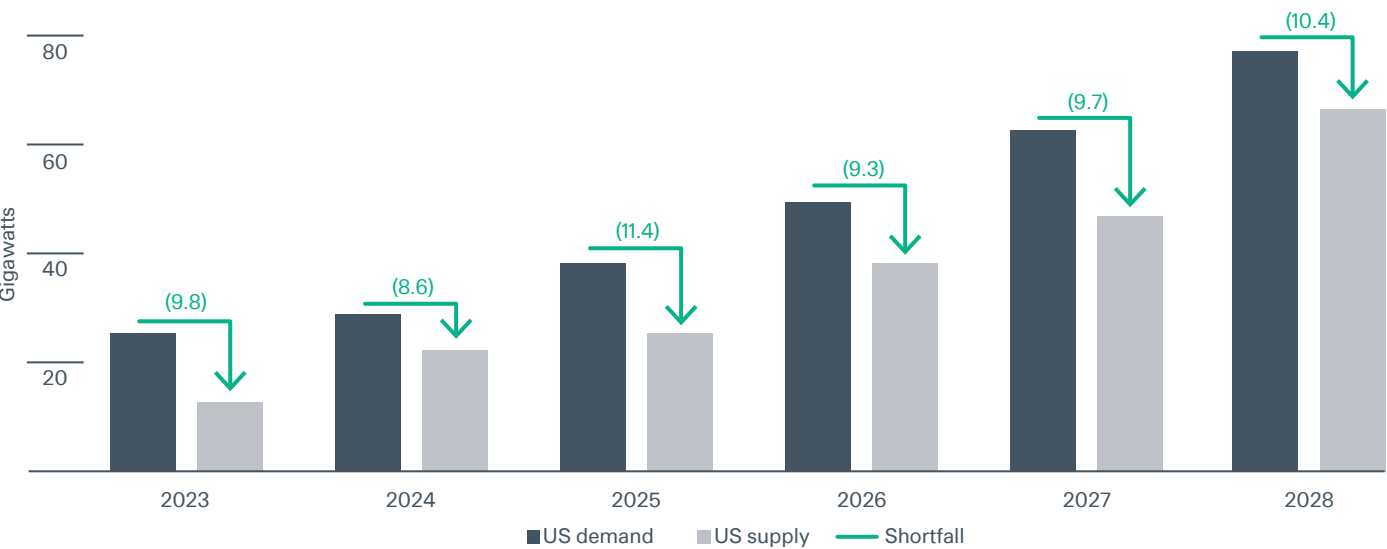
FIGURE 1: PROJECTED DATA CENTER ELECTRICITY CONSUMPTION BY REGION THROUGH 2030 (IEA BASE CASE SCENARIO)



Source: *Energy and AI*, IEA, 2025.

has become the new “oil” in terms of its critical geostrategic importance. While the US alone is expected to account for almost half of the anticipated doubling of global data center-driven power demand by 2030, Goldman Sachs projections point to an already entrenched deficit for the country’s data centers (Figure 2).

FIGURE 2: SHORTFALL OF SUPPLY VS DEMAND FOR DATA CENTER CAPACITY IN THE US



Source: *Powering the AI era*, Goldman Sachs; based on estimates by JLL, CBRE, JPMorgan, and C&W.



HYPERSCALE DATA CENTER

Power grab: Hyperscalers in the driver's seat

So, where is this demand surge in load growth coming from? Enter the hyperscalers—tech giants including Amazon Web Services, Google Cloud and Microsoft Azure that need vast infrastructure for large-scale data processing and storage.

Hyperscalers are the heavy-hitters in this concerted spending spree: Capex spending by the biggest tech companies has jumped by around 67% since the release of ChatGPT in 2022—with a sizable wedge of it flooding into the coffers of accelerated computing giant NVIDIA (**Figure 3**).

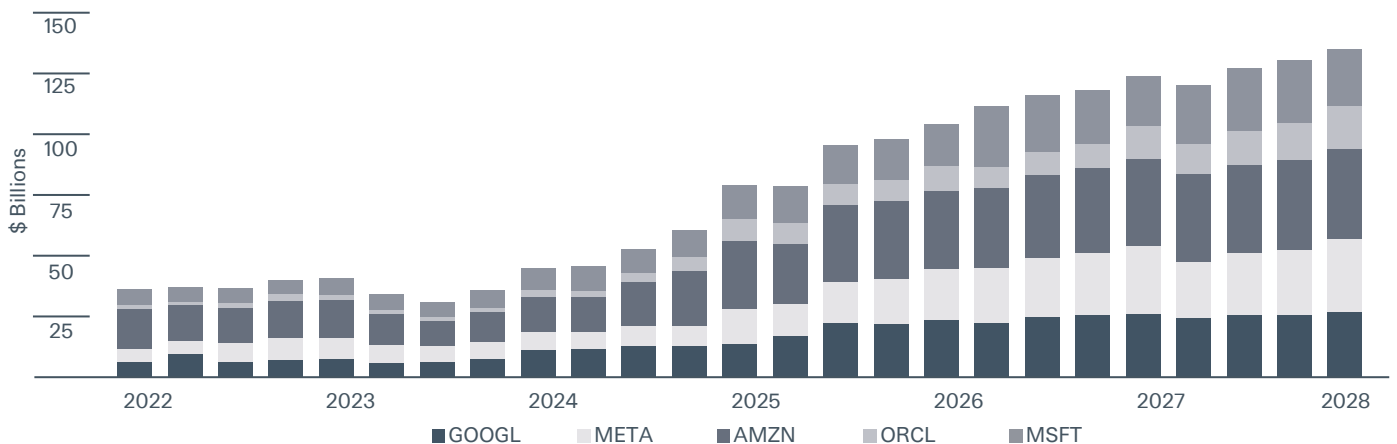
And the feeding frenzy doesn't look set to die down any time soon. For 2025, combined capex spending by the major hyperscalers reached almost \$0.5 trillion, with much of the associated data center capacity already contracted.

Capacity crunch

Hyperscalers and data center operators are fueling a real estate boom as they scramble to acquire huge parcels of land that can host clusters of data centers. However, power constraints are leading to aggressive preleasing of facilities that have yet to be built and pushing out construction timelines to 2027 and beyond. As a result, net absorption is at a record high and vacancy rates are at all-time lows in many regions (**Figure 4**).

In 3Q25 alone, US hyperscalers leased more power capacity than the entire world leased in all of 2024.

FIGURE 3: HYPERSCALER QUARTERLY CAPEX



Source: *Can the 'hyperscalers' keep on scaling?*, Evelyn Partners; as at October 2025.

FIGURE 4: CURRENT DATA CENTER CAPACITY ACROSS KEY REGIONS

	AMER	EMEA	APAC
Operational capacity (MW)			
Total	20,562	9,582	12,206
Colocation	12,269	6,753	10,424
Hyperscale	8,293	2,464	1,782
Under construction			
Total	6,423	2,953	3,087
Colocation	4,597	2,303	2,668
Hyperscale	1,827	612	419
Planned			
Total	46,077	8,839	11,252
Colocation	42,118	7,580	9,784
Hyperscale	3,959	1,191	1,468
Vacancy			
	4.9%	8.0%	12.4%

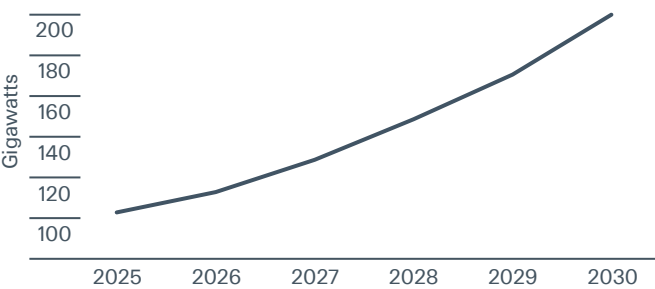
Source: 2025 Global Data Center Market Comparison, Cushman & Wakefield, as of June 2025.
Note: Development pipeline excludes early-stage projects. Vacancy is only calculated on operational colocation capacity.

However, the picture varies significantly across geographies, with some regions sitting on excess data center capacity—infrastructure resources that are not currently being used to support active IT workloads—and other regions facing a critical shortage of capacity. For example, in China, the recent boom in data center construction has left up to 80% of new capacity idle in some regions. Conversely, in the US and Western Europe—where power and grid connection delays are an ongoing problem, high occupancy rates indicate that available capacity is not sufficient. Whereas in the Middle East—particularly the UAE and Saudi Arabia—grid and data center buildout has proceeded rapidly, powered by some of the cheapest energy globally. This region is now home to the second-largest H100 equivalent supply after the US. The invasion of Iran has now changed the pricing competitiveness of this region. Although the Middle East will remain energy independent, the time required to rebuild its critical infrastructure may reduce its role in the AI-energy nexus.

Looking ahead, consensus estimates indicate that global data center capacity will grow somewhere between 69GW and 141GW from 2025–2030. Commercial real estate and property

investor JLL projects that the sector will expand at a 14% CAGR over the next five years, potentially leading to 100GW of new capacity (Figure 5). And these figures don't even include the \$1–2 trillion that tenants will need to invest in fitting out their data centers with GPUs and networking infrastructure.

FIGURE 5: EXISTING AND PROJECTED GLOBAL DATA CENTER CAPACITY



Source: 2026 Global Data Center Outlook, JLL, as of January 2026.

Demand and conquer: Power efficiencies on the cards as AI matures

As AI continues to evolve and mature, energy use is likely to fall. While the extent of this decrease is hard to predict, we expect to see efficiencies in multiple areas.

SMARTER SOFTWARE EQUALS SMARTER HARDWARE

Breakthroughs in chip design and AI algorithms could significantly reduce the power burden. For example, Chinese startup DeepSeek claims to have used just 2,000 chips to achieve comparable performance to GPT-4 (which requires 16,000+ chips). Meanwhile, NVIDIA's Blackwell GPUs can perform up to 20 petaFLOPs per second—5x more than the company's predecessor GPU.

BETTER DATA CENTER DESIGN

Improvements in HVAC design, rack design and insulation are increasing the efficiency of data centers, while on-device AI—where computations are performed directly on the device—can cut energy consumption by 100–1,000x per task.

DATA CENTER INFRASTRUCTURE MANAGEMENT (DCIM) SOFTWARE

Software-powered cooling management systems use AI to dynamically optimize temperature and airflow. These solutions analyze historical data and use real-time sensor inputs and predictive models to fine-tune cooling operations.

By leveraging predictive maintenance software, operators can anticipate equipment failures, optimize energy consumption, and proactively address potential problems before they affect operations. This in turn reduces the amount and expense of back-up capacity/redundancy that needs to be developed in clusters, which currently is not an immaterial consideration or cost.

Software can help balance the tradeoff between energy and water usage in data centers, setting dynamic controls for HVAC operations and temperature adjustments. For instance, it can intelligently decide when to use methods like adiabatic cooling—which leverages water evaporation to reduce energy consumption—rather than purely mechanical cooling, depending on temperature, humidity, and workload. These real-time adjustments help optimize both energy and water efficiency while maintaining peak performance.

CUTTING-EDGE COOLING TECHNOLOGIES

A growing range of cooling solutions are now being deployed to keep data centers ticking over as they should—improving thermal management, reducing water footprint, and cutting costs in the process. For example, magnetic levitation (maglev) air-conditioning units are increasingly being deployed in data centers to provide consistent cooling, reduce energy costs, and maximize uptime. This innovative compressor technology replaces mechanical bearings with magnetic fields, eliminating mechanical friction and resulting in improved efficiency.

STRATEGIC LOCATION IN COLDER REGIONS

One of the main drivers for choosing the location of a new data center or campus is the availability of grid power, especially as the average size of facilities has increased significantly. It stands to reason that if a data center is located in a hot region—and relies on air conditioning for cooling—it takes a lot of electricity to keep the servers at a low temperature.

POWER CAPPING

In data centers with multiple GPUs operating simultaneously, power capping keeps the total power draw within the facility's thermal and electrical boundaries, while still delivering optimal performance. Power capping can significantly enhance data center efficiency by cutting provisioning costs, enhancing grid management, and improving thermal management.

QUANTUM COMPUTING

Cornell University researchers have developed a hybrid quantum—classical framework to power large AI data centers, with their research determining that this approach used less compute, cutting energy consumption by up to 12.5% and carbon emissions by up to 9.8%.

The efficiency gains we outline above could go some way toward slaking AI's thirst for energy, but while it is far too early to estimate aggregate energy savings from these activities, the return on investment on energy optimization is likely to be material for operators. Even taking into account these energy-efficiency efforts, the positive demand trajectory for power is well entrenched.

Investing in the picks and shovels of the AI Gold Rush

While this paper focuses on the power element of the equation, the capital outlay needed to fund the overall AI buildout is not to be underestimated. But neither is the scale of the related investment opportunity given hyperscaler requirements in the face of current structural deficits. Bain estimates that keeping up with AI compute power will require \$500 billion per year in global data center investment by 2030 (plus \$2 trillion in annual revenue to make that capex viable). Even based on generous assumptions, Bain believes that the AI industry could still miss the mark by \$800 billion. Meanwhile, McKinsey projections suggest that by 2030 data centers globally will need \$6.7 trillion to keep pace with demand for compute power: \$5.2 trillion in capex for data centers that handle AI processing loads and \$1.5 trillion for those powering traditional IT applications.

AI is innovating significantly faster than its predecessor technologies.

Performance driven by innovation cycles

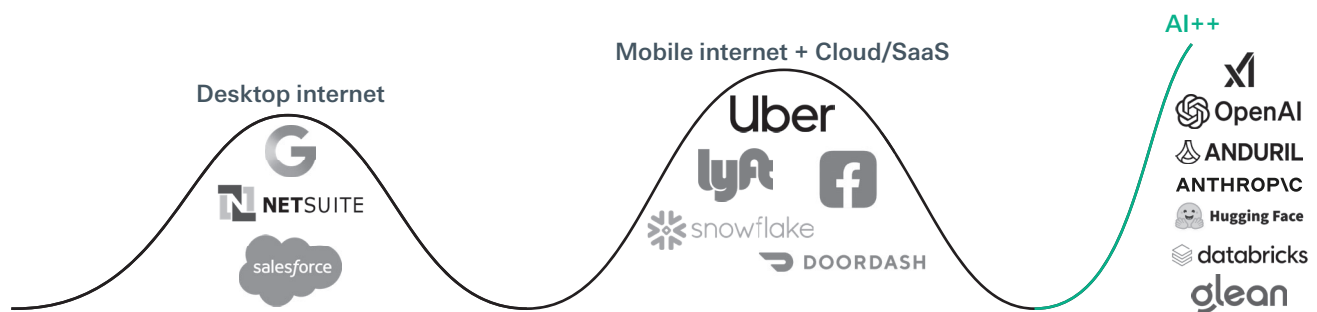
We believe desktop, mobile internet, and cloud/SaaS were incremental technological advances compared to the huge leap forward represented by AI. At this point in time, it is impossible to conceive of all the new applications and business models that AI will spawn—just as we could not have imagined concepts like Netflix and Uber when the internet was in its infancy (**Figure 7**).

There will be successes and failures along the way, but net growth in power demand looks set to remain a constant. Rising power needs will only be met by a portfolio of different energy types, underpinned by a range of hardware and software enhancements—many of which will themselves be AI-enabled.

Clean energy sources are not a sustainability preference; they are a commercial necessity. And, ultimately, any country that wants to stay in the AI race must address sovereign power needs.

While today we ship various forms of energy globally, advances in battery technology may open up new avenues for multinational electricity deposits—quite literally supercharging battery energy storage system (BESS) operations.

FIGURE 7: GROWTH OF AI COMPARED WITH PREDECESSOR TECHNOLOGIES



Source: StepStone Group.

Power point: Transforming data centers into flexible grid assets

"We've seen a breakdown in the utility and data center relationship. Utilities are no longer able to meet the needs of data centers, and data centers are building at a scale that doesn't line up with what utilities can provide." These are the words of Jeff Bladen, head of energy at **Verrus, a StepStone Infrastructure and Real Assets co-investment**, which was launched in 2024 by Alphabet spinout Sidewalk Infrastructure Partners in response to the growing impact of limited energy capacity and lengthy grid interconnection queues on data center development projects.

US-based Verrus is developing a next-generation data center design that aims to reshape how the massive and accelerating electricity demand associated with AI and other advanced computing workloads interacts with the power grid. Led by a team of industry veterans from Google, Meta, EdgeConneX, and other notable sector participants, Verrus plans to own and operate its data centers via long-term contracts with hyperscalers.

Rather than simply acting as new load, they will offer a flexible load profile capable of alleviating demand on an increasingly constrained electrical grid.

The company's next-generation data centers will play a very different role on the grid than their predecessors: Rather than simply acting as new load, they will offer a flexible load profile capable of alleviating demand on an increasingly constrained electrical grid. Verrus's data centers are also designed to be better partners to communities: They use approximately 99% less water than a standard data center, and their prioritization of battery storage over traditional diesel generators reduces both emissions and noise.

The company will serve both utilities and customers through a two-pronged approach:

- **Flexible demand:** Verrus's proprietary design provides demand flexibility for utilities by facilitating curtailment without affecting performance for customers. This is expected to expedite and/or facilitate preferential interconnection in capacity-constrained markets.
- **Compute densification:** Verrus data centers allow customers to maximize productive IT load and are expected to result in up to a 30% increase in utilization of leased capacity relative to traditional data centers. This provides a unique value proposition to customers by enabling a greater number of sellable MWs of IT capacity per site and reducing the total cost of ownership per rack.

In May 2025, Verrus partnered with the National Laboratory of the Rockies (formerly NREL) to successfully demonstrate the performance of its data center technology under real-world grid conditions. The company is actively building a pipeline of potential future data center campuses with the goal of bringing its first project online next year.

Private markets investors are stepping in to provide this huge wall of capital, while paying close attention to risks that include power and land constraints, technological obsolescence, and regulatory pressure. In the original Gold Rush, the real winners weren't the miners themselves, but the people with the foresight to supply the picks and shovels needed to mine the golden nuggets. And for private markets investors with the vision to recognize the huge potential of AI, there are multiple investment opportunities offering a range of varied risk/return profiles. The following examples focus on opportunities related to the power angle of the AI dawn:

- **Electrical infrastructure/grid modernization:** Manufacturers of switchgear, power cables, transformers, sensors, and control systems.
- **Energy and power infrastructure:** Utility companies and equipment suppliers that provide the electricity and power management systems needed by data centers.
- **Energy generation:** Companies that specialize in renewable energy, natural gas, and nuclear power (including SMRs). Many of these opportunities come with extensive real estate and debt requirements.
- **Physical infrastructure:** Manufacturers of essential data center hardware including advanced cooling systems, backup power solutions, power supply/distribution units.
- **Data centers:** The physical buildings and the “digital landlords”—the developers, operators, and lessors of data center space.
- **Software services:** A range of applications—likely enabled by AI—that support the optimization of grids, data centers, and related applications.
- **AI for climate solutions:** Many data centers are located in remote regions with high exposure to extreme weather events such as wildfires, which can cause severe damage to property and critical infrastructure and costly disruption to business operations. Pano AI is one example of a company that is tackling physical climate risk by developing AI-enabled climate solutions to detect wildfires across 30 million acres of the US.

Conclusion

The potential of AI is clear—and so are the myriad opportunities to invest in the underlying infrastructure, and critically, power supply. Yet exactly what the future will hold is harder to predict. We cannot yet conceive of the future path of AI as it continues its supercharged evolution; nor of the possibilities that it could open up for the human race. One thing is for sure: AI is far more likely to be the architect of its own fortune than the victim of its own success.

The war in Iran has highlighted the need for careful consideration of energy supply chains and energy sovereignty. This focus is likely to reinforce sustainability considerations as we may see a concerted effort in building a diversified energy stack globally. Renewables and nuclear will be critical in this regard, with the former winning on speed to the grid. Ultimately, this crisis is bringing the power element of the power-AI nexus into sharper relief.

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Stonepeak

Around the World in 80 Days

Why global trade needs more infrastructure

Stonepeak

Stonepeak is a leading alternative investment firm specializing in infrastructure and real assets with approximately \$93 billion of assets under management. Through its investment in defensive, hard-asset businesses globally, Stonepeak aims to create value for its investors and portfolio companies, with a focus on downside protection and strong risk-adjusted returns. Stonepeak, as sponsor of private equity and credit investment vehicles, provides capital and committed partnership to grow investments in its target sectors, which include digital infrastructure, energy and energy transition, transport and logistics, and real estate. Stonepeak is headquartered in New York with offices in Houston, Washington, D.C., London, Hong Kong, Seoul, Singapore, Sydney, Tokyo, Abu Dhabi, and Riyadh. For more information, please visit: www.stonepeak.com.

An aerial photograph of a large container ship docked at a port. The ship's deck is covered with stacks of colorful shipping containers in shades of red, blue, white, and green. A large yellow gantry crane is positioned over the ship, and its shadow is cast onto the water. The port area includes a paved road with several vehicles and more stacks of containers. The water is a deep blue-green color. Two large, stylized red L-shaped graphic elements are placed on the page: one in the upper right and one in the lower left.

Stonepeak

Around the World in 80 Days

Why global trade needs more infrastructure

Around the World in 80 Days

Why global trade needs more infrastructure

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- Safe passage was the most underpriced subsidy in the global economy, and it is quietly being repriced

- Deglobalization is not less trade, it is less efficient trade: the same cargo taking longer and consuming more of the equipment underneath it

- A world paying for resilience needs more physical infrastructure per dollar of trade than one built for efficiency

I've spent the better part of the year thinking the market has it all wrong. There was no appreciation for the energy disruption, the closed trade routes or the higher freight costs. The S&P kept making new highs. GDP numbers looked surprisingly good. AI did not take all the jobs. The market decided the disruptions were temporary and the old relationships would eventually reassert themselves. However, there are a few threads that when pulled together start to paint a different picture. On one hand, there are the loud things, like the continued erosion of the post-Cold War security architecture, two wars that look set to drag on, and a reindustrialization push justified by national security rather than economics. But quietly, we were watching safe passage being repriced.

For most of the last three decades, safe passage was treated as free. It wasn't. It was an underpriced benefit supported by a post-Cold War security architecture that made major trade routes unusually predictable. Companies designed supply chains around that predictability. Toyota showed us the magic of just-in-time inventory. FedEx helped make arrival feel guaranteed. Cheap money rewarded the optimization of balance sheets, and consultants squeezed out every inefficiency. Ships took the shortest route, containers kept turning and companies held less of everything. Governments kept the sea lanes open. The consultants made sure nothing sat still.

Then Covid exposed how fragile the system had become. Then Russia and Ukraine, national security redrawing supply chains, AI demanding enormous amounts of physical capacity, and the closure of the Strait of Hormuz. All in six years. None of these

events alone had to end globalization. Together, they challenged the assumption underneath it. The system was being asked to absorb more volatility after thirty years of optimization had removed almost all the slack. Any one conflict can end. A waterway can reopen. Freight rates can fall. But after enough temporary disruptions, the response becomes structural. Companies add inventory, suppliers and routes. Production moves closer to home. The world may not trade less, but it will require more infrastructure to keep trading. In September, the Consultative Shipping Group, the maritime authorities from eighteen nations that have worked since the 1960s to keep global shipping open, warned that these were no longer episodic shocks, but signs of a structural shift.

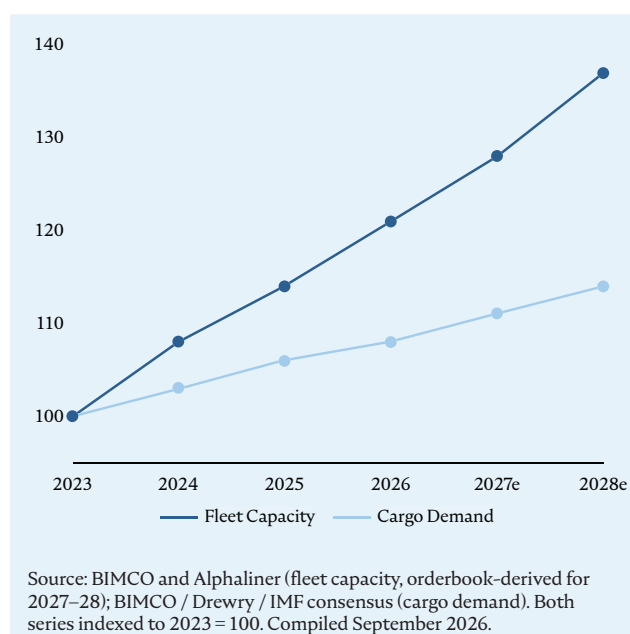
Deglobalization is usually described as a story about less trade. Maybe eventually, but for now, it's more like less efficient trade. The same cargo is still moving. It is just taking longer to get there. What has become underappreciated in this just-in-time inventory world is how much supply-chain optimization depends on optimal routes and nearly everyone showing up on time. Globalization did not make distance disappear. It made arrival predictable. If the routes get longer or the schedule becomes less reliable, the entire system turns more slowly and delays rise. Costs follow. The old system was optimized for efficiency. The new one is being built for resilience. Rerouting is only one version of the response.

We're already watching companies look for workarounds. Between the closure of Hormuz and the impact of tariffs, the demand for more boxes continues to grow. By July, Kuehne+Nagel estimated roughly

350,000 boxes were sitting in the wrong places, no longer where the next customer needed them. Stonepeak sees that through Textainer, one of the world's largest container lessors. A box taking the longer route or sitting in the wrong port cannot begin its next trip. In response, some cargo owners moved from ships to trucks, but trucks can only carry two containers versus more than 20,000 on the largest ships. Not quite as efficient. Then there is the cargo that can't wait. Asia-to-North America airfreight volumes rose almost 20% in May, while spot rates jumped 36% in June, partly because server racks and chips cannot wait for the slow boat (from China).

Fleet Capacity vs. Cargo Demand

Capacity is outpacing demand as operators feel the need more optionality



This whole change in the way the supply chain is moving is one of the reasons Stonepeak invested in IOR, an Australian fuel logistics business. IOR is built for what happens after the ship arrives and, like most countries, Australia depends on long supply chains, spanning import terminals, storage, specialty refining, transportation and a network of refueling sites which serve thousands of customers across transport, mining, agriculture and aviation. In an optimized world, each step might be owned and managed separately, but in a less predictable world, controlling the whole value chain will provide certainty. IOR cannot reopen a waterway or shorten a voyage, but it can receive fuel, hold it, move it and deliver it when the usual route or schedule stops cooperating.

The example is specific, but the implication is much broader. Longer routes need more ships and containers. More inventory needs more storage. New production hubs need power, transportation and digital networks before they can produce anything. Assets that

once looked like idle capacity may become the assets that keep the system moving. That does not make every port, warehouse or pipeline a good investment. It does mean a world paying for resilience will require more physical infrastructure per dollar of trade than one designed entirely around efficiency.

This is what the next version of globalization may look like. Not the end of trade, just more time embedded in it. We will need suppliers with more inventory, using more trade routes that exist in case the preferred one stops working. There will be more capital tied up in goods that are still somewhere between here and there. And the cost to the customer will be higher. None of those changes are dramatic on their own, but together, they reverse thirty years of optimization and force a repricing of what is truly resilient. Safe passage may have been the most underappreciated subsidy in the global economy. Around the world in 80 days used to sound like an adventure. It's starting to sound like an estimate.

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Swiss Life

Datenzentren im KI-Zeitalter: Warum Strom zum entscheidenden Wettbewerbsfaktor wird



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Datenzentren im KI-Zeitalter

Warum Strom zum entscheidenden Wettbewerbsfaktor wird



Quelle: DataBank, ein Portfoliounternehmen von Swiss Life Asset Managers.

Kaum ein Infrastruktursegment hat in den vergangenen Jahren eine vergleichbare Dynamik entwickelt wie der Markt für Datenzentren. Getrieben durch die fortschreitende Digitalisierung, die Verlagerung von Anwendungen in die Cloud und den rasanten Aufstieg künstlicher Intelligenz ist die Nachfrage nach Rechenleistung auf ein Niveau gestiegen, das noch vor wenigen Jahren kaum vorstellbar schien.

Im Mittelpunkt der Diskussion steht häufig die Frage, wie stark die Nachfrage nach KI-Anwendungen und Rechenleistung künftig wachsen wird. Für langfristig orientierte Infrastrukturinvestoren dürfte jedoch eine andere Frage mindestens ebenso relevant sein: Woher soll die Energie kommen, um dieses Wachstum überhaupt zu ermöglichen?

Denn genau hier vollzieht sich derzeit ein fundamentaler Wandel. Während frühere Investitionszyklen primär durch Kapital begrenzt wurden, entwickelt sich Strom zunehmend zur eigentlichen Knappheitsressource. Die Zukunft vieler Datenzentrumsmärkte wird deshalb weniger von der Verfügbarkeit von Kapital als vom Zugang zu Energie, Netzkapazitäten und Bewilligungen bestimmt.

Die Nachfrage nach Rechenleistung ist ungebrochen

Die Attraktivität von Datenzentren als Anlageklasse stützt sich auf mehrere langfristige Entwicklungen, die

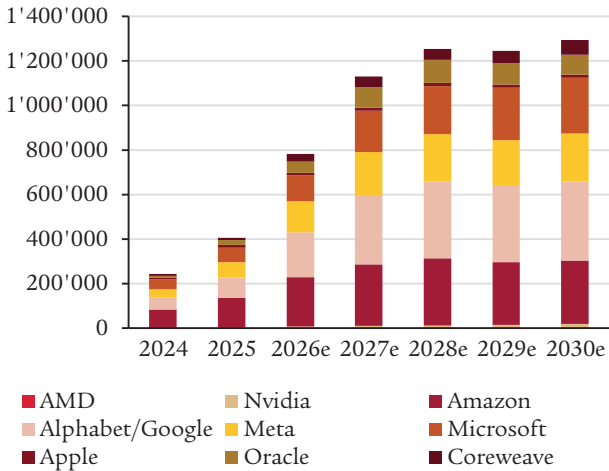
weitgehend unabhängig von konjunkturellen Schwankungen wirken.

So wird die Nachfrage nach Datenzentrumskapazität zum einen weiterhin durch die fortschreitende Digitalisierung der Wirtschaft und die anhaltende Verlagerung von IT-Infrastruktur in die Cloud getragen. Unternehmen speichern und verarbeiten mehr Daten als je zuvor, automatisieren Geschäftsprozesse und setzen zunehmend auf digitale Anwendungen. Trotz erheblicher Fortschritte in den vergangenen Jahren befindet sich ein grosser Teil der weltweiten IT-Landschaft weiterhin im Wandel, sodass die Migration in die Cloud auch künftig ein wichtiger Wachstumstreiber bleiben dürfte.

Zum anderen hat sich mit dem Aufstieg leistungsfähiger KI-Modelle die Rolle von Datenzentren grundlegend verändert. Es wurde ein Investitionszyklus ausgelöst, dessen Umfang sich mit den grossen Infrastrukturbooms vergangener Jahrzehnte vergleichen lässt.

Die weltweiten Investitionen in Datenzentren stiegen von rund USD 100 Milliarden im Jahr 2015 auf mehr als USD 500 Milliarden im Jahr 2024. Seither haben die grössten Hyperscaler ihre Investitionsprogramme deutlich ausgeweitet. Unternehmen wie Microsoft, Amazon, Alphabet oder Meta investieren jährlich zweistellige Milliardenbeträge in den Ausbau ihrer digitalen Infrastruktur.

Geschätzte Investitionen in KI-Infrastruktur (Capex) in Mio. USD



Quelle: Bloomberg (August 2026), Swiss Life Asset Managers.

Einige Prognosen erwarten deshalb bis zum Ende des Jahrzehnts ein jährliches Investitionsvolumen von über USD 1 Billion. Die Geschwindigkeit dieses Ausbaus verdeutlicht, welche strategische Bedeutung führende

Technologieunternehmen Rechenleistung und KI-Infrastruktur inzwischen beimessen.

Hinzu kommt, dass die Nachfrage nicht allein aus der Privatwirtschaft stammt. Regierungen weltweit betrachten Rechenleistung zunehmend als strategische Ressource. Nationale KI-Initiativen, Programme zur technologischen Souveränität und geopolitische Bestrebungen zur Sicherung digitaler Unabhängigkeit erzeugen eine zusätzliche Nachfragequelle neben den kommerziellen Treibern. Der Datenzentrumssektor profitiert damit gleichzeitig von sich gegenseitig verstärkenden wirtschaftlichen, technologischen und geopolitischen Entwicklungen.

Datenzentren sind keine homogene Anlageklasse

Obwohl häufig von «dem» Datenzentrumssektor gesprochen wird, umfasst der Markt eine Vielzahl an Geschäftsmodellen mit zum Teil sehr unterschiedlichen Risiko-Rendite-Profilen.

Datenzentrums-typen	Charakteristika	Typische Kundenbasis und Anwendungsbereiche	Chancen und Risiken
Colocation-Hyperscale	<ul style="list-style-type: none">Grossflächige Datenzentren, die überwiegend für Cloud-Anbieter entwickelt und langfristig an diese vermietet werden	<ul style="list-style-type: none">Cloud-Anbieter wie AWS, Microsoft, Google, MetaTraining und Inferenz von KI-Modellen sowie Cloud-Computing und rechenintensive Anwendungen	<ul style="list-style-type: none">+ Überdurchschnittliches Wachstum aufgrund hoher Nachfrage nach KI- und Cloud-Kapazitäten, Skaleneffekte, langfristige Verträge- Kundenkonzentration, hohe Kapitalintensität
Colocation-Enterprise	<ul style="list-style-type: none">Vermietung von Datenzentrumsinfrastruktur an Unternehmen	<ul style="list-style-type: none">(Technologie-)Unternehmen, öffentliche InstitutionenHosting von Unternehmensanwendungen und eigener IT-Infrastruktur	<ul style="list-style-type: none">+ Diversifizierte Kundenbasis, profitiert vom anhaltenden Digitalisierungstrend- Kürzere Vertragslaufzeiten, Public Cloud-Migrationsrisiko
Edge	<ul style="list-style-type: none">Kleine, verteilte Datenzentren nahe am Endnutzer mit Fokus auf geringe Latenz und Echtzeitverarbeitung	<ul style="list-style-type: none">Telekommunikationsanbieter, IoT-Anwendungen, autonome SystemeLatenzkritische digitale Anwendungen	<ul style="list-style-type: none">+ Langfristiges Wachstum durch Verbreitung von Echtzeitdatenverarbeitung, autonomen Systemen und IoT-Anwendungen- Noch wenig ausgereiftes Geschäftsmodell, höhere technologische Unsicherheit
Enterprise owned (Unternehmens-eigene Rechenzentren)	<ul style="list-style-type: none">Unternehmenseigenes Datenzentrum für geschäftskritische Anwendungen, dadurch häufig weniger investierbar als Colocation-Datenzentren	<ul style="list-style-type: none">Unternehmen oder öffentliche InstitutionenSicherheits- und geschäftskritische Anwendungen mit erhöhten Anforderungen an Compliance, Datensouveränität oder Netzwerkintegration	<ul style="list-style-type: none">+ Eintrittsbarrieren durch spezifische Sicherheits- und Compliance-Anforderungen, häufig bonitätsstarke Nutzer mit potenziellen Sale-and-Lease-Back-Strukturen- Hohe Kundenkonzentration, Public Cloud-Migrationsrisiko

Datenzentren umfassen aus Investorensicht somit ein breites Spektrum unterschiedlicher Risiko-Rendite-Profile. So können stabilisierte Colocation-Plattformen viele Eigenschaften von Core- oder Core+-Infrastruktur aufweisen, während Entwicklungsprojekte eher dem Value Add oder opportunistischen Bereich zuzuordnen sind.

Strom wird zum entscheidenden Engpass

Die öffentliche Diskussion über Datenzentren konzentriert sich häufig auf Nachfrageprognosen. Die eigentliche Herausforderung liegt jedoch zunehmend auf der Angebotsseite.

Historisch wurden Datenzentren primär dort errichtet, wo sich Nachfrage konzentrierte. Die Nähe zu Endkunden, Unternehmen und Internetknotenpunkten war häufig der entscheidende Standortfaktor. Daraus entstanden die bekannten europäischen Kernmärkte Frankfurt, London, Amsterdam, Paris und Dublin (FLAP-D), wo sich heute der Grossteil der europäischen Rechenzentrumskapazität befindet.

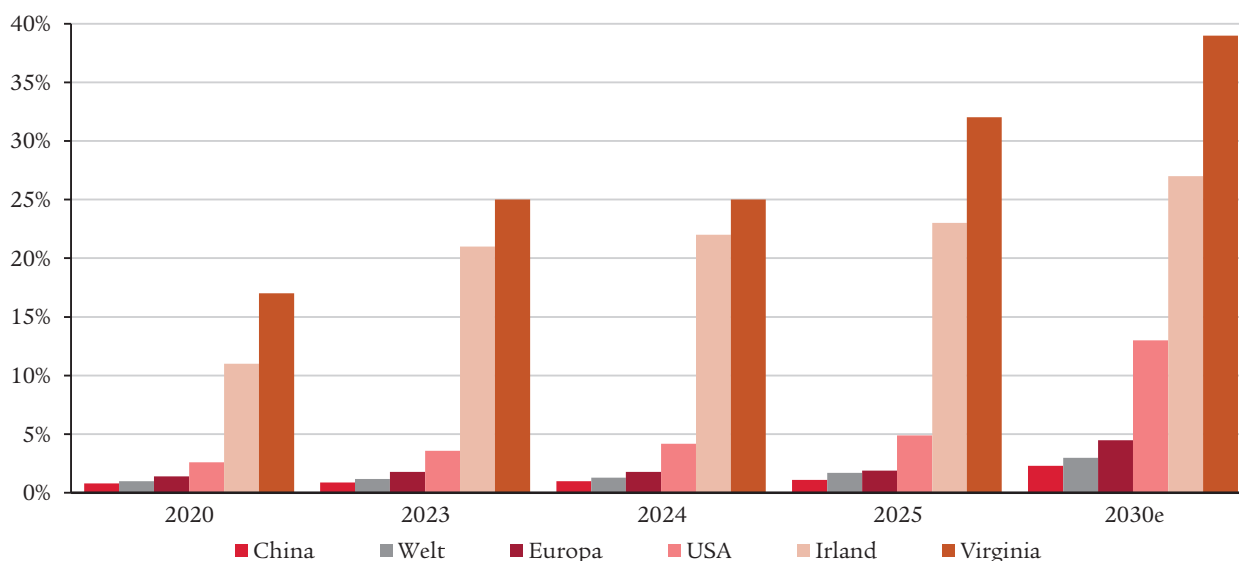
Diese Standortvorteile bestehen zwar weiterhin, verlieren jedoch relativ an Bedeutung. In immer mehr Märkten wird nicht mehr die Finanzierung neuer Projekte zum Engpass, sondern der Zugang zu Strom. Netzanschlüsse, Übertragungsleitungen, Transformatoren und Bewilligungen entwickeln sich

zunehmend zu den entscheidenden Faktoren für den Erfolg neuer Projekte. Wie stark sich die Prioritäten innerhalb der Branche verändert haben, zeigt eine globale Umfrage von CBRE aus dem Jahr 2025: Erstmals wurde die Verfügbarkeit von Strom als grösste Herausforderung für den Sektor genannt und verdrängte Finanzierungsfragen von der Spitze der Risikofaktoren.

Die Dimension dieser Entwicklung wird zunehmend sichtbar. Datenzentren verbrauchen heute rund 1,5% des weltweiten Stroms, was in etwa der gesamten jährlichen Stromerzeugung Deutschlands entspricht. Die Internationale Energieagentur (IEA) geht davon aus, dass dieser Anteil bis 2030 auf nahezu 3% ansteigen könnte. Globale Durchschnittswerte verdecken jedoch die zum Teil erheblichen regionalen Unterschiede. In Irland entfallen bereits heute mehr als 20% des Stromverbrauchs auf Datenzentren, während der Anteil in Teilen von Northern Virginia über 25% liegt. Was auf globaler Ebene beherrschbar erscheint, entwickelt sich in einzelnen Märkten bereits heute zu einem bindenden Wachstumsfaktor.

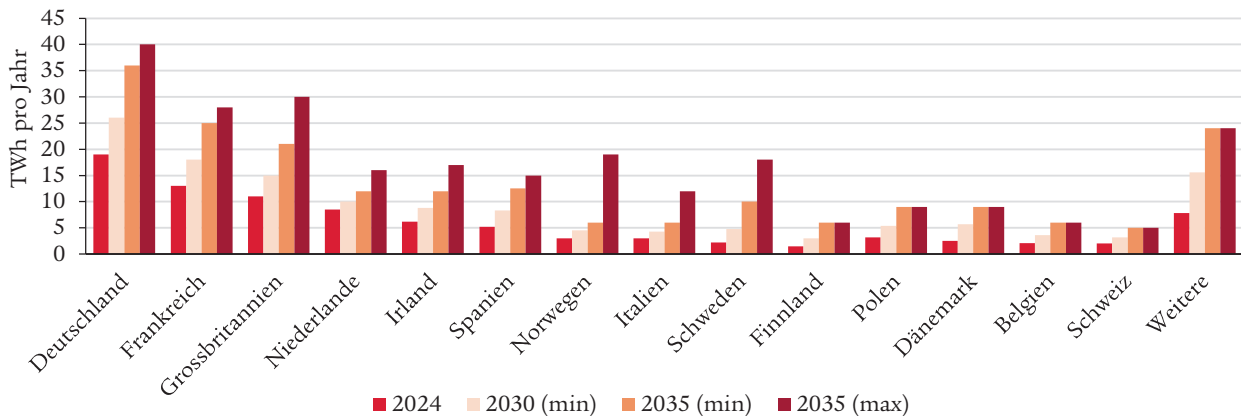
Für Investoren verändert dies die Logik des Sektors grundlegend. Grundstücke, Gebäude und Finanzierung bleiben wichtige Voraussetzungen. Sie stellen jedoch nicht länger die eigentliche Eintrittsbarriere dar. Land ohne Strom verliert zunehmend an strategischem Wert, während gesicherte Energiekapazitäten zunehmend eine knappe und entsprechend begehrte Ressource werden.

Anteil der Datenzentren am regionalen Stromverbrauch



Quelle: International Energy Agency (IEA, April 2025, April 2026), Ember (Juni 2025), Electric Power Research Institute (EPRI, Februar 2026), Energy Policy Research Foundation Inc. (EPRINC, Oktober 2024), Central Statistics Office (CSO, Juli 2024, Juni 2025, Juli 2026), Reuters Insights and RystadEnergy (April 2026), Swiss Life Asset Managers Research. Die Angaben für Virginia in den Jahren 2020 und 2025 beruhen auf konservativen Annahmen. Nur zu Illustrationszwecken.

Geschätzter Stromverbrauch von Datenzentren in ausgewählten europäischen Ländern (TWh pro Jahr)



Quelle: European Network of Transmission System Operators for Electricity (ENTSO-E, Mai 2025), Swiss Life Asset Managers Research. Im Basisszenario wird zwischen 2025 und 2030 ein Anstieg des Stromverbrauchs von Datenzentren um mehr als 50% erwartet. Getrieben wird dieses Wachstum insbesondere durch Colocation-Rechenzentren, deren Nachfrage nach Strom deutlich schneller zunimmt als jene von Hyperscale- und Enterprise-Rechenzentren. Nur zu Illustrationszwecken.

Strom verändert die europäische Datenzentrumslandschaft

Die zunehmende Bedeutung von Energie ist einer der Hauptgründe, weshalb sich die geografische Struktur des europäischen Datenzentrumsmarktes verändert.

Über viele Jahre konzentrierte sich der Kapazitätsausbau auf die FLAP-D-Märkte. Diese verfügten über leistungsfähige Glasfasernetze, eine hohe Kundennachfrage und ausgeprägte digitale Ökosysteme. Doch gerade diese Regionen stossen heute zunehmend an ihre Grenzen. Zwar befinden sich 72% der europäischen Colocation-Kapazitäten in diesen etablierten Märkten, allerdings erschweren Netzengpässe, lange Anschlussfristen und komplexere Genehmigungsprozesse zunehmend den weiteren Ausbau.

Infolgedessen verlagert sich das Wachstum schrittweise in alternative Regionen. Städte wie Berlin, Brüssel oder Marseille profitieren davon, dass sie weiterhin Zugang zu etablierten Netzwerken bieten und gleichzeitig weniger ausgeprägten Strom- und Bewilligungsengpässen ausgesetzt sind. Die Herausforderung besteht vielerorts nicht mehr darin, Nachfrage zu identifizieren, sondern diese Nachfrage überhaupt in verfügbare und angeschlossene Kapazitäten umzusetzen.

Noch stärker zeigt sich dieser Trend in den nordischen Ländern. Norwegen, Schweden und Finnland verbinden ein grosses Angebot erneuerbarer Energie mit vergleichsweise günstigen Strompreisen, grossen Flächenreserven und klimatischen Vorteilen für Kühlungssysteme. Für rechenintensive Anwendungen gewinnen diese Faktoren zunehmend an Bedeutung.

Gleichzeitig gewinnen auch neue Regionen in Südeuropa an Bedeutung. Länder wie Spanien, Italien und Griechenland profitieren von Investitionen in erneuerbare Energien, verbesserter Konnektivität und einer insgesamt attraktiven Kostenstruktur. Damit entwickeln sich Regionen, die noch vor wenigen Jahren als Randstandorte galten, zunehmend zu relevanten Bestandteilen des europäischen Datenzentrumsökosystems.

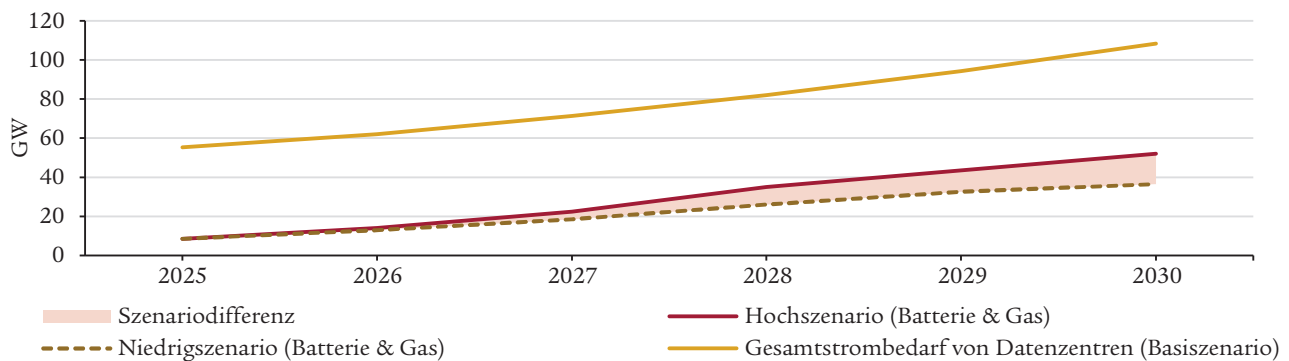
Während Datenzentren während des Cloud-Zeitalters primär den Nutzern folgten, folgen sie im Zeitalter künstlicher Intelligenz zunehmend dem Strom.

Datenzentren werden zu Energieinfrastruktur

Die vielleicht folgenreichste Entwicklung besteht jedoch darin, dass sich die Rolle der Datenzentren selbst verändert.

Traditionell waren Datenzentren passive Stromverbraucher. Energie wurde aus dem Netz bezogen und stellte primär einen operativen Kostenfaktor dar. Dieses Verständnis gilt heute zunehmend als überholt. Vielmehr entwickelt sich die Stromversorgung zu einem strategischen Wettbewerbsfaktor und damit zu einem zentralen Bestandteil der Wertschöpfungskette.

«Die führenden Datenzentrumsbetreiber von morgen könnten sich weniger über die Bereitstellung von Rechenkapazität und stärker über den Zugang zu Energie differenzieren.»

Prognostizierte Kapazitäten Vor-Ort-Gaskraftwerke und Batteriespeicher für Datenzentren weltweit (2025-2030)

Quelle: International Energy Agency (IEA, April 2026), Swiss Life Asset Managers Research. Nur zur Veranschaulichung.

Bereits heute investieren Betreiber verstärkt in Batteriespeicher, intelligente Laststeuerung und flexible Netzanschlusslösungen. Besonders in Nordamerika gewinnt die zusätzliche, eigene Stromerzeugung an Bedeutung. Die Internationale Energieagentur (IEA) geht davon aus, dass Onsite-Gaskraftwerke und Batteriespeicher bis 2030 rund ein Drittel bis nahezu die Hälfte des zusätzlichen Strombedarfs von Datenzentren decken könnten.

Dieser Trend ist weit mehr als eine technische Anpassung. Er verändert den wirtschaftlichen Charakter des Sektors. Betreiber müssen Energie zunehmend aktiv beschaffen, speichern, steuern und teilweise selbst erzeugen. Der Umgang mit Energie entwickelt sich damit zu einem ebenso wichtigen Erfolgsfaktor wie das Management von Rechenzentrumsflächen oder Serverkapazitäten.

Die langfristigen Gewinner des Marktes könnten deshalb nicht zwingend jene Akteure sein, die über die grössten Datenzentren verfügen. Entscheidend wird vielmehr sein, wer Zugang zu den knappen Energieressourcen besitzt, die für den Betrieb dieser Anlagen notwendig sind.

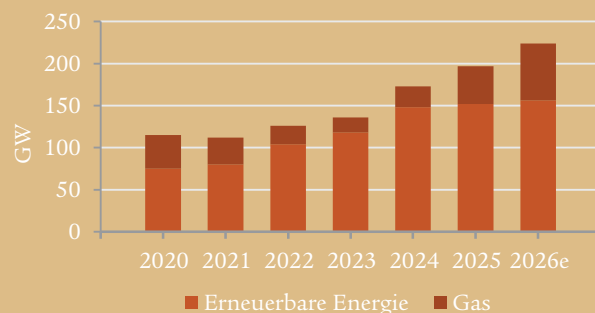
In gewisser Weise entwickeln sich Datenzentren damit zu einer Hybridform aus digitaler Infrastruktur und Energieinfrastruktur. Die führenden Datenzentrumsbetreiber von morgen könnten sich weniger über die Bereitstellung von Rechenkapazität und stärker über den Zugang zu Energie differenzieren. Genau darin dürfte einer der interessantesten und bislang noch unterschätzten Aspekte der gesamten Investitionsthese für Datenzentren liegen.

Zwischen Nachhaltigkeitszielen und Versorgungssicherheit

Nachhaltigkeit entwickelt sich im Datenzentrumssektor zunehmend von einer regulatorischen Anforderung zu einem strategischen Wettbewerbsfaktor. Energieeffizienz, Beschaffung erneuerbarer Energien und Wasserverbrauch spielen sowohl bei Investitionsentscheidungen als auch bei der Bewertung von Anlagen eine immer wichtigere Rolle. Technologien wie Flüssigkühlung, Abwärmenutzung, Batteriespeicher, Geothermie, kleine modulare Reaktoren (SMRs) können dazu beitragen, den steigenden Energiebedarf effizienter und nachhaltiger zu decken.

Die Geschwindigkeit des Nachfragewachstums stellt die Energieversorgung jedoch vor erhebliche Herausforderungen. Um den stark steigenden Strombedarf zu decken, wird insbesondere in den USA verstärkt auf neue gasbetriebene Kraftwerkskapazitäten zurückgegriffen. Diese können kurzfristig den Ausbau von Datenzentren unterstützen, stehen jedoch teilweise im Widerspruch zu den langfristigen Zielen der Dekarbonisierung, da sie die Abhängigkeit von fossilen Energieträgern verlängern können.

Datenzentren könnten zum Bremsfaktor der Energiewende in den USA werden



Quelle: EIA (August 2026), Swiss Life Asset Managers Research, geplante Stromerzeugungskapazitäten in den USA (GW).

Risiken, die Investoren im Blick behalten sollten

Ein Grossteil der Diskussion rund um Datenzentren konzentriert sich derzeit auf die Nachfrage nach künstlicher Intelligenz, den steigenden Stromverbrauch oder Nachhaltigkeitsaspekte. Diese Themen sind zweifellos relevant. Gleichzeitig erhalten einige der potenziell folgenreichsten Risiken für institutionelle Investoren deutlich weniger Aufmerksamkeit. Vielfach handelt es sich dabei nicht um technologische Risiken, sondern um strukturelle Fragestellungen, die sich aus Portfoliokonstruktionen, physischen Infrastrukturengpässen, Klimarisiken oder der gesellschaftlichen Akzeptanz ergeben. Mit zunehmender Reife der Anlageklasse dürfte es für Investoren wichtiger werden, ihren Risikorahmen über klassische Immobilien- und Infrastrukturüberlegungen hinaus zu erweitern.

1) Konzentrationsrisiken sind grosser, als sie auf den ersten Blick erscheinen

Datenzentren sind heute über zahlreiche Anlageklassen und Investmentstrategien hinweg vertreten. Was auf den ersten Blick diversifiziert erscheint, ist häufig vom selben fundamentalen Treiber abhängig: Der wachsenden Nachfrage nach Rechenleistung. Diversifikationseffekte über verschiedene Anlageklassen hinweg können dadurch überschätzt werden.

Implikation für Investoren: Diversifikation über verschiedene Anlagevehikel reduziert nicht zwangsläufig die Abhängigkeit von KI-, Cloud- und Rechenleistungs-Wachstum.

2) Klimarisiken entwickeln sich zunehmend zu Bewertungsrisiken

Klimarisiken sind längst nicht mehr nur eine ESG-Fragestellung. Mit steigender Rechenleistung nehmen auch der Kühlungsbedarf, Stromverbrauch und die Bedeutung der Wasserverfügbarkeit zu. Gleichzeitig können Hitze, Dürre oder Extremwetterereignisse die Betriebskosten erhöhen und die langfristige Attraktivität von Standorten beeinträchtigen. Klimaresilienz wirkt sich damit zunehmend sowohl auf Bewertungen als auch die Entwicklung neuer Projekte aus.

Implikation für Investoren: Attraktive Strommärkte können unattraktive risikoadjustierte Renditen liefern, wenn sie gleichzeitig erheblichen Klima- und Umweltrisiken ausgesetzt sind.

3) Infrastrukturengpässe reichen über den Netzanschluss hinaus

Die Sicherung eines Netzanschlusses stellt nur einen Teil der Herausforderung dar. Transformatoren, Schaltanlagen und notwendige Netzausbauten entwickeln sich zunehmend zu Engpässen und können Projekte trotz vorhandener Nachfrage, Finanzierung und Genehmigungen verzögern. Gleichzeitig verkürzen Fortschritte bei KI-Hardware die Technologiezyklen und erhöhen den Druck, Investitionen rasch zu amortisieren.

Implikation für Investoren: Einschränkungen der elektrischen Infrastruktur und die Gefahr technologischer Obsoleszenz können Projektlaufzeiten, Kapitalbedarf und langfristige Renditen wesentlich beeinflussen.

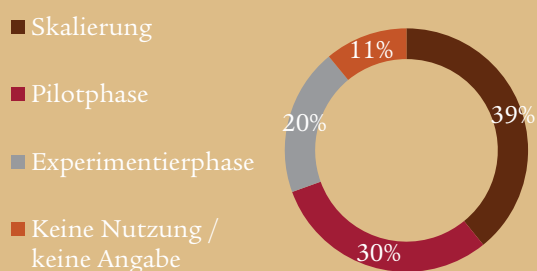
4) Gesellschaftliche Akzeptanz wird zum strategischen Erfolgsfaktor

Mit zunehmender Grösse und steigendem Energiebedarf wächst in vielen Regionen der Widerstand gegen neue Datenzentrumsprojekte. Bedenken hinsichtlich Stromverbrauchs, Wasserbedarf, Flächennutzung und Umweltauswirkungen haben bereits in mehreren Märkten zu Projektverzögerungen, strengeren Genehmigungsanforderungen oder temporären Moratorien geführt. Die Bedeutung gesellschaftlicher Akzeptanz dürfte daher weiter zunehmen.

Implikation für Investoren: Was lange Zeit primär eine technische Herausforderung war, entwickelt sich zunehmend zu einer politischen und gesellschaftlichen Fragestellung.

5) Der wirtschaftliche Nutzen von KI ist noch nicht flächendeckend sichtbar

Die Einführung künstlicher Intelligenz schreitet insbesondere bei grossen Unternehmen voran. Die wirtschaftlichen Auswirkungen fallen bislang jedoch uneinheitlich aus. Viele Unternehmen befinden sich weiterhin in der Pilot- oder Skalierungsphase, während steigende Betriebskosten häufig als Hindernis für eine breitere Nutzung genannt werden.



Quelle: McKinsey (August 2026).

6) Die Finanzierung des KI-Booms könnte die Kreditmärkte verändern

Bisher wurden die Investitionen in KI-Infrastruktur vorwiegend durch interne Cashflows und privates Kapital finanziert. Mit zunehmender Grösse der Investitionsprogramme dürfte jedoch der Bedarf an Fremdkapital steigen. Dadurch könnte sich die Verflechtung zwischen Technologieunternehmen, Infrastrukturanlagen und den Kreditmärkten weiter verstärken. Darauf deutet auch die starke Zunahme des Emissionsvolumens von Investment-Grade-Anleihen US-amerikanischer Technologieunternehmen hin.

Emissionsvolumen von Investment-Grade-Anleihen (gerundet, in Mrd. USD)

	2024	2025	% Veränderung
Tech. USA	108.7	230.6	112.2%
Global	6'227.6	6'875.0	10.4%
USA	1'213.1	1'382.8	14.0%

Quelle: Refinitiv (Dezember 2025).

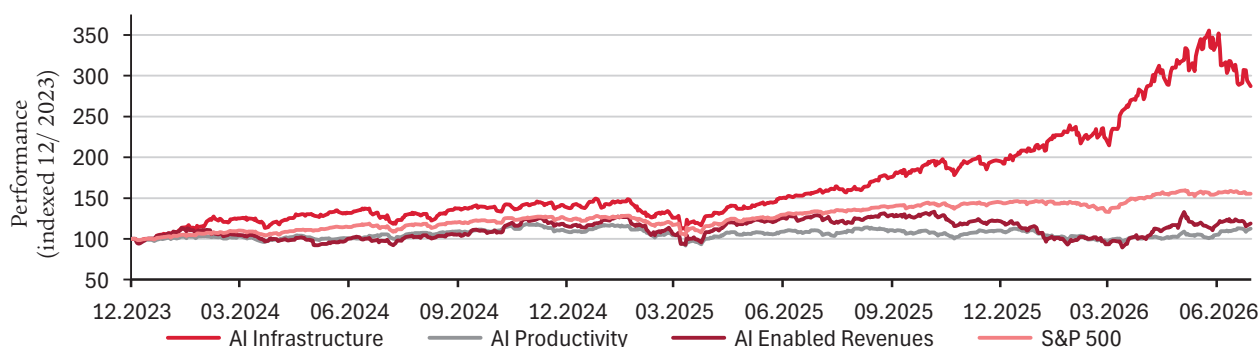
Die Rolle von Datenzentren im Portfolio

Aus Anlegersicht nehmen Datenzentren eine besondere Stellung im Universum der privaten Kapitalanlagen ein. Sie vereinen Eigenschaften klassischer Infrastrukturanlagen wie langfristige Vertragsstrukturen, hohe Kundenbindung und Wechselkosten sowie ihre geschäftskritische Bedeutung für den Betrieb digitaler Anwendungen mit strukturellen Wachstumstreibern, die traditionell eher dem Technologiesektor zugeschrieben werden. Nur wenige Anlageklassen bieten eine vergleichbare Kombination aus vertraglich abgesicherten Cashflows und langfristigem Wachstumspotenzial.

Historisch erzielten Datenzentren attraktive Renditen, die mit jenen von Private Equity, traditioneller Infrastruktur und börsenkotierten Aktienanlagen vergleichbar waren. Gleichzeitig bleibt der Sektor stärker als klassische Infrastruktur vom technologischen Fortschritt und der Nachfrage nach Rechenleistung abhängig.

Die jüngste Marktentwicklung unterstreicht diese besondere Stellung. Unternehmen mit Bezug zu KI-Infrastruktur konnten breite Aktienmärkte deutlich übertreffen und zeigen, wie stark Investoren dieses strukturelle Wachstum derzeit honorieren.

KI-getriebene Infrastrukturunternehmen entwickelten sich zuletzt deutlich besser als breite Aktienmärkte



Quelle: Bloomberg (August 2026), Swiss Life Asset Managers. Nur zu Illustrationszwecken.

Wenn unterschiedliche Anlageklassen vom selben Wachstumstreiber abhängen

Investitionen in Datenzentren sind nicht ausschliesslich im Infrastrukturbereich anzutreffen. Investoren erhalten Zugang über Infrastruktur-, Immobilien-, Private Equity- und Private Credit-Strategien.

Somit mögen Anlagen über Infrastruktur-, Immobilien- oder Private Equity-Strategien hinweg auf den ersten Blick diversifiziert erscheinen. Tatsächlich sind einige der zugrundeliegenden Investments zunehmend vom gleichen fundamentalen Treiber abhängig: Der Nachfrage nach Rechenleistung. Für Investoren ist deshalb wichtig, nebst der Allokation auf Ebene der Anlageklassen auch die Exponierung gegenüber zugrunde liegenden strukturellen Wachstumstreibern zu betrachten.

Diversifikation durch Datenzentren innerhalb von Real Asset Portfolios

Gleichzeitig können Investments in Datenzentren innerhalb eines breiteren Real Asset Portfolios

durchaus einen wichtigen Diversifikationsbeitrag leisten. Die wirtschaftlichen Treiber des Sektors unterscheiden sich deutlich von jenen traditioneller Immobiliensegmente wie Büro-, Einzelhandels- oder Wohnimmobilien. Während deren Entwicklung stärker von Beschäftigung, Konsumausgaben, Haushaltsbildung und lokalen Wirtschaftszyklen beeinflusst wird, wird die Nachfrage nach Datenzentren primär durch Digitalisierung, Cloud Computing und die steigende Nachfrage nach Rechenleistung bestimmt.

Für Immobilieninvestoren kann eine gezielte Beimischung digitaler Infrastruktur daher die Diversifikation verbessern und gleichzeitig den Zugang zu einigen der nachhaltigsten strukturellen Wachstumstrends der Weltwirtschaft eröffnen. Diese Unterscheidung ist jedoch wichtig: Während Datenzentren die Diversifikation innerhalb eines Real-Asset-Portfolios erhöhen können, steigern sie gleichzeitig die Exponierung gegenüber einem gemeinsamen Megatrend – dem kontinuierlichen Wachstum der globalen Rechenleistung.

Die zehn wichtigsten Erkenntnisse für Investoren

1. Zugang zu Strom wird wertvoller als Zugang zu Boden.
In vielen Märkten ist nicht mehr die Verfügbarkeit von Bauland der entscheidende Engpass, sondern die Fähigkeit, einen verlässlichen Zugang zu Strom und Netzkapazitäten sicherzustellen.
2. KI-Inferenz könnte sich als der nachhaltigere Nachfragetreiber erweisen.
Während das Training von KI-Modellen weiterhin von wenigen Hyperscalern dominiert wird, wird die Nachfrage nach Inferenzleistungen zunehmend von der breiten Einführung von KI in Unternehmen, Anwendungen und im Konsumentenbereich abhängen.
3. Etablierte digitale Ökosysteme schaffen zusätzlichen Wert.
Anlagen innerhalb etablierter Cloud- und Netzwerkinfrastrukturen profitieren von Konnektivitätsvorteilen, hohen Wechselkosten und mehreren voneinander unabhängigen Nachfragequellen und können höhere Bewertungen rechtfertigen.
4. Flexible Energielösungen werden zu strategischen Wettbewerbsvorteilen.
Datenzentren mit flexiblem Netzzugang, Speicherlösungen oder eigener Stromerzeugung können erhebliche Vorteile bei der Verfügbarkeit neuer Kapazitäten erzielen.
5. Angebotsengpässe könnten die Preissetzungsmacht in Europa stärken.
Begrenzte Netzkapazitäten, lange Anschlussfristen und anspruchsvolle Genehmigungsprozesse sprechen dafür, dass hochwertige Anlagen auch künftig von einem günstigen Angebots-Nachfrage-Verhältnis profitieren dürften.
6. Neue Standorte mit hoher Energieverfügbarkeit dürften Marktanteile gewinnen.
Das zukünftige Wachstum verlagert sich zunehmend über die traditionellen Kernmärkte hinaus in Regionen mit hoher Energieverfügbarkeit, attraktiven Rahmenbedingungen und einem grossen Angebot erneuerbarer Energien.
7. Datenzentren entwickeln sich zunehmend zu kritischer Infrastruktur.
Ihre wirtschaftliche Bedeutung, hohe betriebliche Relevanz und enge Verflechtung mit den Energiesystemen machen Datenzentren strukturell näher an Infrastrukturinvestitionen als an traditionelle Immobilienanlagen.
8. Klimaresilienz wird zu einem Renditetreiber.
Wasserverfügbarkeit, Klimaresilienz und die Anfälligkeit für Extremwetterereignisse entwickeln sich zu wichtigen Einflussfaktoren für den langfristigen Anlagewert und die Entwicklung neuer Projekte.
9. Vermeintliche Diversifikation kann Konzentrationsrisiken verdecken.
Investitionen in Datenzentren können über verschiedene Anlageklassen hinweg diversifiziert erscheinen, bleiben jedoch häufig von demselben fundamentalen Treiber abhängig: Der Nachfrage nach Rechenleistung.
10. Die grössten Gewinner könnten jene sein, die sowohl Rechenleistung als auch Energie kontrollieren.
Betreiber, die Datenzentrumskapazitäten mit gesichertem Energiezugang, flexiblen Versorgungslösungen und ausgeprägter Energiekompetenz verbinden, dürften über besonders nachhaltige Wettbewerbsvorteile verfügen.



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Co-investment models in infrastructure



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Co-investment
models in
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Allocations – a moving target

Drivers of investor allocations to different asset classes vary, with the possible inflation hedge offered by infrastructure a key attraction. More broadly, and in the longer term, drivers for investors include risk-return expectations and anticipated liquidity needs as well as regulatory constraints. Unlisted infrastructure, as a distinct asset class, is still relatively new, having emerged after 2000 as privatized industries and project finance vehicles created opportunities for new sources of potential returns for institutional investors.

Managers closely monitor investors' stated allocations as potential indicators of where they might source capital commitments. Various data sources offer slightly different perspectives on the broad landscape. Hodes and Weill Associates conduct an annual survey of major institutional investors regarding infrastructure allocations. Their 2026 survey suggests that the main types of institutional investors' target allocations range from 3.8%¹ of assets under management (AuM) for insurance companies up to 9.3% for private pension funds, based on weighted a AuM measure.

However, investors are not always fully allocated at their target levels, with actual allocations reported to be around 106 basis points below the 6.2% average target.² This gap has narrowed compared to two years ago, when allocations were around 120 basis points below the 2024 average target of 5.5%. The relative youth of the infrastructure asset class aligns with the latest survey's finding that 58% of investors report being under-allocated, as targets have continued to rise.

Innovation through imitation

As the asset class continues to gain ground on its big brother real estate, in particular in the closed-end fund space, models more common across private markets are finding fertile ground in unlisted infrastructure. While fund of funds models are not new in infrastructure, their value in helping access larger stand-alone deals via co-investments is increasingly relevant.

Co-investments are a growing investment model in the private infrastructure market where general partners (GPs), seek additional equity by offering investors the opportunity to co-invest alongside their fund into an infrastructure asset. Co-investments, typically offered to existing primary fund investors, allow GPs to manage fund restrictions like deal size constraints and sectoral/geographical concentration limits. Long-standing GP relationships support offering clients higher volumes of co-investment opportunities, potentially providing benefits including GP- and asset-level diversification, competitive fees, faster capital deployment and lower execution risks.

A co-investment is a limited partner's (LP's) ownership interest in a single infrastructure asset or portfolio of infrastructure assets alongside the GP who originates and manages the transaction. Unlike blind-pool funds, co-investing requires asset-level underwriting (commercial, technical, financial, legal, tax, operational, ESG) and a monitoring plan tailored to the asset's contracts, regulation, financing, capex and opex profile.

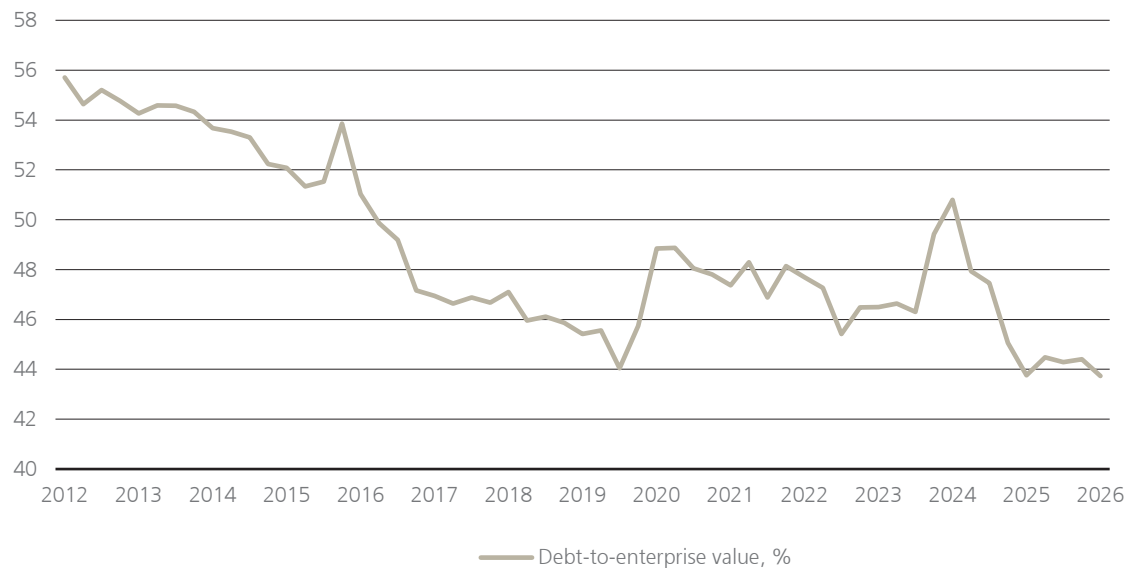
¹ 2026 Institutional Infrastructure Allocations Monitor. Ithaca, NY: Cornell University's Brooks Center for Infrastructure and Hodes Weill & Associates, LP, June 2026. 40PP.

² Ibid.

Higher rates drive demand for equity

Tighter monetary policy since 2022 has encouraged managers to reduce the use of debt in infrastructure transactions, resulting in increased demand for equity capital. In 2015, when the cost of BBB debt in Europe was around 1.5%, debt in infrastructure deals was at circa 5x EBITDA.³ With rates significantly higher in recent years, closer to 4%, leverage moderated to ~3.5x in 2024. Debt to enterprise values also fell back to a new low of 44% as of Q1 2026 (Figure 1). This followed a brief rise in late 2023 as valuations came under pressure from the impact of elevated interest rates. The speed and magnitude of rate rises from mid-2022 gave a strong signal to rein in the use of debt. We believe this has increased the relevance of co-investments as a key source of equity for larger transactions in recent years.

Figure 1: Infrastructure asset leverage reached a new low at the end of 2024
(Global infrastructure debt to enterprise values, %)



Source: MSCI Asset level infrastructure index, March 2026.

Scale may demand model diversity

Co-investments are typically larger transactions than those within the parent fund. Their inclusion in the fund may surpass agreed thresholds because of their scale, sector, region or strategy. As such, structuring co-investments so that most of the exposure sits outside the fund helps avoid concentration risks. Despite this, GPs pursue them as high-conviction investments that allow the parent fund some share of the total opportunity. This is in addition to extending the option to commit capital to funds and wider LP networks as part of a broader syndication of equity. Despite their scale, the LPs' ticket size for co-investments will generally be smaller than their commitment in the parent fund.

Co-investments are typically related to a specific single transaction, so capital is often called faster than in blind-pool structures – helping LPs to achieve target allocations more quickly. The scale of these assets – often more developed operational brownfield and diversified platforms – helps mitigate some of the J-curve effects associated with slower drawdowns.

³ Infraction transaction data accessed February 2026.

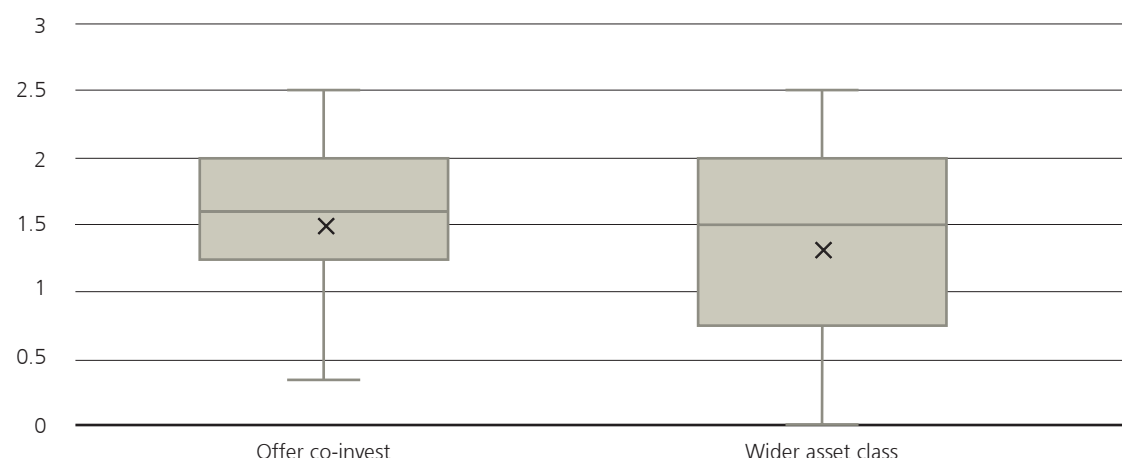
Where access meets opportunity – relational deal sourcing

In infrastructure, access matters most when it provides early visibility of opportunities, clarity on allocations and enough information to underwrite within tight deal timelines. Longstanding investor/manager partnerships can help yield more proprietary opportunities, including pre-signing co-underwrites where LPs review fuller diligence materials before signing. Building trust through recurrent deals helps convert opportunistic processes into programmatic ones, achieving scale and increasing capacity through efficiencies in due diligence and operational management. This creates a virtuous cycle that drives relationship-based sourcing as GPs prioritize partners they know can move quickly to meet accelerated transaction closings. This trust is also built on reciprocal reliability, helping partners execute and avoid wasted effort from lost opportunities. This is an alternative to pursuing broadly marketed opportunities, which can be more challenging to deliver with less aligned and experienced parties.

Negotiated economics and lower potential expense ratios

Co-investments can improve net return outcomes. This is because management fees are often negotiated at the asset level and are frequently low or fee free, which may contribute to a reduced total expense ratio. UBS's experience in infrastructure since 2004 suggests a fee saving between broadly diversified fund⁴ of funds and co-investment funds of around 240bps.⁵ This is particularly important because analysis shows that infrastructure funds that offer co-investments tend to have higher management fees during the investment period than the wider asset class (Figure 2). LPs are in essence paying for the option to be involved in co-investments. Take-up will vary depending on the sophistication and capacity of investors to be involved in transactions, with some paying for access to opportunities they do not pursue.

Figure 2: Funds offering co-investments charge higher fees during the investment period
(Infrastructure fund management fees during investment period, %)



Source: Preqin Pro, February 2026. UGA Infrastructure analysis. The greyed box is the interquartile range, the line in the box is the median, the cross is the arithmetic average. The distributions are statistically significantly different to the 5% level ($p = 0.032$).

⁴ Existing fund available to Swiss pension funds.

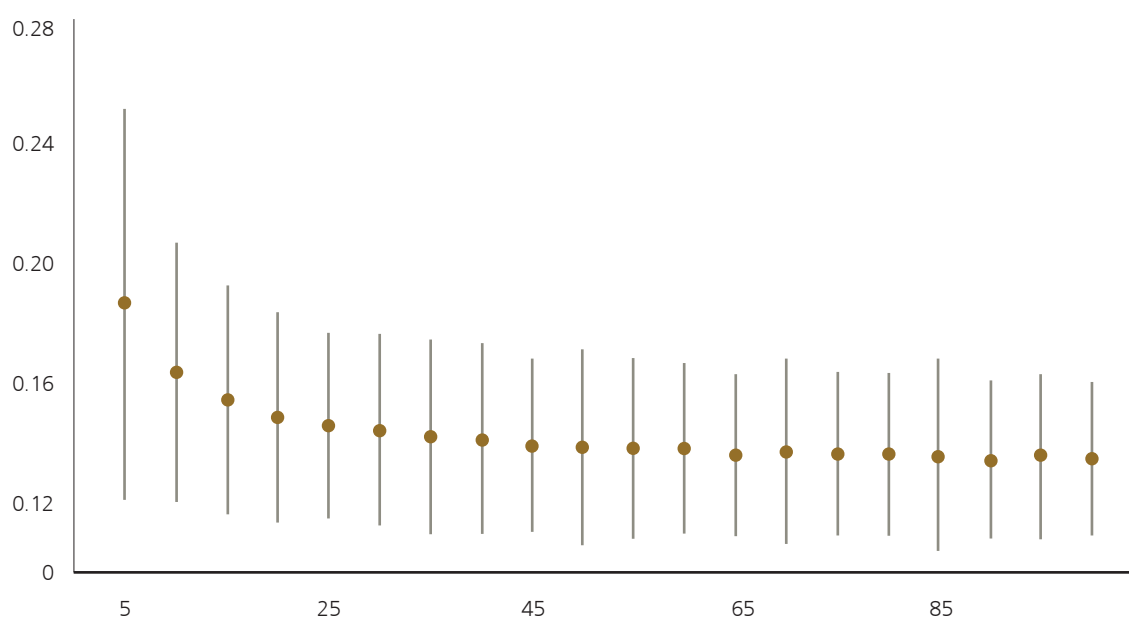
⁵ Underlying fund expenses do not include secondary funds and fund continuation vehicles. 3-year average of the total expense ratio (TER) figures published in 2022-2024. Including management fees, performance fees, and other operating expenses such as administration fees, audit fees, legal fees, professional fees.

Co-investment funds

Separately, co-investment funds may allow investors to gain exposure to a broader portfolio of individual co-investments. Co-investment funds are made up of individual exposures to a variety of co-investments, sourced from a broad set of managers. Fund of funds providers are uniquely placed to develop co-investment fund products, as they are embedded in manager networks, enabling the sourcing of high-quality transaction pipelines. The diverse relationships built over many years, as well as expertise in more direct investment appraisal, are both crucial in developing successful co-investment funds. Simply pursuing all co-investment opportunities without expertise in asset selection may lead to sub-optimal returns over the long term.

Co-investment fund models sidestep the parent funds, and where experience allows provide exposure to a portfolio of established platforms across sectors, regions and strategies. Simulations from EDHEC research,⁶ specifically on infrastructure asset performance volatility, affirm the textbook notion that a portfolio requires 30+ assets to realize the benefits of diversification.⁷ However, further meaningful reductions in performance volatility can be seen beyond this scale, extending into the 60+ asset portfolio range (Figure 3). The scale of individual co-investments may make the required size of portfolios for co-investment funds even larger, so accessing broader exposures is of heightened importance.

Figure 3: Performance volatility continues to fall as infrastructure portfolios expand beyond 30 assets
(Mean portfolio volatility and number of infrastructure assets)



Source: Edhec Infrastructure & Private Assets Research Institute, March 2024.

⁶ EDHEC Infrastructure and private assets research institute – Achieving diversification in unlisted infrastructure investment: smart infra portfolio construction (2024).

⁷ Diversification does not assure a profit or protect against a loss and cannot guarantee that any goal or objective will be achieved.

Flattening the learning curve

For those investors looking to develop in-house expertise to support ambitions of building direct exposures to infrastructure assets, co-investments can help flatten the learning curve. Engaging in a non-discretionary mandate leaves the final decision to be involved in the investment with the LP, while also having the expertise and experience of the manager on hand to appraise and articulate the business case. This can save on separate and dedicated engagement with financial advisers, helping reduce reliance on external expertise. The manager can also filter and screen co-investment opportunities in line with the stated deal characteristics agreed when establishing the mandate. Investors may wish to exclude deals in particular regions or sectors, or focus deployment on independent renewable power producers in Europe, for example. This reduces the search costs for investors looking to go direct, as well as allowing access to deals that would not otherwise be available beyond organizations already embedded in manager networks.

Co-investments bring investors closer to the underlying asset, allowing more access to information and aiding monitoring. This can be crucial for those developing more specific and nuanced portfolio ambitions, as well as assessing gaps across in-house expertise and working towards developing direct deal-making capabilities. Figure 4 below gives more detail on the various options for gaining exposure to co-investments in ascending order of required LP expertise and engagement.

Figure 4: LPs have a variety of ways to co-investment to match their preferences

(The alternative methods of co-investment in private markets)

1		<ul style="list-style-type: none"> – How it works: GP offers participation in a specific deal, often through a structured vehicle. – Best suited to: LPs with an existing GP relationship seeking selective access without a full underwriting capability. – LP role: Reviews fit and makes a relatively rapid commitment decision. – Key trade-off: Lower workload and often low or zero fees, but limited control and a short diligence window.
	Syndication Lowest LP input	
2		<ul style="list-style-type: none"> – How it works: A specialist manager pools LP capital across a portfolio of co-investments. – Best suited to: Smaller, newer or resource-constrained LPs seeking diversified exposure. – LP role: Selects and monitors the manager rather than underwriting every asset. – Key trade-off: Diversification and operational efficiency, but limited influence over individual deal selection.
	Co-investment funds Low to moderate LP input	
3		<ul style="list-style-type: none"> – How it works: The LP establishes a dedicated mandate with an experienced GP, with agreed strategy and governance, including helping dictate terms. – Best suited to: LPs seeking tailored deployment without owning the entire appraisal process. – LP role: Sets mandate parameters, participates in governance, and oversees pipeline and portfolio delivery. – Key trade-off: Greater customization and influence, with more negotiation, oversight, cost and structural complexity.
	LP–GP joint venture Moderate to high LP input	
4		<ul style="list-style-type: none"> – How it works: The LP uses an in-house team to underwrite and execute individual investments alongside the GP. – Best suited to: Large LPs with dedicated people, systems, specialist advisers and strong GP relationships. – LP role: Performs asset-level diligence, valuation, structuring, approvals, execution and monitoring. – Key trade-off: Maximum control and direct insight, but the greatest resource, expertise and execution burden.
	Direct co-underwriting Highest LP input	

The background of the slide is a photograph of a long, curved bridge spanning a body of water. The scene is captured during sunset or sunrise, with a warm, orange glow across the sky and water. The bridge's structure is visible, with multiple spans and supports. In the distance, a city skyline is faintly visible on the horizon. A semi-transparent white box contains the text, and a red vertical bar is positioned to the left of the title.

Conclusion

Co-investing shifts the work from manager selection to asset-level analysis and due diligence. Infrastructure underwriting entails appraising the durability of revenues (contracted vs. merchant), inflation linkage, counterparty credit, operating cost pass-through, capex deliverability and refinancing risks, as well as a range of regulatory scenarios. The creation of conservative base and downside cases helps avoid exposure to less resilient business models. Experience proves its value, as repeated market cycles help asset class specialists identify which business models remain resilient through changing tides.

Risk management is strongest when embedded end-to-end: in screening, diligence, structuring, execution and monitoring. Leading programs enforce this through predefined templates that turn uncertain prospects into explicitly quantified risks, requiring documented mitigants.

Infrastructure co-investments are a valuable tool in helping institutional investors achieve their portfolio ambitions in one of the fastest growing private market asset classes. Investing via co-investments with established partners in the sector helps provide access to the net return efficiencies of low or- fee free co-investment offerings. When supported by institutional-grade due diligence and risk governance, investors may speed up capital deployment while also achieving diversification through established co-investment funds.

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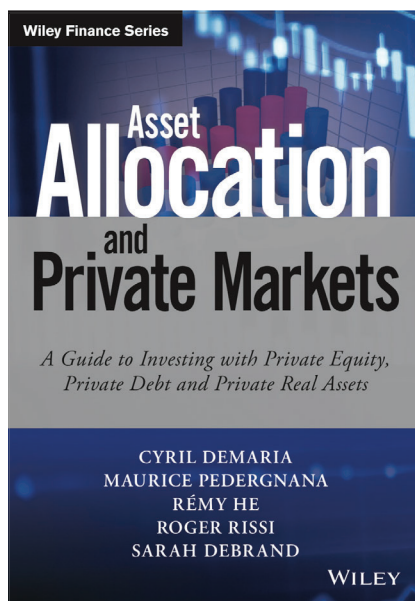
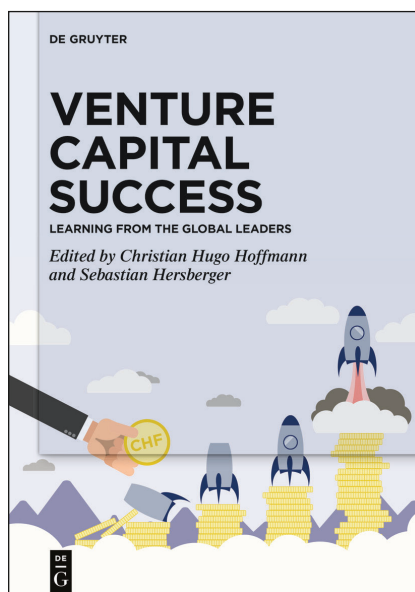
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