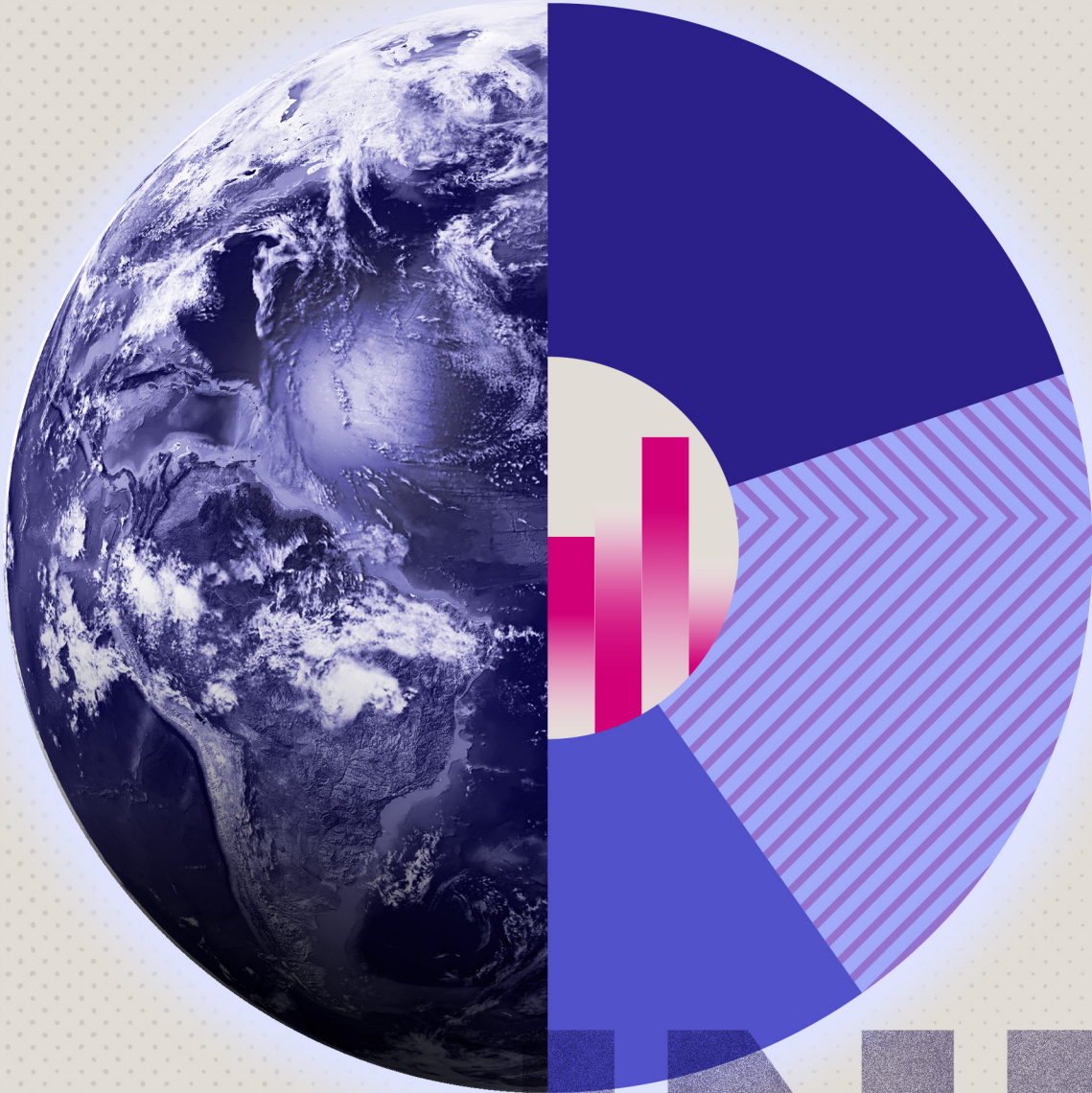


insights⁺

Preqin Global Report

Infrastructure 2025



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PREQIN

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Executive summary

The pace of inflows remains weak, but performance is resilient



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Unlisted infrastructure managers continue to experience a challenging fundraising market environment. Despite the continued strong performance of assets through the global pandemic and over the longer term, investor commitments have waned as part of a rebalancing, following a surge of inflows in 2022. Higher rates and baked-in inflation deepened J-curves and pushed out payback periods. While these factors are waning, the deal market's revival fundamentally relies on a stronger fundraising market, which may not return in the short term.

The 'Year in review: 2024' chapter examines the fundraising data to weigh the drivers and drags on what continues to be a subdued market. The share of fundraising by North America-focused funds is slowing after the rush witnessed in 2022, as funds targeting the region back up on the road. APAC fundraising has been a saving grace this year, with the average size of funds targeting that region reaching a new record high. A quieter deals market reflects this slow fundraising pace, although the telecoms sector has shrugged off the aggregate trend, stoked by demand for data centers. Despite dry powder reserves falling, stocks remain ample to maintain valuations until at least mid-2025 – by then, fundraising may have picked up if rate reductions continue.

Looking across our deals data over the long term by region and sector, the share of primary deals gives insights into the maturation of differing markets, with developed regions now dominated by secondary deals for operational assets. 'The ABC of capital investment' chapter considers the motives for capital investment to better understand the business case for infrastructure investment, as well as reflecting on the different dynamics at play in developed and emerging markets. The fact that the renewable energy sector exhibits a much higher share of primary deals than conventional energy attests to the long-term potential of the energy transition for continued growth in capital deployment.

Our latest insights on the renewables sector, in the 'Renewable energy' chapter, reveal the recent successes of renewables funds in a competitive marketplace, assessing the sector's hosting of first-time fundraisers. We also examine data for the latest UK AR6 Contracts for Difference auction, including the emergence of new innovative tidal stream projects that promise to broaden the technologies available to deliver the energy transition.

Across emerging markets, we reveal how infrastructure accounts for a declining share of deals in Asia in the 'Infrastructure in emerging markets' chapter. Other alternative asset classes, notably venture capital, have grown much faster in the region. The constraint on private capital infrastructure from the greater prevalence of state-owned enterprises in the region, crowding out private capital opportunities with tax-funded investment in infrastructure projects, is also explored. The strong run of APAC-focused fundraising observed in 2024 so far suggests this is currently of little concern.

Finally, we appraise our latest investor and fund manager surveys from November this year to compare their views on the state of the market and expectations for the coming year. One key finding here relates to the 41% of infrastructure managers that believe the geopolitical landscape presents the greatest challenge to return generation in the next 12 months. Trump's reinstatement at the White House and the lingering prospect of a reset on tax credit subsidies, alongside heightened import tariffs on Chinese cleantech, could see renewables momentum in North America falter through 2025.

Key findings

1 North America-focused fundraising contributes to broader slowdown

The number of North America-focused funds closing fell from a peak of 63 in 2021 to just 18 in the first three quarters of 2024. This was not an issue until this year, because the aggregate capital raised by North America-focused funds was buoyant and the average fund size remained high, surging to more than \$2.0bn in 2022. However, both the number of funds and their average size have since reverted to the long-term average. Aggregate capital raised by North America-focused funds to the third quarter of 2024 was just half the average value over the preceding five years' first three quarters. Uncertainty surrounding the revision of certain US energy policies may subdue fundraising for the region, but only in the short term. Investors seem keen on the market, with 92% suggesting it is the developed market that offers the best opportunities (see 'Our survey: Taking the pulse' chapter).

2 Dominance of primary deals returns, driven by resilience in renewables

Despite a slowdown in aggregate deal volumes to the third quarter of 2024, primary deals accounted for 52% of these – their biggest share since 2010. Primary deals underpin the secondary market, so this finding is reassuring. While volumes remain behind 2023 on an annualized basis, the fourth quarter often delivers a surge in activity, so 2024 may yet be an improvement on 2023. Primary deals in the renewable energy market continued to be resilient, accounting for 69% of deals to the third quarter of 2024 – a bigger share than at any point since at least 2006. This is an encouraging sign that high interest rates and inflation challenges are being overcome and is a testament to the relevance of the energy transition as a multi-generational investment theme.

3 New record low in dry powder share brings long-term valuation risk

Aggregate dry powder in the asset class fell back 10% to \$335.3bn in the first quarter of 2024 as inflows slowed. The risk to the deals market is contained, however, given the slowing of capital calls, which reduced to \$93bn in the 12 months to the end of the first quarter of 2024. This suggests the market could run for more than three years at its current pace, but dwindling dry powder will at some point bring risks to asset valuations. Dry powder stocks relative to assets under management hit a record low of 24% at the end of the first quarter, although this is unlikely to tempt further managers to enter the fundraising market, given that the number of funds raising and the aggregate capital they're targeting remain at all-time highs.

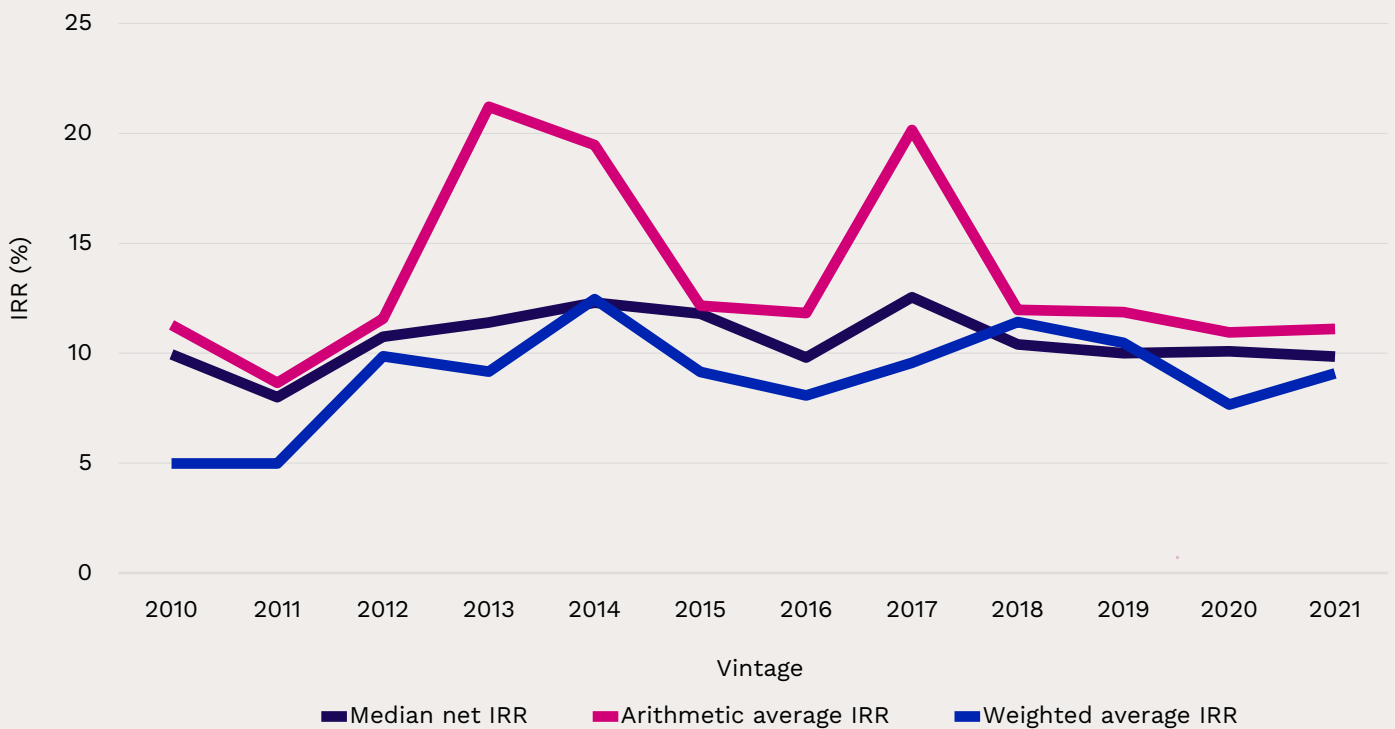
4 Manager concerns about geopolitical landscape come to the fore

The proportion of managers reporting the geopolitical landscape as a key challenge for return generation in the next 12 months rose to 41%, making it the lead concern. This worry may become even more widespread if concrete examples of increasingly isolationist US policies take shape; politics could quite quickly impact cash flows if tariffs on imported equipment start to bite. Interest rates and asset valuations were the next most-pressing issues for managers, each eliciting 36% of responses. On the upside, investors are responding to rate cuts and now seem less concerned about interest rates as a challenge to return generation – down from 65% in 2023 to 47%.

Chart of the year

Size matters in return generation – small funds’ agility can realize upsides

Median, arithmetic, and weighted mean IRRs for infrastructure funds by vintage



Source: Preqin Pro. Data as of June 30, 2024

“ More investors have reported assets are fairly valued than at any other point in the past five years. This suggests more recent vintage IRRs should remain steady, or indeed rise, as exit valuations hold and gain ground amid value for money ”

The performance of infrastructure funds is front and center as investors look to broaden their alternatives allocations, with many looking to capture the energy-transition investment theme with commitments to unlisted infrastructure. Looking at current 2024 reported internal rates of return (IRRs) through the vintages and across different average measures helps answer questions about the association between fund size and performance.

Weighted average returns, influenced more by larger funds, have lingered lower, averaging 1.67 percentage points below the median for vintages 2010–2021. Strong rises in arithmetic average returns for 2013 and 2017 vintages are driven by smaller funds, shown by the milder movements in the weighted average. Further, the more stable median measure shows these returns were not enjoyed broadly across the middle market either.

More investors have reported that assets are fairly valued than at any other point in the past five years (see ‘Our survey: Taking the pulse’ chapter). This suggests more recent vintage IRRs should remain steady, or indeed rise, as exit valuations hold and gain ground amid value for money. Consistency between the three IRR indicators for recent vintages using 2024 data is somewhat artificial, however – only time will reveal the true risks facing these funds, from which a more valid return distribution will emerge.

→ Year in review: 2024

Fundraising and deal markets remain subdued while funds in market targeting North America queue up – but Trump's success may deter renewables investors

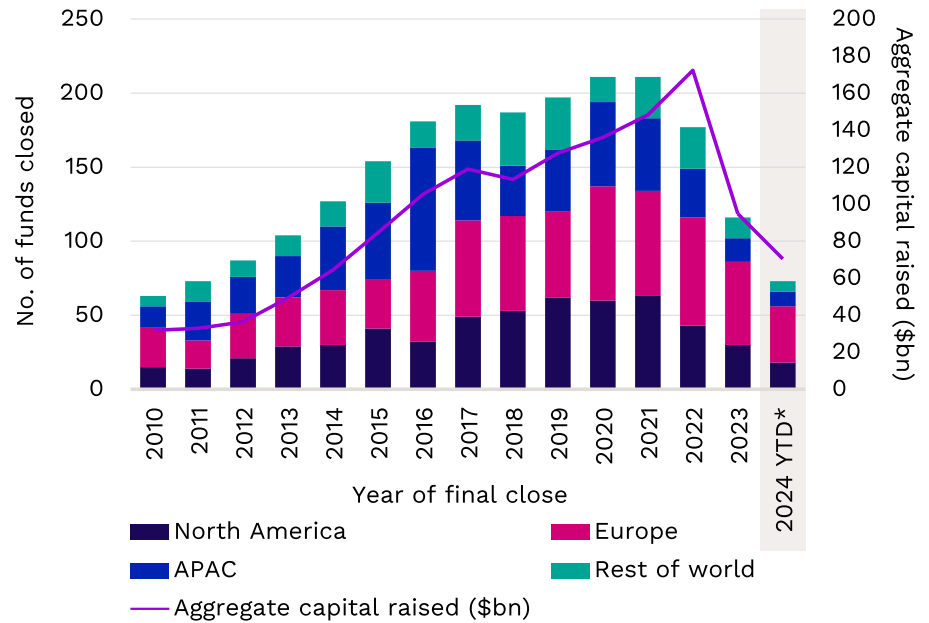


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Infrastructure has endured a prolonged slowdown in fundraising since the beginning of 2023. The drivers of this include a glut of capital raising in 2022 fulfilling investors' allocation ambitions, heightened rates biting on the prospects of the most levered equity asset class, and a broad slowdown in deals and exits delaying capital distributions that would be used to finance new primary fund commitments. The first three quarters of 2024 show a similar pace of fundraising as last year, with just \$70bn raised by the end of the third quarter, versus an average \$136bn raised annually over the preceding five years (Fig. 1.1).

Fig. 1.1: Fundraising pace remains subdued against previous years

Unlisted infrastructure funds closed by primary geographic focus



*YTD to end-Q3 2024

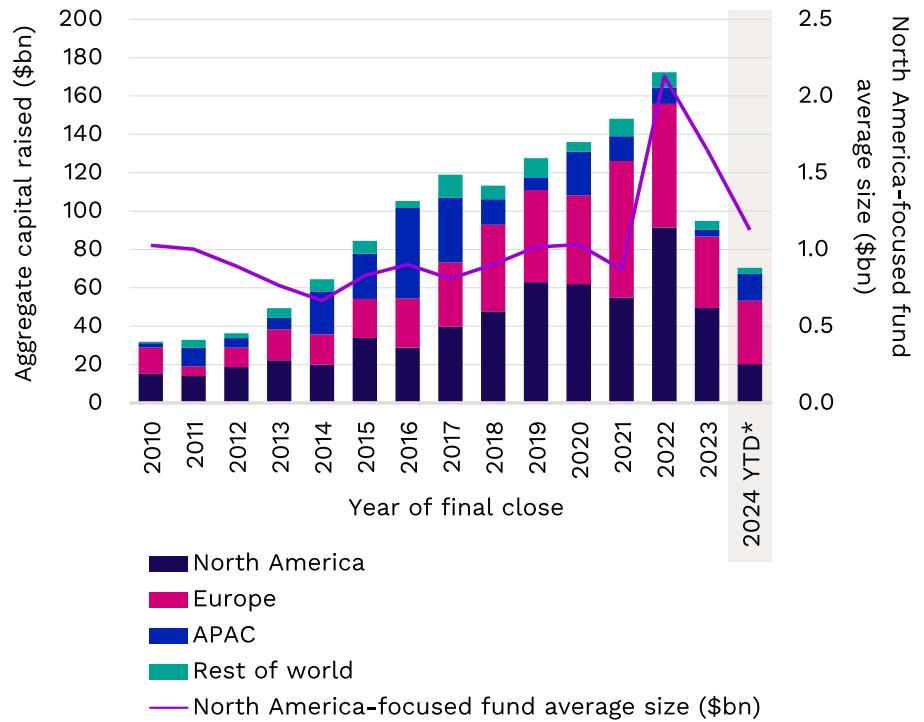
Source: Preqin Pro

New politics in North America may shift fundraising

The number of North America-focused funds closing annually has dropped sharply – from a peak of 63 in 2021 to just 18 in 2024 so far. With buoyant levels of aggregate capital raised this was less of an issue – average fund sizes surged to more than \$2bn in 2022 (Fig. 1.2). However, both the number of funds and their average size have since reverted to the long-term average. The aggregate capital raised by such funds in the first three quarters of 2024 was just 24% that of the same period in 2022.

Fig. 1.2: North America-focused fundraising share recedes over 2024

Aggregate capital raised by unlisted infrastructure funds closed by primary geographic focus



*YTD to end-Q3 2024

Source: Preqin Pro

This is partly a rebalancing following the surge in investment prompted by the Infrastructure Investment and Jobs Act (2021) and Inflation Reduction Act (IRA, 2022). As the dust settles on the outcome of the US presidential election, investors will be looking for signals of Trump’s eagerness to repeal the IRA, given that, at the time of writing, market speculation on this is already moving stock prices.¹ Such a scenario contrasts with Preqin’s forecast of strong fundraising for North America-focused funds in 2025 (see ‘Infrastructure: Preqin’s forecasts through 2029’ chapter). New uncertainties have emerged, particularly around renewables funds targeting the region.

APAC in the spotlight as average fund size reaches record high

Looking at average fund size by region, APAC-focused funds have been the saving grace this year, with average values surging to their highest level (\$1.4bn) in at least 14 years (Fig. 1.3). This is driven by a few particularly large APAC-focused funds, such as KKR’s Asia Pacific Infrastructure Investors II \$6.4bn fund² and Stonepeak’s Asia Infrastructure \$3.3bn fund.³ Both are core funds, which indicates the region is no longer seen as a higher-risk play. As Europe’s attractive renewable energy market continues to draw capital, the average value of Europe-focused infrastructure funds could soon be on a par with their North American peers. Europe-focused funds averaged \$0.9bn in the first three quarters vs. North America’s \$1.1bn.

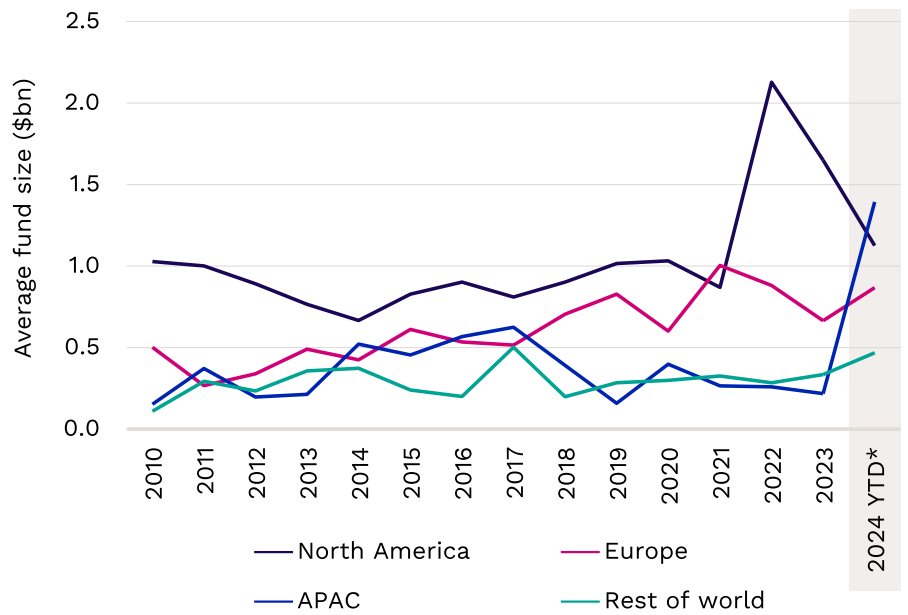
1 <https://www.ft.com/content/6e323b66-a873-439b-9b32-6a869f54d1b1>

2 <https://pro.preqin.com/funds/149477>

3 <https://pro.preqin.com/funds/141882>

Fig. 1.3: Average APAC-focused fund size surges to new high

Average size of unlisted infrastructure funds closed by primary geographic focus



*YTD to end-Q3 2024

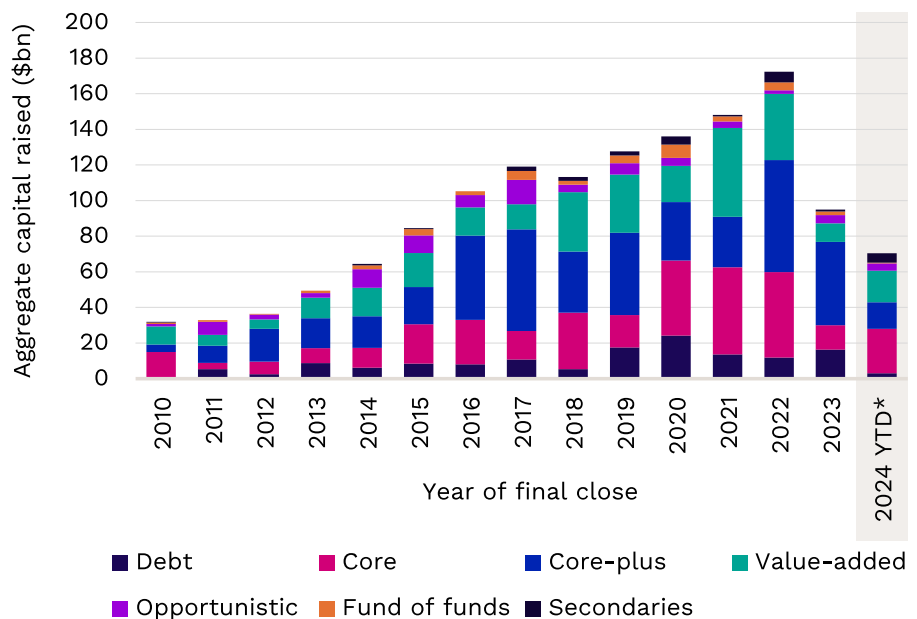
Source: Preqin Pro

The ebb and flow of fundraising across the various infrastructure strategies has led to debt and core-plus losing market share to core and value-added so far in 2024 (Fig. 1.4). One notable strategy to stand out this year is secondaries. Although this is still a nascent part of the market, the largest ever infrastructure-focused secondaries fund, Pantheon’s Global Infrastructure Fund⁴ closed at \$5.3bn in January. It has more flexibility regarding deployment than is usual, citing 30-60% for both Europe and North America, reflecting a desire to maximize the opportunity set for fund stakes. The fund

4 <https://pro.preqin.com/funds/131765>

Fig. 1.4: Debt and core-plus recede against growth in core and value-added

Aggregate capital raised by unlisted infrastructure funds closed by strategy



*YTD to end-Q3 2024

Source: Preqin Pro

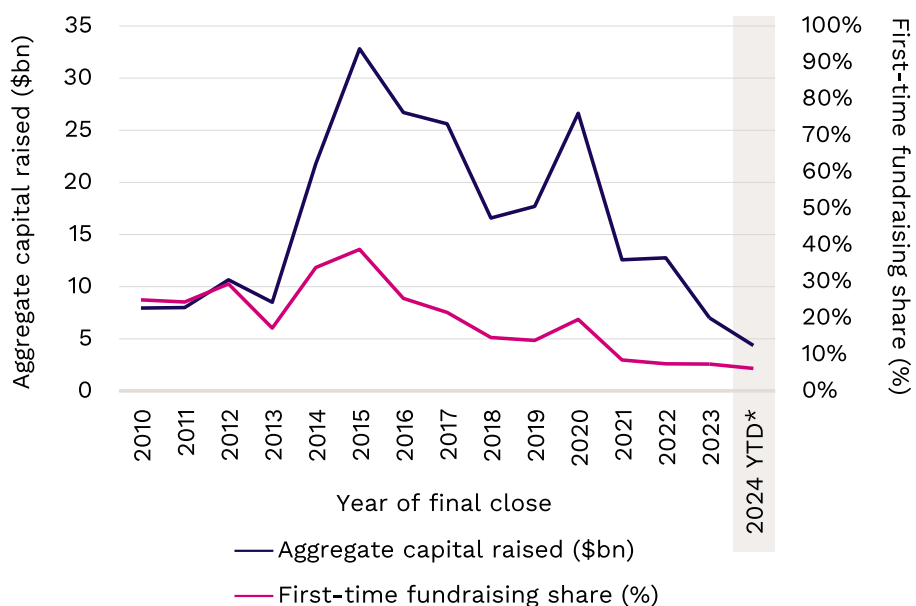
may have an easier time finding these in a market where some managers are delaying exits until further interest rate cuts can aid exit valuations. Impatient investors may well look to secondaries funds to accelerate their distributions.

Established GPs cement their dominance as new leader emerges

The challenging fundraising environment is taking its toll on first-time fundraisers in particular, with the share raised by fledgling managers at an all-time low – down from 38.8% in 2015 to just 6.2% up to the third quarter of 2024 (Fig. 1.5). As established managers push for ever-larger follow-on funds, it is unlikely we’ll see this metric rise back into double digits anytime soon. Over the past 10 years, Brookfield has been the clear leader in terms of fundraising, raising \$96bn in all (Fig. 1.6). However, Blackrock’s recent acquisition of Global Infrastructure Partners means numbers three and six in the table have joined forces – the combined \$98bn they have raised over the past 10 years nudges them in front of Brookfield. With a lower estimated dry powder to capital raised ratio of 24%, compared to Brookfield’s 33%, their combined ability to deploy capital at scale and pace will appeal to investors.

Fig. 1.5: First-time fundraising share drops to new low

Annual global first-time fundraising



*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 1.6: Established fundraisers cement their lead

Largest fund managers by total capital raised for unlisted infrastructure funds in the past 10 years*

Firm	Headquarters	Total capital raised in past 10 years (\$bn)	Estimated dry powder (\$bn)	Dry powder/capital raised in past 10 years (%)
Brookfield Asset Management	Toronto, Canada	95.6	31.4	32.8%
Macquarie Asset Management**	London, UK	73.2	19.0	26.0%
Global Infrastructure Partners	New York, NY, US	61.3	16.4	26.7%
EQT	Stockholm, Sweden	53.6	16.8	31.3%
KKR	New York, NY, US	47.9	21.5	44.9%
BlackRock	New York, NY, US	36.4	7.3	20.0%
Stonepeak	New York, NY, US	34.7	10.1	29.1%
I Squared Capital	Miami, FL, US	34.0	12.2	36.0%
Copenhagen Infrastructure Partners	Copenhagen, Denmark	27.9	10.3	37.0%
Ardian	Paris, France	25.6	10.9	42.6%

*Capital raised by known closed-end unlisted infrastructure funds and separate accounts; does not include capital raised by open-ended funds

Source: Preqin Pro

**Macquarie includes the combination of both Macquarie Infrastructure and Real Assets (MIRA) and Macquarie Infrastructure Debt Investment Solutions (MIDIS)

Largest funds also affected by the slower fundraising pace

One way to break down recent years’ data on fundraising is to stratify it across both the time spent in market and whether initial targets were missed, met, or exceeded. The two charts in Fig. 1.7 do this for the market between 2017 and 2020 and then 2021 to the end of the third quarter of 2024. The lines show the average size of funds closing within the time spent in market. The largest funds tended to close within 13–18 months for both timeframes. However, the fundraising period that recorded the second-largest average fund size has changed: from seven to 12 months for 2017–2020, to 18–24 months for 2021 onwards. Funds are taking longer to close post pandemic – even the largest, which typically rely on re-ups from LPs with whom they have established relationships. In terms of fundraising success, in all but the funds taking seven to 12 months to close we see similar or larger shares of funds achieving above-target close values. This is a positive sign but should be taken with a pinch of salt, as it only represents funds that have reached a final close, and excludes those that remain in the fundraising market.

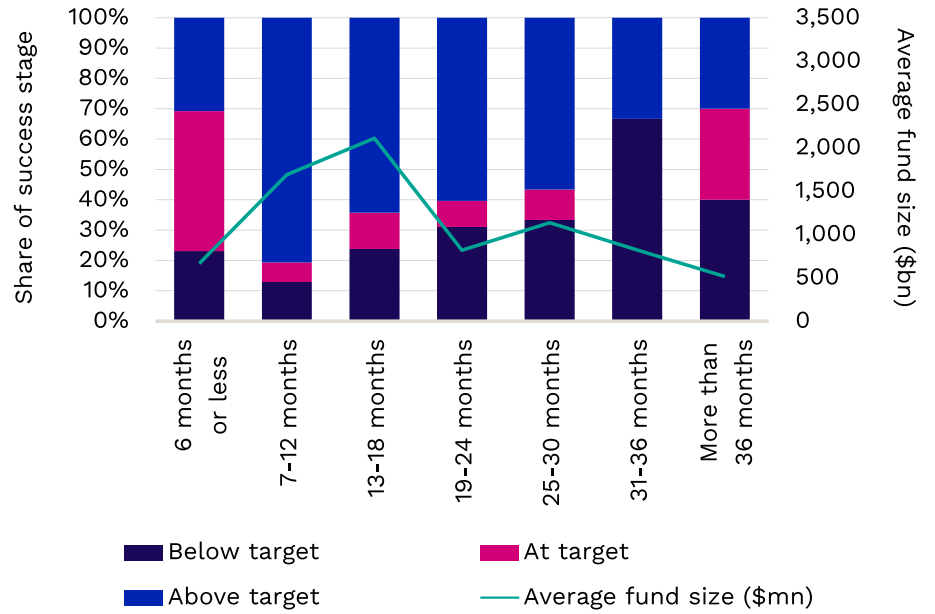
Smaller core funds in market balance against larger opportunistic funds

A growing number of funds remain in market and the risk that many will never reach their target lingers. The pace of new funds commencing fundraising switched up a gear in 2021, amid frantic markets buoyed by pandemic stimulus policies. That growth has only now begun to slow, as managers begin assessing the prospects for raising new funds more critically.

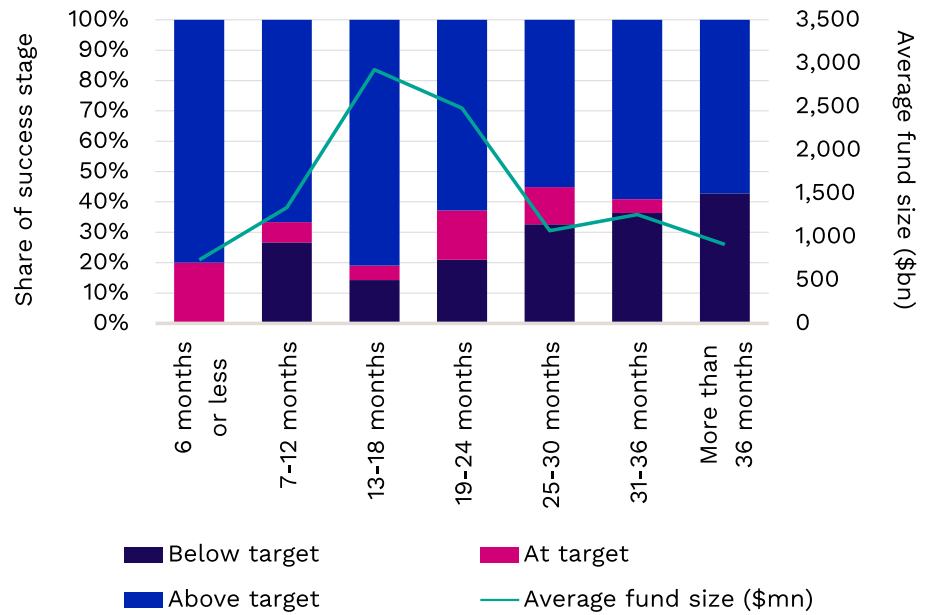
Fig. 1.7: Time in market extends but fundraising success rates similar

Unlisted infrastructure fundraising success by time spent in market

2017–2020



2021–2024 YTD*



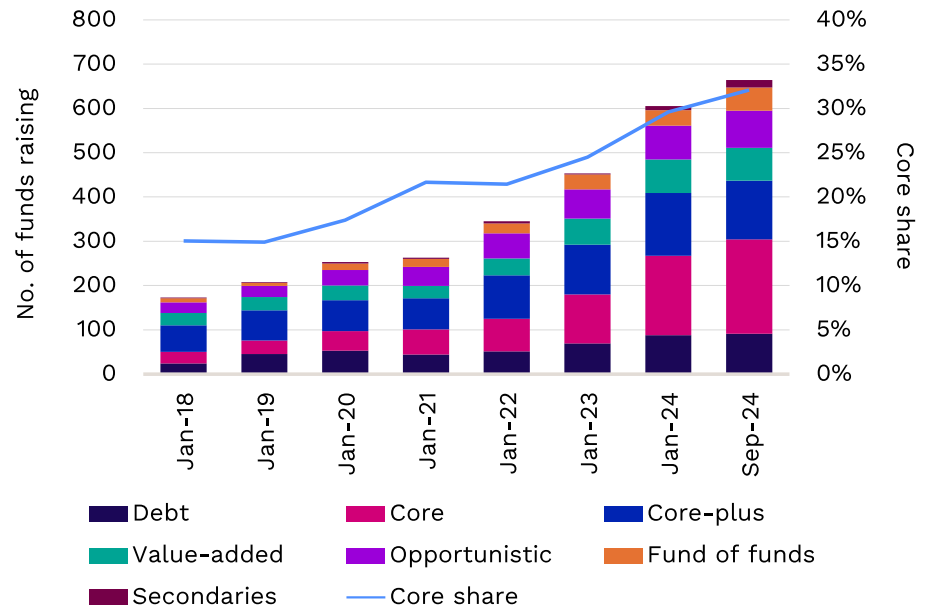
*YTD to end-Q3 2024

Source: Preqin Pro

Despite this, the number of core infrastructure funds in market increased by 19% in the first three quarters of 2024, increasing this strategy's share of the infrastructure funds in market to a new high of 32% (Fig. 1.8). These funds tended to be smaller, with the amount of capital targeted rising just 4.7% over the same period. Opportunistic funds saw the largest increase in capital targeted, at 40%, despite the number of funds rising just 10.5% (Fig. 1.9). Clearly there are different dynamics emerging at each end of the infrastructure equity risk spectrum – smaller funds are pitching in the increasingly competitive core space, and fewer, larger funds dominate the higher-risk strategies such as opportunistic, where competition is less fierce.

Fig. 1.8: Core funds take larger share of funds in market

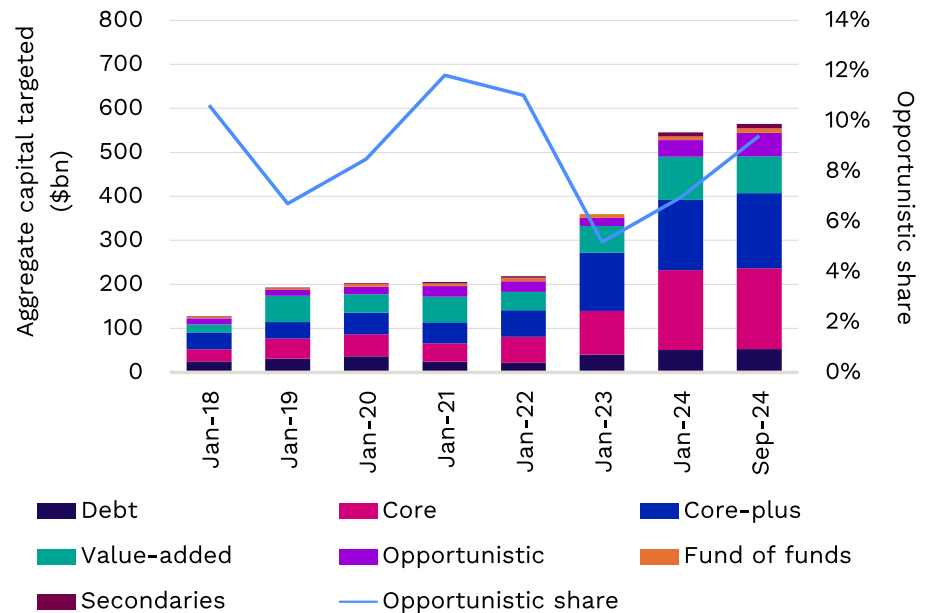
Number of unlisted infrastructure funds in market by primary strategy



Source: Preqin Pro

Fig. 1.9: Larger opportunistic funds have entered the market in 2024

Aggregate capital targeted by unlisted infrastructure funds in market, by primary strategy

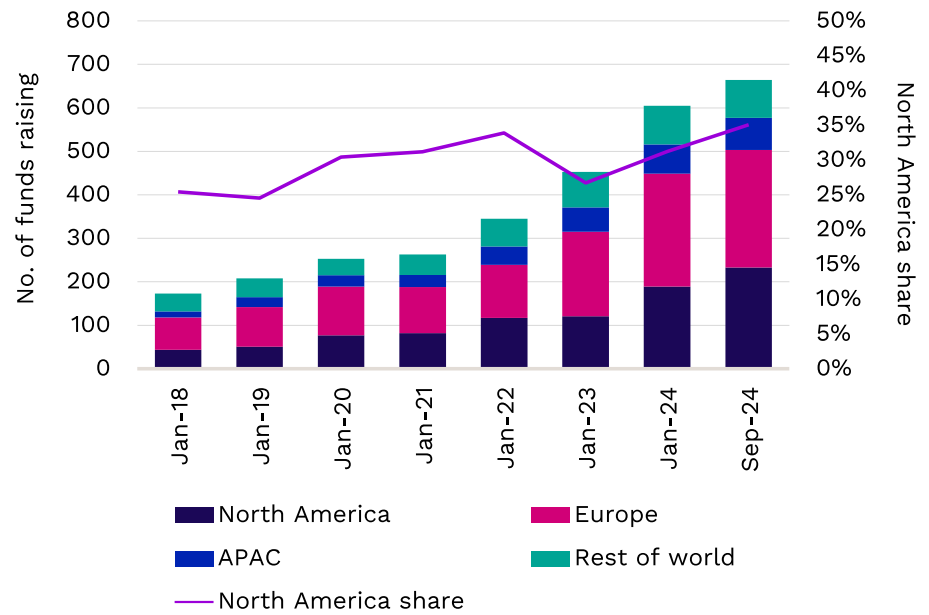


Source: Preqin Pro

In terms of regional focus of funds in market, the greatest growth was in funds targeting North America – up 23% by number and aggregate capital targeted (Fig. 1.10 and 1.11). Whether they can reach final close remains to be seen. Allocations to renewables-focused funds are likely to be hit by new US legislation, given Trump’s stated intention to repeal the Inflation Reduction Act⁵ – and the North American infrastructure market already appears overcrowded. Conversely, conventional energy funds should see a flood of interest going into 2025.

Fig. 1.10: North America-focused funds regain lost ground

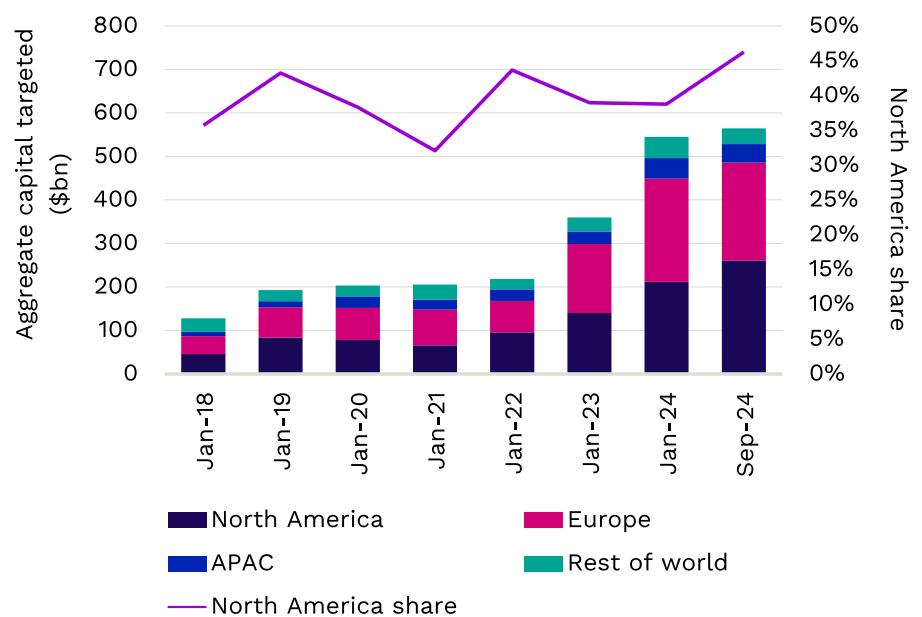
Unlisted infrastructure aggregate capital targeted by primary region focus



Source: Preqin Pro

Fig. 1.11: Largest new funds in market target North America

Unlisted infrastructure aggregate capital targeted by primary region focus



Source: Preqin Pro

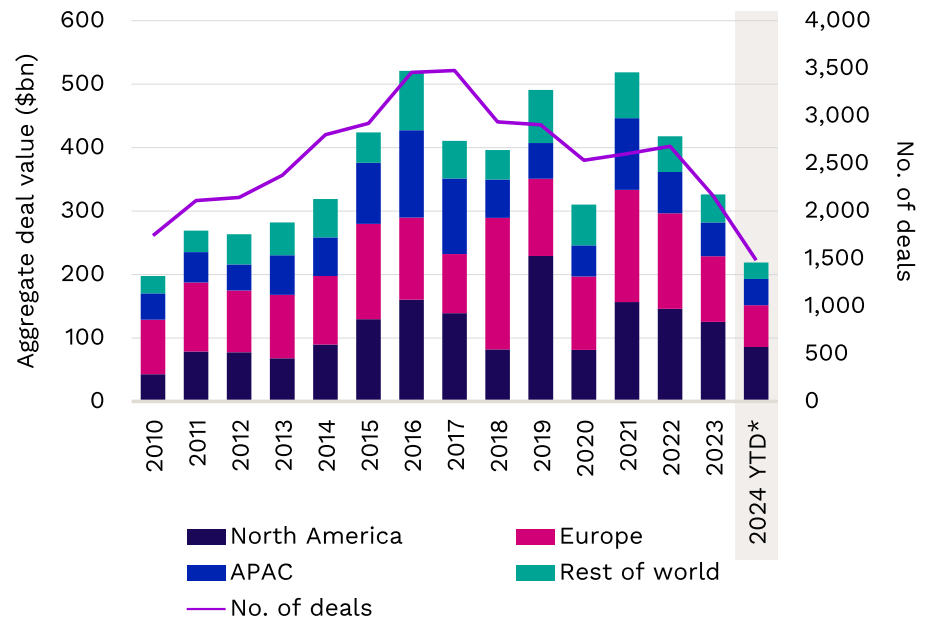
5 <https://www.columbiathreadneedle.co.uk/en/inst/insights/us-elections-the-inflation-reduction-act-and-the-risk-of-repeal/>

Deals market remains subdued but telecoms showing resilience

In the other key market besides fundraising, deals have continued to slow marginally to the third quarter, running at 96% to volumes over the first three quarters of 2023 (Fig. 1.12). The anticipation of further rate cuts may be dragging on the market, vindicating sellers for holding out for higher prices and justifying buyers waiting to finance deals at lower debt costs. The contraction in deal values over recent years is broadly spread over the global regions.

Fig. 1.12: Weak deals market continues through 2024

Annual aggregate infrastructure deal value (\$bn) by region



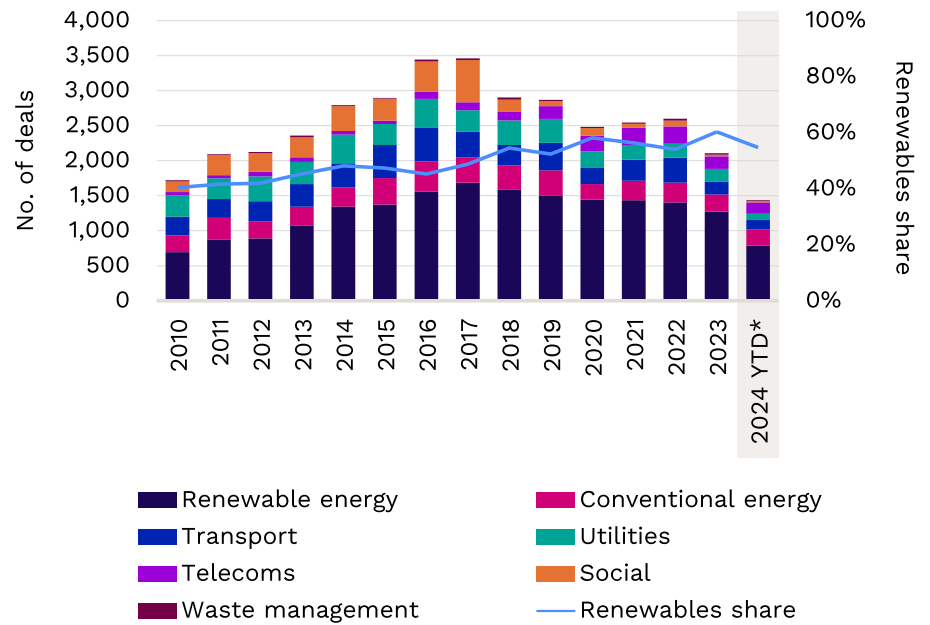
*YTD to end-Q3 2024

Source: Preqin Pro

Renewable deals still dominate, accounting for 55% of volume so far in 2024 (Fig. 1.13). However, their aggregate deal values are often much smaller than conventional energy and so have never dominated aggregate deal values. One sector that has shown resilience amid a weak market is telecoms. Larger deals have been emerging since 2016 and the sector was well placed to capitalize on a global pandemic. It is now set to benefit from an anticipated geometric growth in demand for data center capacity to deliver the AI-driven revolution. Telecoms’ share of aggregate deal values so far in 2024 has reached a new high of 30% (Fig. 1.14), underlining the sector’s newfound importance to the asset class. Managers focusing too intently on renewable energy in their multi-sector strategies risk losing the attention of investors keen to ensure sufficient exposure to telecoms as a source of diversification within infrastructure allocations.

Fig. 1.13: Renewables' dominance of volumes tempers from peak

Number of infrastructure deals by sector

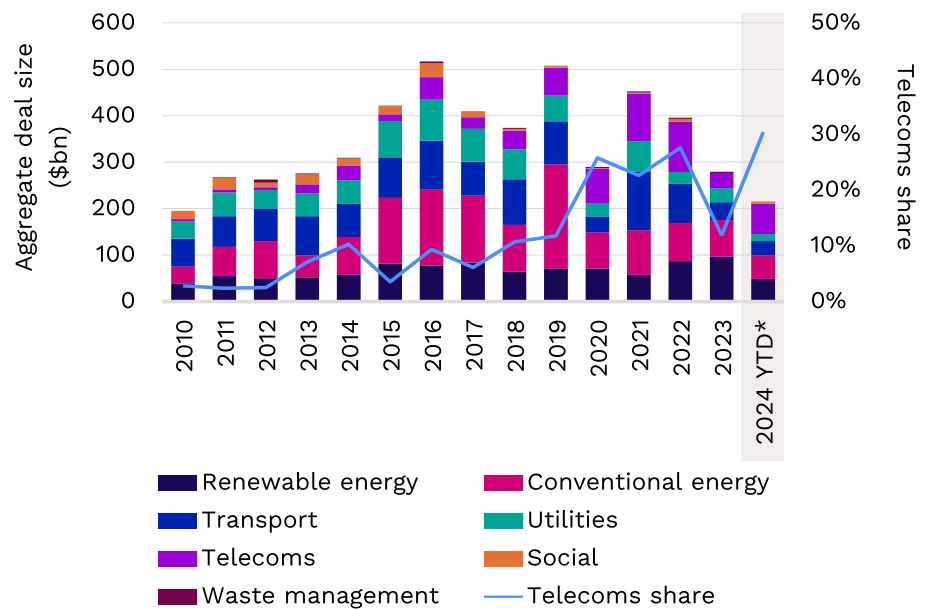


*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 1.14: Telecoms deal value share surges to record level

Annual aggregate infrastructure deal value by sector



*YTD to end-Q3 2024

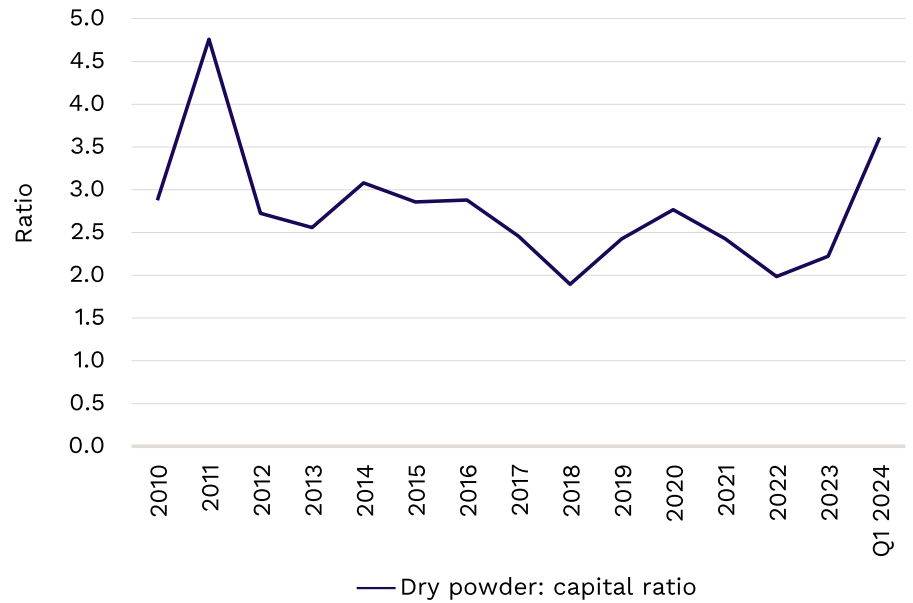
Source: Preqin Pro

Dry powder drops but less than calls

Any concerns about slower fundraising impacting the deals market might be misplaced, judging by the rate of capital calls. At the end of the first quarter of 2024, despite a drop in dry powder, the stock of \$335bn was still 3.6 times the amount of capital calls over the last year (\$92.9bn) (Fig. 1.15). While not an issue for the short term, as dry powder diminishes valuations will become more uncertain unless fundraising can recover.

Fig. 1.15: Slowing capital calls reduces dry powder shortage risk

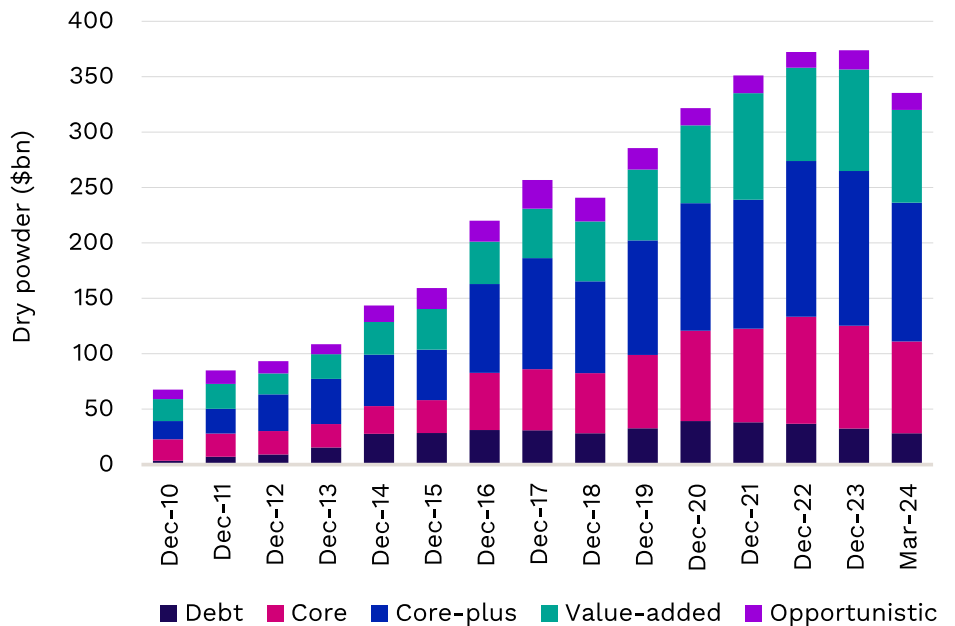
Unlisted infrastructure: ratio of dry powder to annual capital called



Source: Preqin Pro

Fig. 1.16: Dry powder falls in Q1 amid slow fundraising

Dry powder by primary strategy



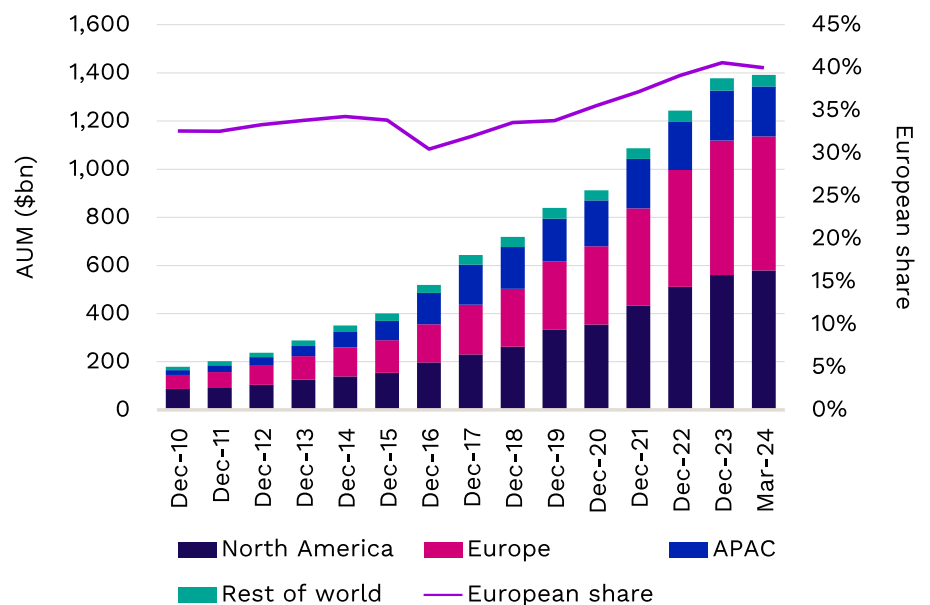
Source: Preqin Pro

Despite the sufficiency of dry powder for the current deals market, it has reached a new historical low relative to assets under management (AUM), dropping three percentage points over the first quarter alone to 24%, compared with 35% at the end of 2020. The drop in aggregate dry powder, down \$38.5bn over the first quarter of 2024 (Fig. 1.16), will surprise no one, in light of weaker fundraising. Infrastructure debt funds recorded the sharpest drop in dry powder, falling 13.3% over the first quarter as funds drew capital to support lending. With rates still elevated, the case for real asset debt funds remains strong, albeit in the shadow of attention given to the broader private debt asset class. The ‘Infrastructure debt in the spotlight’ chapter examines infrastructure debt’s business case and potential in a moderating rate environment.

Looking at global AUM we can see that a seven-year trend for Europe’s increasing share has come to an end, levelling off at 40% in the first quarter of 2024 (Fig. 1.17) vs. 42% targeting North America.

Fig. 1.17: Growing European focus of AUM levels off

AUM by region focus over time



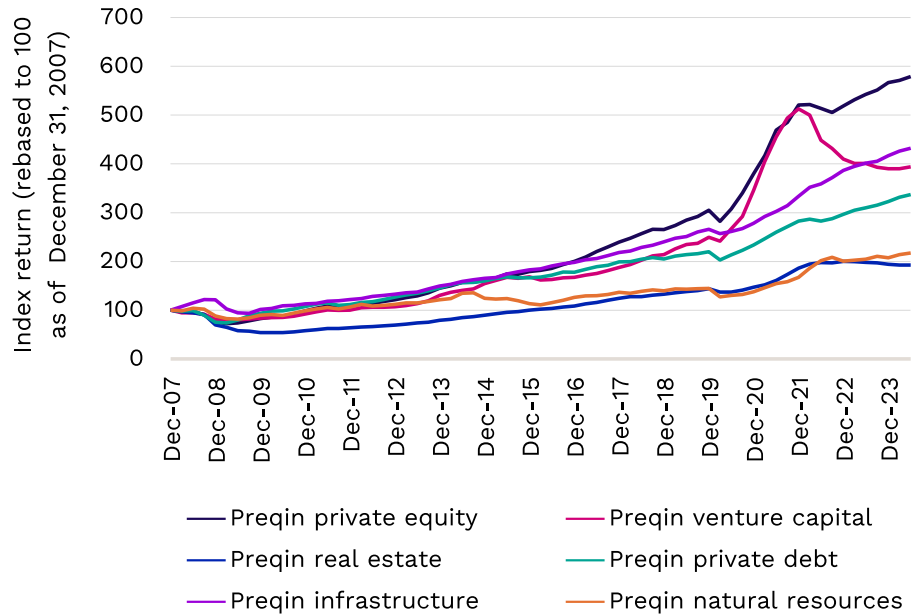
Source: Preqin Pro

Infrastructure performance looks strong despite low-risk nature

The Preqin index shows that infrastructure’s performance has consistently been strong, dipping for just one quarter during the pandemic before resuming a rise that began in late 2009 (Fig. 1.18). This consistency has been heralded by many as proving the thesis of the asset class. However, infrastructure’s sharp climb in recent years – taking it above venture capital, which struggled when rates rose – highlights concerns over the sustainability of performance. This has led to toppy entry valuations, which may be deterring some investors from making commitments. Real estate could prove a tempting alternative. Fundraising in real estate has been far more consistent than infrastructure, albeit below historical levels, partly because performance there has been weak and investors sense there is more value to be had in that market.

Fig. 1.18: Infrastructure index surpasses VC with steady rise

Preqin index: private capital strategies vs. S&P 500 TR Index (rebased to 100 as of December 31, 2007)

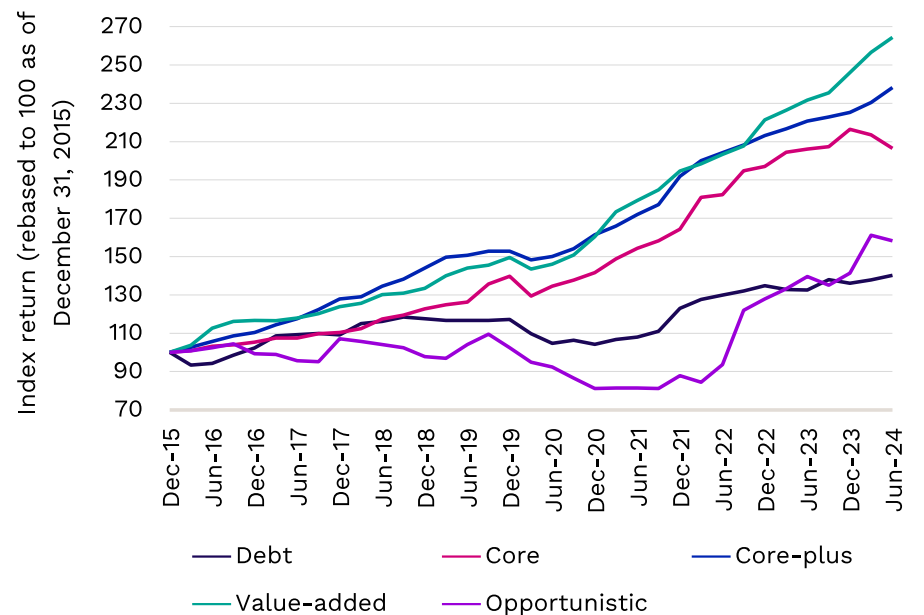


Source: Preqin Pro

Looking across strategies we can see that value-added funds have performed best up to mid-2024 when rebased to 2015 (Fig. 1.19) – unsurprisingly, given their higher risk tolerance. That said, opportunistic funds’ even higher risk preference has always sat uncomfortably within the infrastructure asset class. The lower use of offtake contracts increased merchant risks, deterring many fund investors and asset-level lenders. Infrastructure debt funds have performed least well, reflecting their lower

Fig. 1.19: Debt funds’ performance undermined by strong equity performance

Preqin unlisted infrastructure index by primary strategy (rebased to 100 as of December 31, 2015)



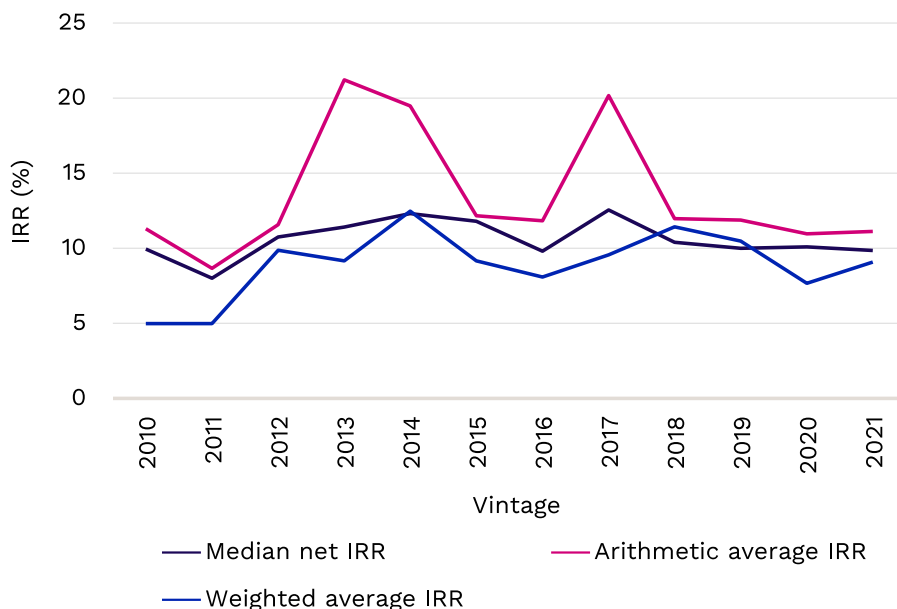
Source: Preqin Pro. Most up-to-date data

risk exposure. Their improved performance seems to coincide with the recent period of heightened rates, but the index actually increased most over the final quarter of 2021, six months before rate rises ensued. In fact, the answer lies in the performance of other infrastructure strategies. Funds in the broader asset class – the main borrowers of infrastructure debt funds’ lending – have been performing impressively and using their buoyant cash flows to pay down higher-rate private borrowing, thereby constraining debt funds’ returns.

Finally, reflecting on alternative measures of average IRR performance over vintages, we see weighted average returns have tended to linger lower – averaging 1.67 percentage points (ppts) below the median for vintages 2010–2021 (Fig. 1.20). Larger funds may well benefit from greater diversification, but smaller funds reflect the emergence of niche sectors and business models capturing first-mover advantage. The combination of strong rises in average returns for vintages 2013 and 2017 and limited change in the weighted average points to smaller funds’ outperformance, from taking more risk to finding new sources of upside before established players catch up. Consistency between the three IRR indicators for recent vintages using 2024 data is somewhat artificial, however – only time will reveal the true risks facing these funds, from which a more valid return distribution will emerge.

Fig. 1.20: Larger funds tend to underperform on absolute basis

Median, arithmetic, and weighted mean IRRs for infrastructure funds by vintage



Source: Preqin Pro

Why now is a generational opportunity for infrastructure debt

Nuveen's Don Dimitrievich explains how decarbonization, energy security, and AI have created a step change in power demand

Why should investors allocate to infrastructure debt now? And which strategies look especially promising?

The demand for capital in infrastructure debt, particularly within the energy and power sectors, is expanding at an unprecedented rate – levels unseen in the last 20 years. The reason for that is threefold.

Number one is the trend to decarbonize, which typically takes the form of electrification. Number two is energy security reasons, particularly in Europe and North America, where there's a concern associated with relying on Russia for natural gas and China for critical materials and equipment for clean energy. As a result, there's a renewed focus on the onshoring of the infrastructure supply chain, which will require significant power for those domestic production facilities. Number three is the development of artificial intelligence (AI) and the power consumption that will potentially entail. The convergence of these three trends means we're likely to see a historical capital deployment opportunity to facilitate this increased power demand.

So how do we fund that? A typical infrastructure project is debt financed for 60–80% of the capital structure. In the US, you often also have tax equity as part of the capital solution, and project equity. For the hundreds of billions or potentially trillions of investment that will be needed annually to meet power demand globally, infrastructure debt is going to be a critical source of capital. In terms of the current infrastructure debt opportunity, we're seeing two key themes.

Firstly, with the increase in base rates over the last two years, you're able to generate all-in returns that are equivalent to where infrastructure equity returns have historically been. Secondly, by accessing the market opportunity as a credit investor, you are better protected than equity providers, while benefiting from very appealing risk-adjusted returns. When structured properly these transactions can offer significant structural and covenant protection.

How are the effects of climate change affecting both the demand and risk/return profile for infrastructure as an asset class?

Energy and power demand is growing globally, so how do we fund that in a responsible way? Hydrocarbons still make up about 80% of the global energy supply, so part of our strategy is to invest in projects that cut CO2 emissions while also supporting assets that bolster energy resilience and security. We can't just disregard 80% of the energy supply that is hydrocarbon-based, so we continue to look at investing in opportunities that provide secure energy supply in a responsible manner that reduce CO2 or methane emissions on a unit basis.



Don Dimitrievich

Senior Managing Director and Portfolio Manager, Energy Infrastructure Credit, Nuveen

As an industry, we've also had some challenges with the pace of clean energy deployment to meet the anticipated need for growing power demand. One challenge is capital intensity, as most of the capital for renewable projects must be invested upfront, as sun or wind are free, contrary to traditional energy assets, where the input costs of oil or gas are considerate. The increased interest rates that we've experienced over the past two years have made the construction of renewable projects more costly. Then there are permitting delays. In the US, it takes on average 40 to 70 months to get a project approved, which has put pressure on being able to develop renewable projects to meet demand growth. And lastly, infrastructure supply chain delays. Even though supply chains have normalized in a lot of industries since COVID-19, in infrastructure we're still seeing long lead times for transformers, breakers, and in some cases inverters. The delays and increased costs have created tension as we try and rapidly invest in these technologies. That said, it's also an opportunity for investors such as Nuveen where we can provide flexible capital.

How has the increased need for power and electrification developed historically?

Using the US as an example, power demand has been relatively flat for the last two decades. Over the past 10 years, it's estimated that the compound annual growth has been approximately less than 0.5%. Estimates going forward for this decade are anywhere from 1.5–2.5% due to decarbonization, the onshoring of the infrastructure supply chain and increased manufacturing activity, and AI-related power demand. As a result, you're talking about a step-fold increase from where we've been over the past two decades. The reality is that most of the people working at utilities haven't seen this type of demand growth in their careers. So we need to invest in renewables and energy storage, as well as energy efficiency that can help reduce demand.

The war in Ukraine, and the consequent disruption in Russian gas to the European continent, led to the increased use of coal-fired power generation. This in turn, created more awareness for the need for energy security and the recognition that natural gas can be part of the solution, to avoid reliance

on dirtier sources of energy. In commercial and pragmatic terms, we should invest in natural gas to help meet surging power demand but remain vigilant in doing so responsibly and committing to investment strategies that help facilitate the longer-term trend of decarbonization.

How will the growth of digitalization impact power needs, and consequently infrastructure?

Generative AI is potentially a powerful game-changer. All the major tech companies are investing in this technology, which will require a significant amount of incremental power. We've been seeing this trend build over the last several years, and it's now widely recognized that power supply is the bottleneck for the build-out of large-scale data centers. The one cautionary point I would also make is that we're seeing potentially hundreds of billions of expected investment in AI. If it turns out that the anticipated efficiency gains from AI don't fully materialize, we're going to find ourselves with significant excess data center and power capacity. As credit investors, we're focused on ensuring that projects we finance have off-takers that are well-capitalized and strong counterparties so that we can guard against potential issues down the road associated with excess power capacity.

What are the benefits of non-investment grade infrastructure debt when applied to investing in the clean energy and natural gas sectors?

The investment project finance market can be appropriate if the project meets certain defined criteria to meet investment grade credit risk, such as fully contracted offtake or certain debt service coverage ratio and other cashflow metrics. In those instances, the private placement project finance debt is often the right solution, and from a cost of capital perspective, it's appropriate.

Where non-investment grade infrastructure debt really comes into the equation is where there's a need for the project equity owner to have more flexibility in terms

of the capital structure. As non-investment grade debt providers, we may not need as long of an offtake duration as traditional investment grade project finance, and we can work with different ways of being paid down through excess cash sweeps.

The Basel III framework has imposed stringent regulatory requirements on banks, including increased capital charges, which impacts their ability to provide debt capital. That limits banks' ability to lend, which could have an impact in investment areas where banks have been more active. For example, commercial banks have been more active in the European infrastructure market, so banks may be more constrained to meet the growing capital needs as the addressable market expands dramatically. This creates a significant opportunity for providers of flexible capital.

What misconceptions may investors still hold about infrastructure debt?

When people hear the term infrastructure debt, they sometimes only think about the very long-duration project finance investments. While there is a need for such capital, there is more room in investors' asset allocation for flexible capital solutions like we focus on in the non-investment grade space, as it provides attractive risk-adjusted returns. The misconception here is that achieving higher returns than historically expected involves taking on equity-like risks, but there are more opportunities available apart from equity and project financing. Part of this stems from the asset class's evolution. In the coming years, we're likely to see hundreds of billions in annual capital deployment, and, when structured with an appropriate return profile for each project, non-investment grade infrastructure can offer attractive returns. This can be achieved while maintaining downside risk mitigation, allowing investors to avoid the risk levels associated with equity investments.

Don Dimitrievich is a Senior Managing Director and Portfolio Manager for Energy Infrastructure Credit at **Nuveen**. He joined Nuveen in November 2022 to establish a multi-billion credit and structured equity investment business to ensure secure energy supply and provide sustainable energy solutions to decarbonize energy consumption.

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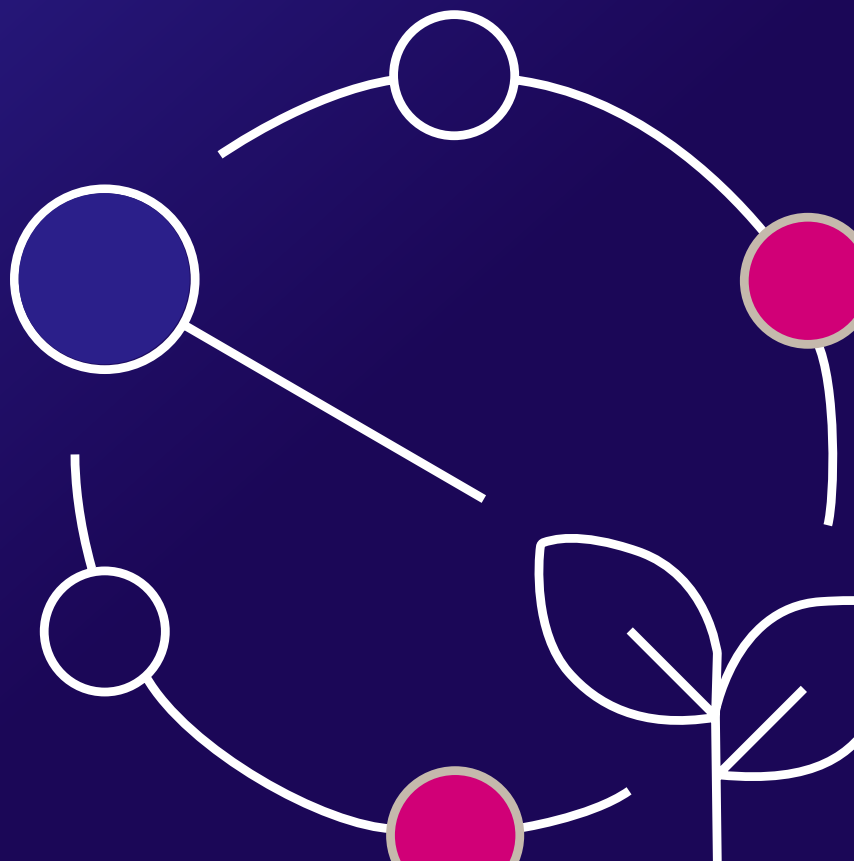
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PREQIN



→ **Infrastructure:**

Preqin's forecasts through 2029

Deal markets will continue to suffer short term in the face of higher rates, but the energy transition will drive a revival from 2027 onwards





Alex Murray, PhD
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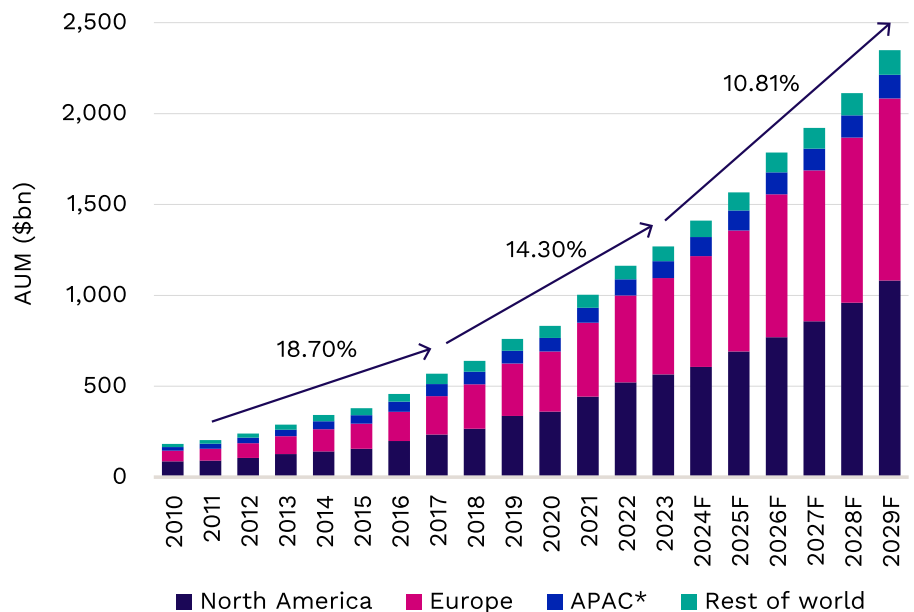
The unlisted infrastructure asset class has been enduring a prolonged slowdown in fundraising since early 2023. In part this is driven by a rebalancing, following the flood of capital in 2022, as well as the heightened rate environment bearing down on the deals market. Our latest forecast for the asset class, published in our Future of Alternatives 2029¹ report in September, suggests this weaker fundraising market will continue until 2026F before a strong return to pace, similar to that seen in 2022. The weak fundraising market of 2023 and onwards will drag on assets under management (AUM) growth in the short term. But stronger fundraising in the second half of the forecast period (2027F–2029F), alongside higher performance compared with 2017–2023, supports the upward revision of our previous AUM forecasts.

North America to remain top market

Our forecast out to 2029F suggests AUM will increase at a compound annual growth rate (CAGR) of 10.8% to \$2.35tn (Fig. 2.1), meaning the asset class will continue to catch up with real estate, the dominant real asset class. Infrastructure AUM is forecast to reach 88% of real estate AUM by the end of the forecast horizon (\$2.35tn vs. \$2.67tn, respectively), compared with 79% at the end of 2023. This points to the credible prospect of unlisted infrastructure overtaking private real estate in AUM terms in the 2030s, given the tailwind from the continuing energy transition propelling the asset class forward.

Fig. 2.1: North America and Europe tussle for lead market

Infrastructure AUM* by region focus



Source: Preqin. All figures are nominal

*AUM figures exclude funds denominated in yuan renminbi
 Values relate to end of year
 To avoid double-counting, totals exclude secondaries and funds of funds

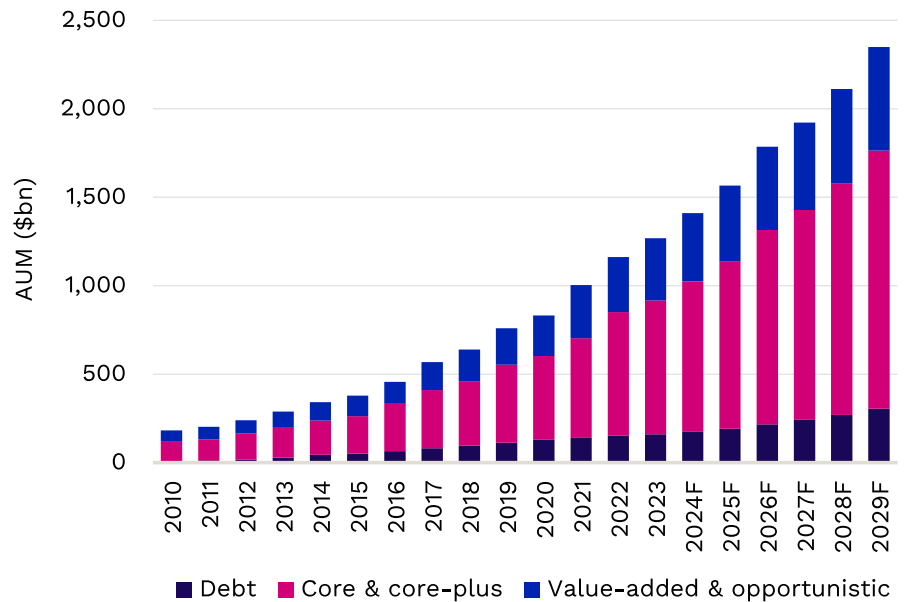
However, the forecast growth in capital targeting the key developed markets of North America and Europe is lower than that seen in recent years. Regional CAGRs of 11.4% and 11.2% respectively are forecast for end-2023 to 2029F, vs. 15.9% and 16.5% between 2017 and 2023. These two regions accounted for 44.6% and 41.7% of AUM respectively in 2023, so have a huge influence on the asset class. Forecast AUM targeting APAC and the rest of the world have even less favorable CAGRs (5.8% and 9.0%, respectively), suggesting developed markets will gain ground on emerging ones.

1 <https://www.preqin.com/insights/research/reports/future-of-alternatives-2029>

In terms of infrastructure fund strategies, the share of AUM within core and core-plus funds will grow at the expense of value-added funds, settling at 62% by 2029F (Fig. 2.2). This growth in lower-risk fund strategies is consistent with the findings in our Preqin 2024 Global Report: Infrastructure,² which showed a resurgence in core and core-plus AUM in a risk-off, higher-for-longer rates scenario.

Fig. 2.2: Core and core-plus to exceed 60% of infrastructure AUM

Global infrastructure AUM by sub-strategy



Source: Preqin. All figures are nominal

Values relate to end of year

To avoid double-counting, totals exclude secondaries and funds of funds

We expect North America to retain its crown as the lead target market for capital deployment, in part driven by lingering uncertainty over whether Europe will respond at any scale to the 2021 US Infrastructure Investment and Jobs Act (worth \$1.2tn)³ and the 2022 Inflation Reduction Act (worth \$370bn). This is despite North America having a lower share of AUM in defensive core and core-plus funds, at 59% in 2029F – 2.9 percentage points lower than the global asset class at the end of the forecast period (Fig. 2.3).

Dry powder’s share of AUM at the asset class level is expected to carry on falling, as managers continue to deploy in a deals market that has so far remained more resilient than real estate,⁴ despite much slower fundraising.⁵ We forecast dry powder to reach 22% of AUM by 2029F based on a forecast CAGR of 7.24% on the aggregate stock of dry powder (Fig. 2.4). This is dependent on the deals market maintaining momentum. If there were any meaningful contraction in the infrastructure deals market, similar to that seen in real estate, dry powder stocks may start to accumulate, extending its share of AUM.

² <https://www.preqin.com/insights/global-reports/2024-infrastructure>

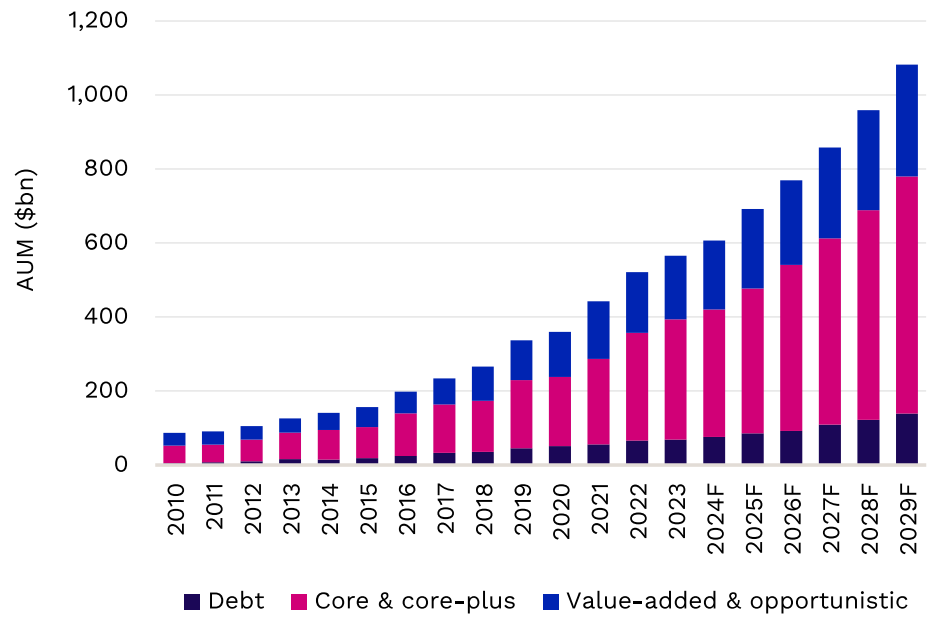
³ <https://www.ft.com/content/c0dd4f89-b198-4a37-84f5-7ad8402678f1>

⁴ <https://www.preqin.com/insights/research/quarterly-updates/q2-2024-real-estate>

⁵ <https://www.preqin.com/insights/research/quarterly-updates/q2-2024-infrastructure>

Fig. 2.3: North America core infrastructure to hit new high

North America-focused infrastructure AUM by sub-strategy

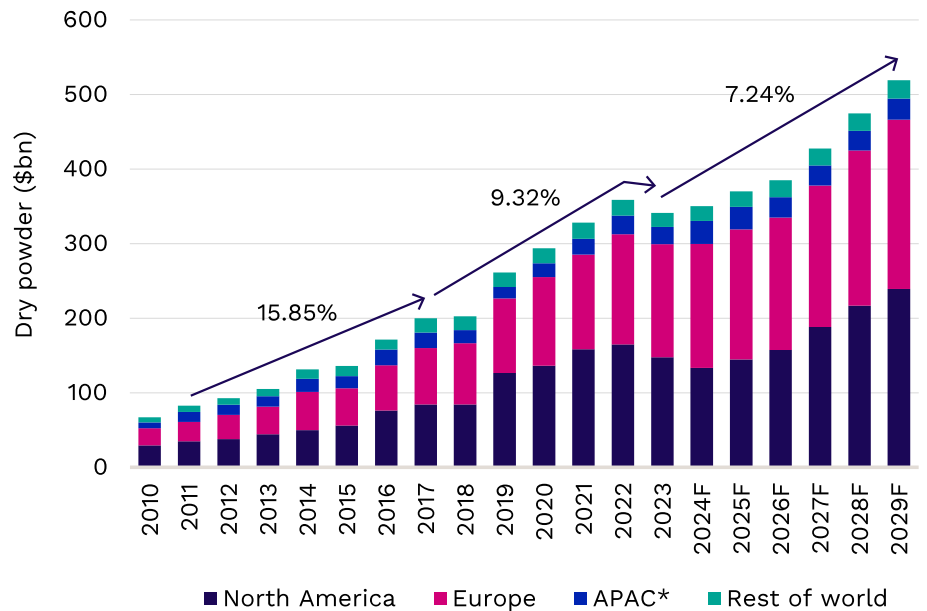


Source: Preqin. All figures are nominal

Values relate to end of year
To avoid double-counting, totals exclude secondaries and funds of funds

Fig 2.4: Dry powder targeting North America to see strongest growth

Infrastructure dry powder* by primary region of focus



Source: Preqin. All figures are nominal

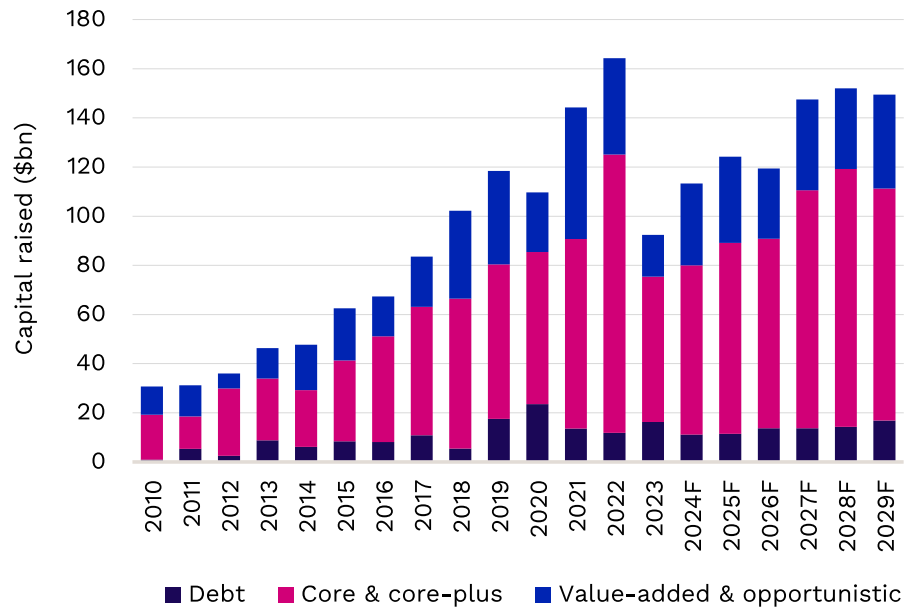
*Dry powder figures exclude funds denominated in yuan renminbi
Values relate to end of year
To avoid double-counting, totals exclude secondaries and funds of funds

Near-term fundraising dogged by higher-for-longer rates

Turning to fundraising, 2023 was the weakest year since 2017, when the asset class was still in its adolescence. With just \$92.4bn raised by end-2023, this sets the scene for a tempered return to the pace of previous years (Fig. 2.5).

Fig. 2.5: Resurgence in fundraising won't call back 2022 peak

Infrastructure capital raised* by sub-strategy



Source: Preqin. All figures are nominal

*Capital raised figures exclude funds denominated in yuan renminbi
 Values relate to end of year
 To avoid double-counting, totals exclude secondaries and funds of funds

The near-term forecast remains well below the peaks of 2021 and 2022. Despite this, the second half of the forecast period suggests fundraising could rise substantially from 2027F, to average \$149.6bn annually over 2027F–2029F. However, we do not anticipate flows in the forecast period will top the \$164bn raised in the record year of 2022.

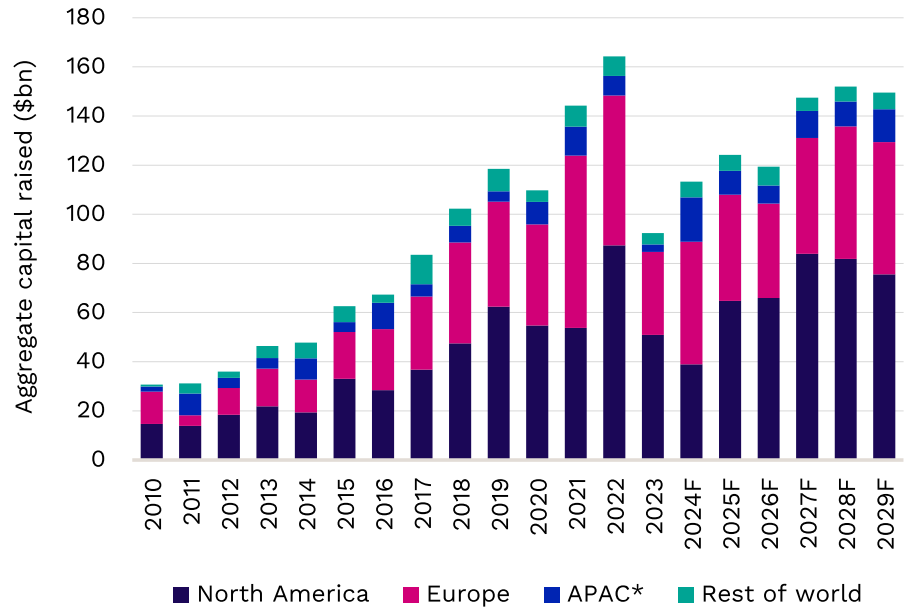
While any forecast comes with uncertainties, one key input that looks set to stay higher for longer is interest rates. As the asset class with some of the highest levels of leverage on equity across private markets, higher rates are expected to bear down on the deals market. One source of upside within the forecast horizon is any increase in the pace of monetary loosening. The Bank of England recently began its moderation of base rates, cutting by a quarter of a percentage point in early August 2024 following the European Central Bank’s similar reduction in June. However, market consensus on potential rate changes by the Federal Reserve (Fed) has changed since the end of 2023, and expectations now favor continuing contractionary monetary policy. Back in December 2023, Fed rates were expected to fall to closer to 3.25% by 2026. This has increased closer to 4% as of June 2024,⁶ affirming the market’s reluctant acceptance of the higher-for-longer scenario.

6 <https://www.preqin.com/insights/research/reports/preqins-state-of-the-market-h2-2024>

In terms of the breakdown of capital raised across target regions, North America is expected to continue to dominate, averaging 51% of the aggregate capital raised annually over 2024F–2029F, vs. 48% between 2017 and 2023 (Fig. 2.6). This rise explains the drop in the share of capital targeting Europe, from an annual average of 39% between 2017 and 2023 down to 36% over the forecast period.

Fig. 2.6: North America to grow share of infrastructure fundraising

Infrastructure historical and forecast fundraising* by region



Source: Preqin. All figures are nominal

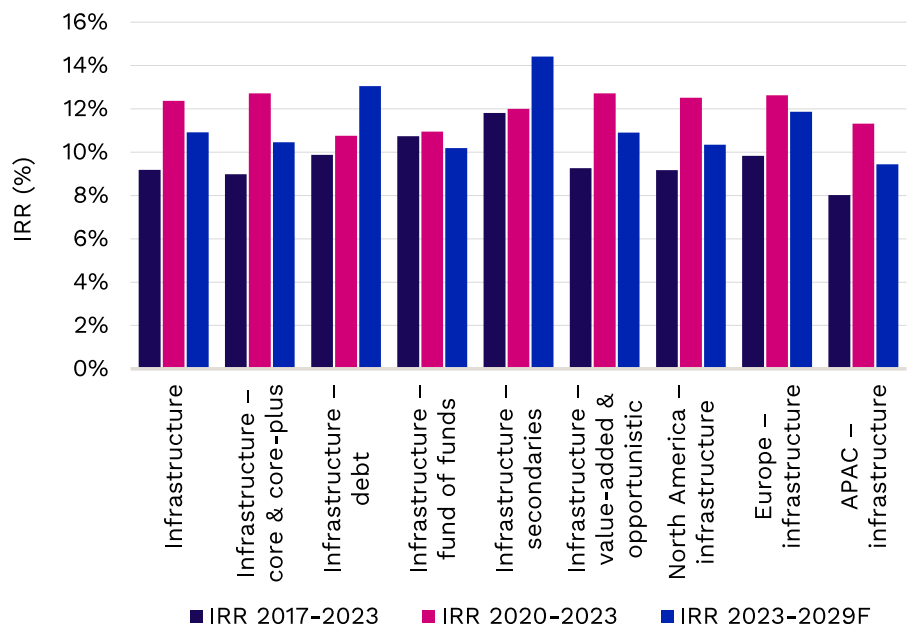
*Capital raised figures exclude funds denominated in yuan renminbi
 Values relate to end of year
 To avoid double-counting, totals exclude secondaries and funds of funds

Slight dip in recent performance still trumps longer-term trend

Higher debt costs will naturally have a negative impact on the performance of infrastructure equity funds, which dominate the asset class. The asset class as a whole is expected to deliver an internal rate of return (IRR) of 10.9% for end-2023 to 2029F, in between the 12.4% IRR for the more recent 2020–2023 period and the 9.2% seen over the longer term between 2017 and 2023 (Fig. 2.7).

Fig. 2.7: Strong recent performance curtails forecast returns

Infrastructure historical and forecast performance*



Source: Preqin. All figures are nominal

*When we calculate performance we exclude funds denominated in yuan renminbi
Values relate to end of year

Higher rates will impact the returns of new primary investments and assets facing refinancing more than operational secondary assets with longer tenors on fixed-rate lending. Core and core-plus funds tend to benefit from these longer fixed-rate debt positions, providing some buffer against the negative impact of rates on performance.

Infrastructure debt funds will see an upside in this higher-rate environment, given their position on the right side of tighter credit markets.⁷ Forecast returns for these funds (13.1%) are expected to exceed the asset class as a whole (10.9%), although there are considerable uncertainties around this. Anecdotally, infrastructure debt has underperformed expectations, partly because borrowers have often made use of early repayment options. Furthermore, at least in Europe, the banking market for infrastructure is highly competitive. This may limit the returns available to private infrastructure debt funds, with borrowers more receptive to less flexible lower-rate facilities amid tighter credit markets.

Decarbonization underpins growth prospects

While the future of the unlisted infrastructure asset class faces challenges in a higher-for-longer rate scenario, continued growth is linked to climate targets to decarbonize electricity generation. The asset class is increasingly dominated by energy deals.⁸

Higher debt costs may continue to deepen J-curves for primary development, but opportunities for unlisted infrastructure, and the capital that flows into it, should be buoyed by longer-term environmental necessities, aided by accommodative regulatory and subsidy programs across developed markets.

⁷ <https://www.preqin.com/insights/research/sector-in-focus/strategy-in-focus-real-assets-debt>

⁸ <https://www.preqin.com/insights/research/reports/esg-in-alternatives-2024>

How to stand out in a growing secondaries market

Information advantage is critical to building a successful secondaries strategy, according to James O’Leary, Partner and Head of Infrastructure and Real Assets at StepStone Group

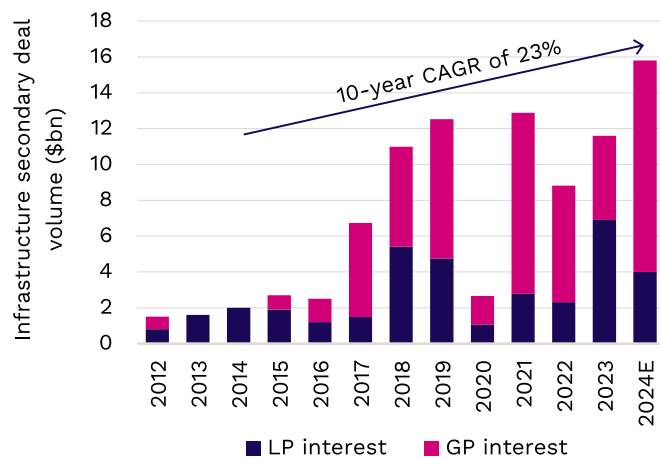
It’s no secret that infrastructure secondaries investments have been surging. According to Campbell Lutyens, deal volumes in 2024 may exceed \$15bn. This would represent a record year, with volumes up more than 36% compared with 2023 and more than 22% above 2021 levels, the previous peak, where deal volumes were elevated to address pent-up supply that had carried over from a pandemic-affected 2020.



James O’Leary

Head of Infrastructure and Real Assets,
StepStone Group

Infrastructure secondary deal volume



Source: Campbell Lutyens, StepStone Group analysis

This increased activity is a function of the continued growth in infrastructure assets under management (AUM), the natural maturation of the infrastructure asset class, as well as the increasing appetite for LPs to access liquidity given exit constraints across private markets in recent years. Annual secondary volumes have averaged 0.8% of total infrastructure AUM over the last three years, with LP-interest secondary volumes averaging just 0.3% of AUM over the same period. StepStone believes both figures may grow in the years to come, as the market matures.

A successful secondaries strategy requires a relative information advantage on both manager and asset quality, which in turn supports the quality of underwriting and speed of execution.

This information advantage can be sourced from three key areas: the scale of your primary program, the quality of your manager and asset-level database, and your ability to leverage asset-level insights from your co-investment platform.

StepStone is one of the largest allocators of primary infrastructure capital in the world. Over the last decade, our global team has deployed more than \$60bn of primary capital across more than 220 infrastructure funds. However, investing alone is not enough.

StepStone is committed to regular and active engagement with managers around the world, holding more than 1,300 meetings with infrastructure sponsors each year, providing critical intelligence on manager and fund-level investment performance. StepStone also reviews hundreds of co-investments each year, providing detailed asset-level knowledge across the market.

Through significant primary and co-investment deployment, and continual engagement with global sponsors, StepStone has been able to create a comprehensive data intelligence tool, SPI by StepStone, that garners detailed operating data on more than 1,600 infrastructure investments. This data set is vital to being able to underwrite secondary investments in an efficient and low-risk manner. At StepStone, we have more than 50 live secondary models that are continuously updated for current market information to support a highly informed secondaries investment strategy.

Investing from the ‘outside in’ is no longer viable in infrastructure secondaries. An information advantage based on reliable data is paramount.

StepStone Infrastructure and Real Assets seeks to provide tailored solutions to meet the needs of institutional investors at any stage of their investment programs. With total capital responsibility of \$98bn across global infrastructure investments, we are ideally positioned to support our clients with deep GP engagement across the sector. Our platform enables access to a large pool of opportunities across primary fund investments, secondaries, and co-investments through fully customized solutions and tailored products. We provide deep experience across all major infrastructure and real assets sub-sectors, strategies, and geographies, introducing our clients to attractive secular themes across markets. Learn more at www.stepstonegroup.com/what-we-do/asset-classes/infrastructure

→ The ABC of capital investment

Secondary deals in operational assets now dominate globally, but developing economies continue to build out their capital stocks via primary deals to add new capacity





Alex Murray, PhD
VP, Head of Real Assets
alex.murray@preqin.com

Infrastructure is the lowest-risk equity asset class in private markets, with only private debt demonstrating more stable and lower returns over the long run. This risk profile is driven by reliable demand for the essential services infrastructure assets provide. Capital investment in these underlying physical assets is more intensive than in other forms of investment, and is facilitated by the centrality of their role in the economy and their ability to generate stable revenues. The strong business case for infrastructure investments enables high levels of gearing. With up to 90% leverage in terms of senior debt use – higher if the shareholder loan structures used by sponsors in some deals are taken into consideration – the gearing on infrastructure deals is one of the highest across alternatives business models.

With this business case in mind, it is helpful to consider the three motives of capital investment in infrastructure.

A = Alter

Alter and improve existing assets to increase their quality above and beyond their original design.

This type of investment might help increase revenues by supporting higher prices for improvements to services. The UK government's Building Schools for the Future capital program in the 2000s, for example, used private finance to invest in school facilities and improve the learning environment via public-private partnerships (PPPs). The desire to improve public assets provided an early opportunity for private capital in unlisted infrastructure.

B = Backlog

Deal with the deterioration of assets and reduce backlog maintenance, returning assets to their original state.

This type of investment can help reduce ongoing costs or disruption to services caused by the unavailability of assets. England's National Health Service Estate, for example, requires an estimated £11.6bn of backlog maintenance work to restore assets and improve poor-quality facilities and healthcare outcomes. Many of the largest and newest general acute hospitals in England were built with private capital.

C = Capacity

Increase capacity by increasing the quantity of assets in the aggregate capital stock and the creation of revenues from new assets.

Energy generation is a case in point. The International Renewable Energy Agency's latest recommendation suggests that renewable energy capacity will need to triple by 2030 – to more than 11,000GW – to limit global warming to 1.5°C.

Primary deals are mainly about adding capacity

The nature of capital investment is reflected in the type of deals pursued. Primary deals are defined as those involving major new investment in assets, and are classified as either brownfield or greenfield.¹ Brownfield deals involve investment in existing assets, often to reinvigorate them and improve their quality (A or B), whereas greenfield deals involve the creation of new assets (C). Secondary deals, on the other hand, involve the purchase of operational assets that require no significant immediate capital investment.

That is not to say secondary buyers may not pursue additional capital works in time. Wind farms, for example, can be repowered with upgraded components² or completely new turbines to extend their lifespan beyond the initial design. The management of development and construction risks toward creation and sale of steady state operational assets in primary deals drives the capital appreciation-based returns for the most active managers. More passive buyers rely more on future income generation from operational assets.

¹ <https://www.preqin.com/academy/industry-definitions/deal-terms-definitions>

² <https://www.marsh.com/en-gb/industries/energy-and-power/insights/repowering-uk-wind-turbines-key-risk-considerations.html>

One challenge with investment routes A and B is the complexities that investing in existing assets can entail. Existing assets bring uncertainties around their condition, as even invasive surveys can fail to uncover issues that may lead to unanticipated cost escalation during capital investment periods, deepening J-curves and extending payback periods. The presence of asbestos,³ for example, was a source of difficulties in early PPP social infrastructure projects. Private capital investment is therefore more comfortable with greenfield investments; hidden costs are replaced by calculable risks. Unsurprisingly, then, brownfield projects accounted for just 15% of primary deal volume between 2006 and the third quarter of 2024. Returns for greenfield investments are more predictable, matching the risk/return characteristics of the asset class.

Secondary deals now dominate as asset class matures

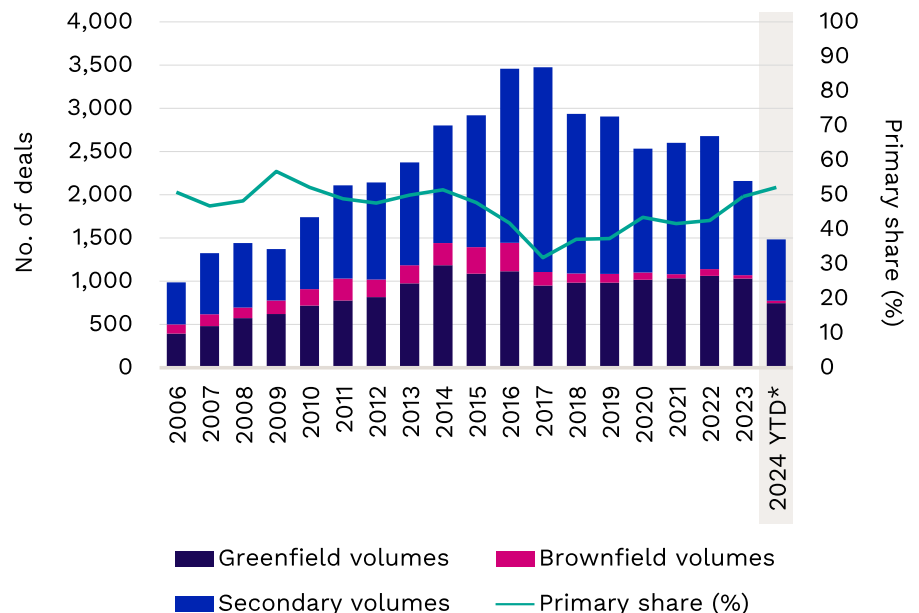
Primary deals dominated the early years of infrastructure’s growth – in terms of deal values if not in terms of volume (Fig. 3.1). However, as early funds sought to exit, these assets fed the growth in the secondary market – and, since 2015, secondary deal volumes have exceeded primary deals. This is partly a natural development of the asset class but also reflects a tempered primary deal market since 2016, particularly in brownfield deals. Even if we see a surge of new primary investment in renewable energy assets, secondary deals will tend to rise over the longer term, fed by disposals of earlier-vintage funds’ assets. An increasing number of PPP assets are approaching the end of their contract lives, with some owners considering disposal in the years ahead. Buyers should be wary, however, as in some markets, particularly the UK, relationships between sponsors and the public procuring authority have soured.⁴ This could bring complications, so potential buyers should ensure their due diligence is thorough, as financial deductions on underperforming contracts could impair returns.

3 https://www.nao.org.uk/wp-content/uploads/2009/10/2009_performance_pfi_construction.pdf

4 <https://www.gov.uk/government/publications/white-fraiser-report-private-finance-initiative-sector/white-fraiser-report>

Fig. 3.1: Primary deals once again dominate volumes

Aggregate infrastructure deal volumes by project stage



*YTD to end-Q3 2024

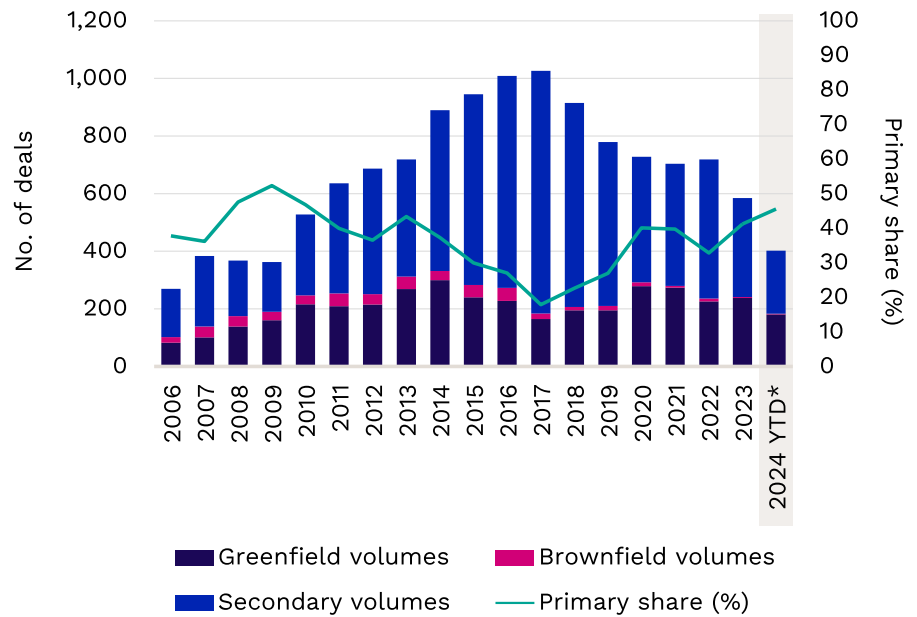
Source: Preqin Pro

Developing regions see primary deals maintain dominance

Looking at the split between primary and secondary deals around the globe, we see a clear distinction between the broadly developed economies of North America and Europe, and the less developed economies of APAC and Rest of world. Whereas the long-term average shares of primary deal volumes between 2006 and the third quarter of 2024 in North America and Europe are 34.7% and 43.0%, respectively, APAC averages 58.2% and Rest of world 57.8% (Fig. 3.2–3.5). Developing economies tend to have larger shares of their overall GDP within the construction industry, as they continue to build out their capital stocks.

Fig. 3.2: Secondary deal volumes dominate primary post 2010 in North America

Aggregate infrastructure deal volumes in North America by project stage

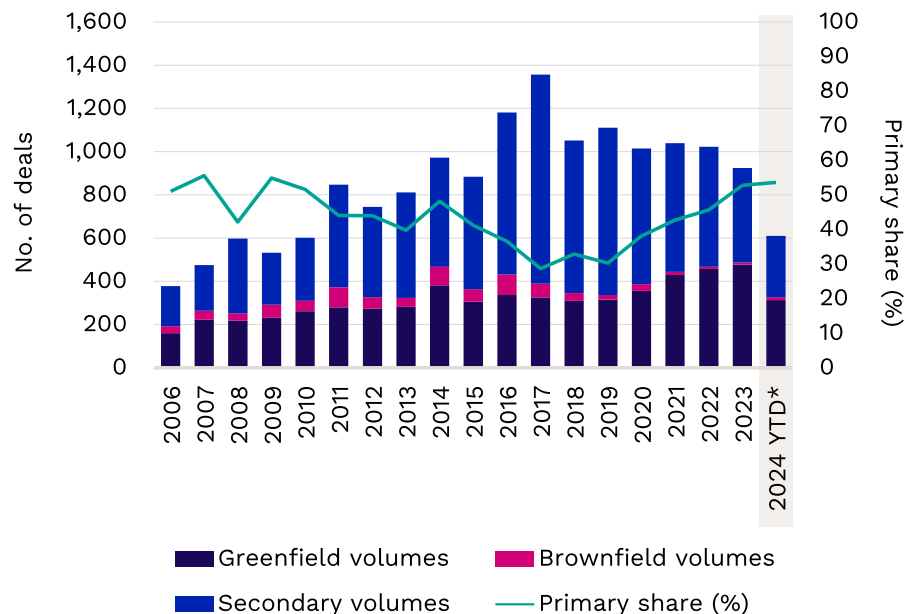


*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 3.3: European primary deals market sees strong growth through pandemic

Aggregate infrastructure deal volumes in Europe by project stage

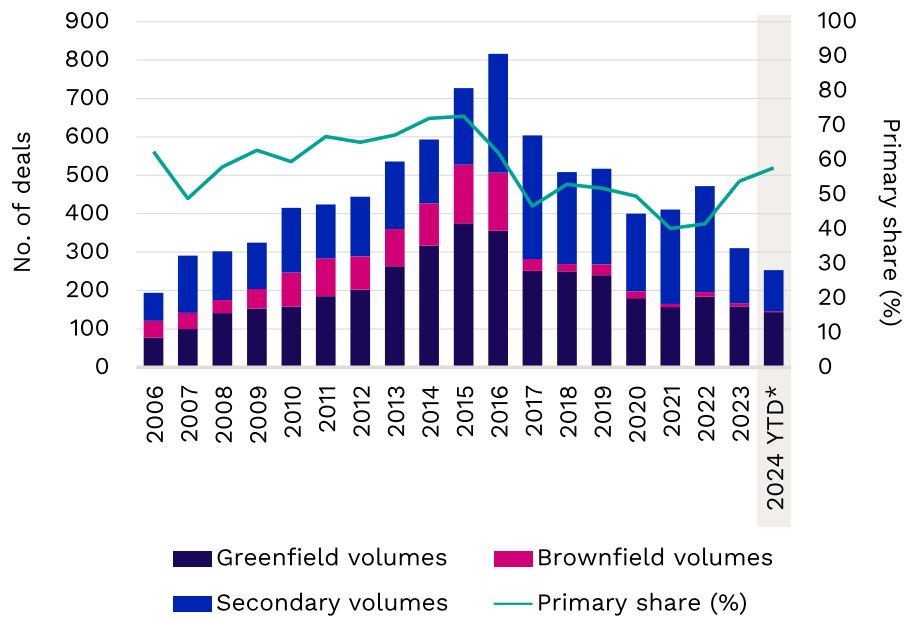


*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 3.4: Developing economies in APAC maintain primary deal dominance

Aggregate infrastructure deal volumes in APAC by project stage

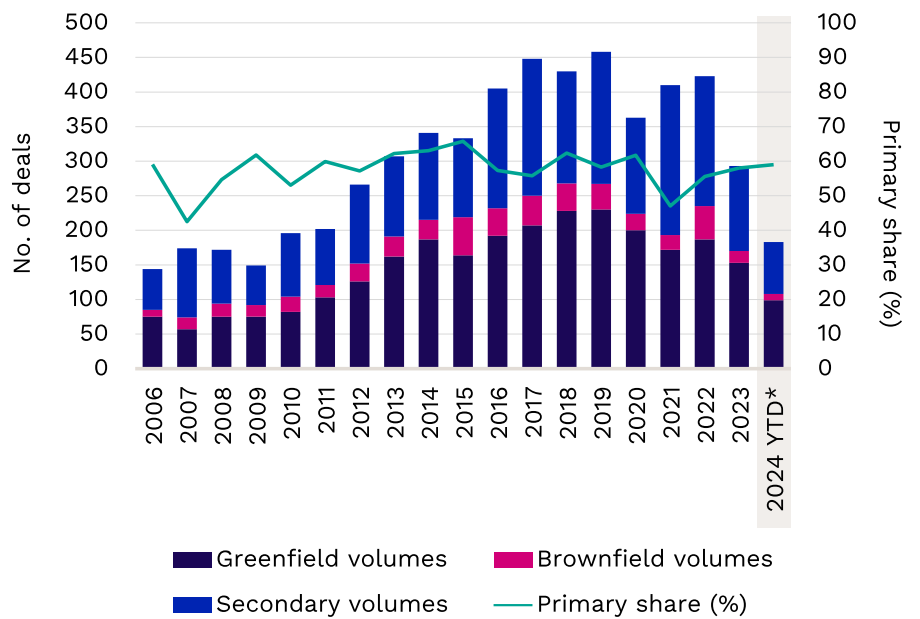


*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 3.5: Primary deals continue to build out Rest of world capital stock

Aggregate infrastructure deal volumes in Rest of world by project stage



*YTD to end-Q3 2024

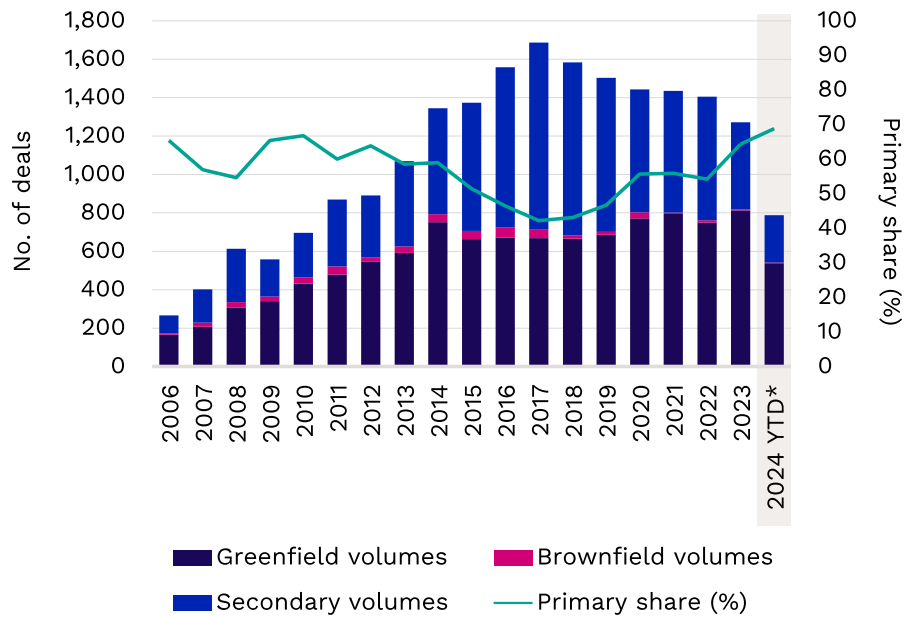
Source: Preqin Pro

Energy transition drives energy deal dynamics

From a sectoral point of view, the energy transition draws a line in the sand between two central sectors for the infrastructure asset class. The broad energy sector has come to dominate aggregate deal markets (see ‘Year in review: 2024’ chapter), but this has been driven mainly by the growth and resilience of primary renewable deals (Fig. 3.6), which reached a new peak of 818 deals in 2023. Conversely, primary deals in the conventional energy sector in 2023 were 27% down on the 2016 peak, amid lingering concerns over stranded asset risks (Fig. 3.7). However, data to the third quarter of 2024 shows some resurgence in activity based on volumes, albeit with similar deal values to 2023 on an annualized basis.

Fig. 3.6: Energy transition underpins growing renewable energy capacity

Aggregate infrastructure renewable energy deal volumes by project stage

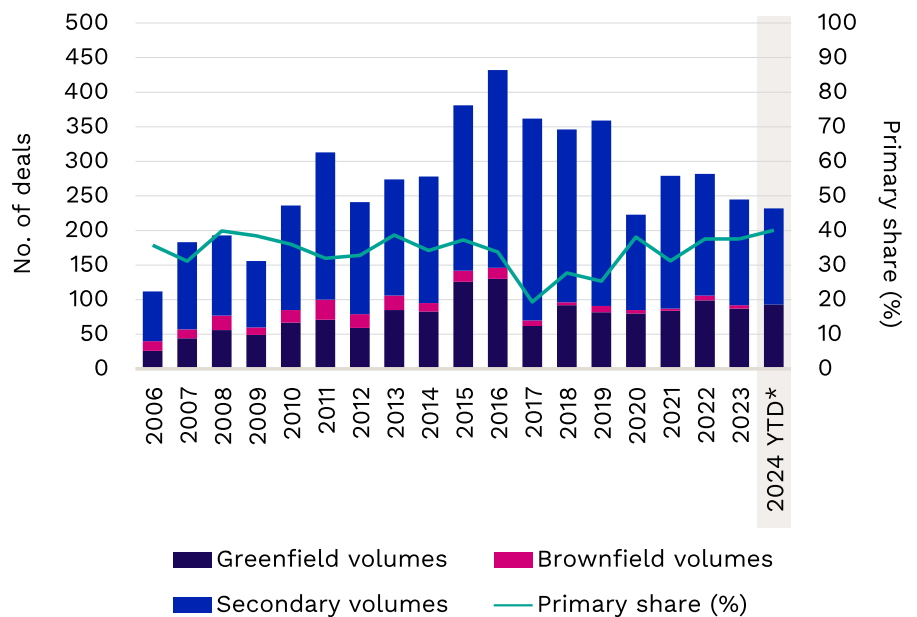


*YTD to end-Q3 2024

Source: Preqin Pro

Fig. 3.7: Stranded asset concerns stem flow of primary conventional deals

Aggregate infrastructure conventional energy deal volumes by project stage



*YTD to end-Q3 2024

Source: Preqin Pro

The key point here is that renewables deals account for more primary investment in new capacity in recent years, reaching a new high to the third quarter of 2024 at 69%, whereas conventional energy's share of new capacity remains at just 40%. Although conventional energy remains important to investors today, Preqin data on private markets energy sectors shows the direction of travel.

Risk management is crucial for high gearing

The routes into greenfield and brownfield capital investment are the basis of the infrastructure asset class, which necessitate scrutiny to achieve the highest levels of gearing among private markets. The requirement to identify, manage, or transfer risks influences the type of deals, with private capital preferring greenfield to brownfield and the associated blank slate risks these capital projects provide. The secondary market's resurgence is assured in the longer term, given our forecasts show that the developed markets of North America and Europe will maintain their share of global fundraising.⁵ One area where managers might carve out their own niche would be in the brownfield market – having the expertise to bid and deliver on brownfield deals could be a source of differentiation. On the demand side of the energy transitions, the embodied energy of historic infrastructure demands more brownfield investment. However, many investors are still comfortable to leave these to public authorities to deliver.

⁵ <https://preqin.com/insights/research/reports/future-of-alternatives-2029>

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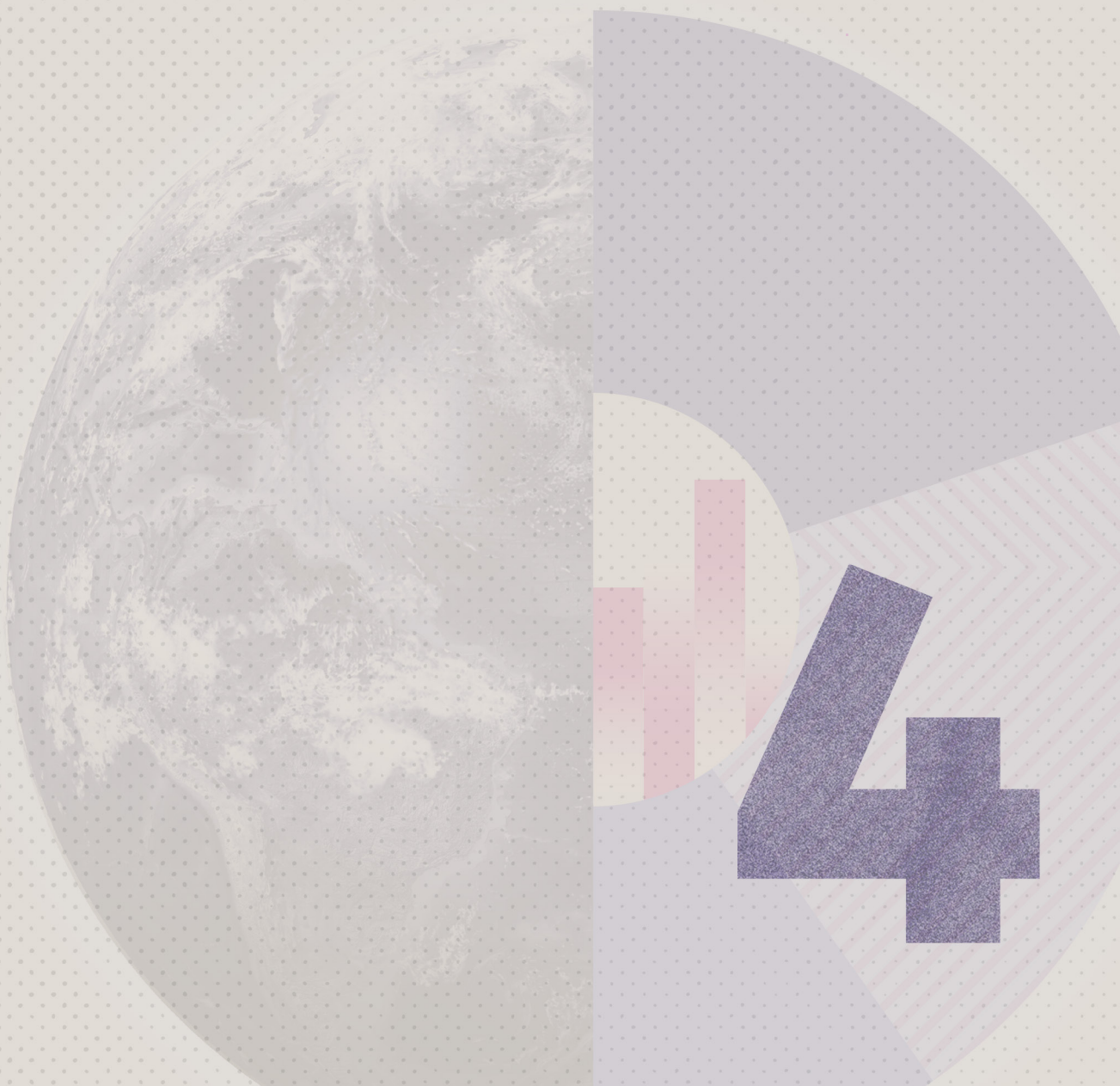
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→ Renewable energy

Renewable energy is gradually re-establishing itself, but first-time managers should be cautious





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Analyst
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The energy transition came to the forefront of thematic investing in recent years, as policies designed to address climate change hastened the development of renewable energy schemes via government-led financial incentives. Europe has a longer history of promoting renewable energy, but other regions have also sought to deliver on climate goals via decarbonizing energy generation. Although subsidies have become less prevalent in Europe due to policy changes, incentives remain. New managers seem reluctant to enter the renewables market, however, in light of strong competition among established players and long-term returns compression.

First-time managers struggling to raise in renewable energy

The Paris Agreement, signed in 2015, set a target of limiting the overall global temperature increase to ‘well below’ 2°C. One of the key elements of the framework is building new infrastructure to meet these goals.¹ Between 2015 and 2021, the number of closings of infrastructure funds with exposure to renewable energy steadily increased – as did the amount of capital (Fig. 4.1). Since the interest-rate rises and high inflationary environment of more recent years, the number of funds closing has fallen – by 66% since the 2021 peak. The high cost of financing capital developments is reflected in funds’ inability to raise bigger sums and the less-than-stellar performance of renewables² in recent years. However, 2022 was a peak year in terms of capital raised. The Inflation Reduction Act³ caused a surge in capital targeting North America, propelling the region’s global share to 54%, up from 35% the previous year. Subsidies help attract capital, and the \$370bn in funding for clean energy has driven more capital toward the region in recent years.

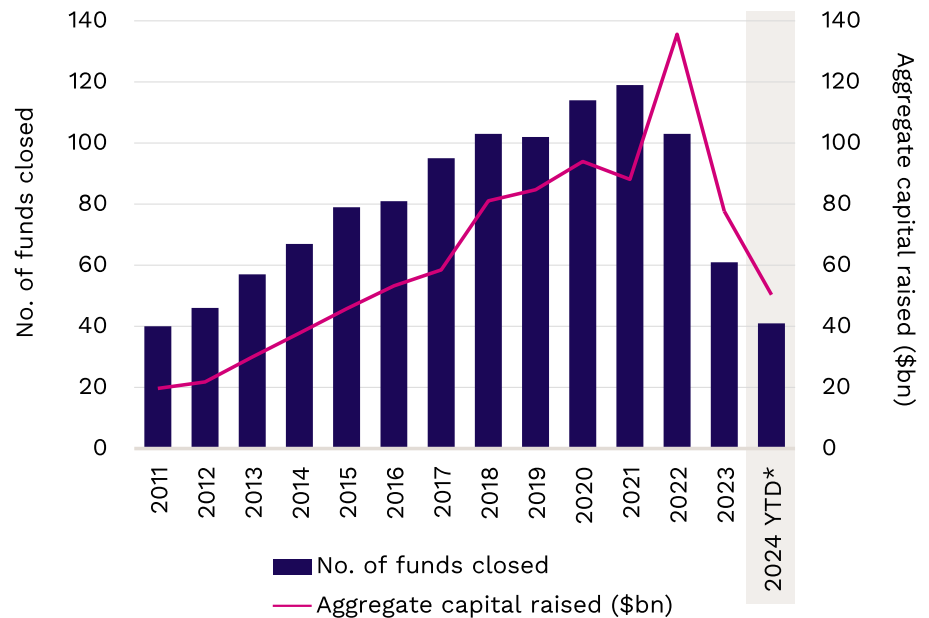
1 <https://unfccc.int/process-and-meetings/the-paris-agreement>

2 <https://www.spglobal.com/spdji/en/indices/sustainability/sp-global-clean-energy-index/#overview>

3 <https://www.congress.gov/bill/117th-congress/house-bill/5376>

Fig. 4.1: Renewables fundraising faltering in recent years

Global unlisted infrastructure fundraising with exposure to renewable energy



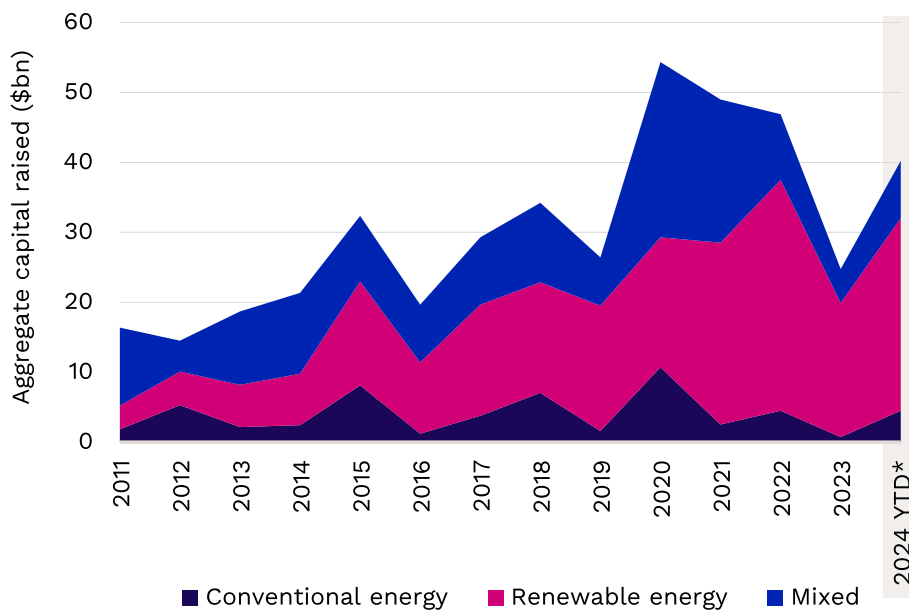
*YTD to October 14, 2024

Source: Preqin Pro. Data as of October 2024

There has been a shift in capital commitments into energy funds over the past decade. Historically, fundraising has been dominated by mixed energy funds, which deploy to both conventional and non-conventional (renewable) energy assets (Fig. 4.2). However, in 2015 the amount of capital raised for renewable funds exceeded both mixed funds and conventional energy funds. Although mixed-energy funds had a resurgence in 2020 and 2021, due to the fast-shifting energy demands seen after the pandemic⁴ that renewable sources were unable to cope with, renewable funds were back in the driving seat by 2022.

Fig. 4.2: Renewables lead energy fundraising

Energy funds capital raised by type (\$bn)



*YTD to Q3 2024

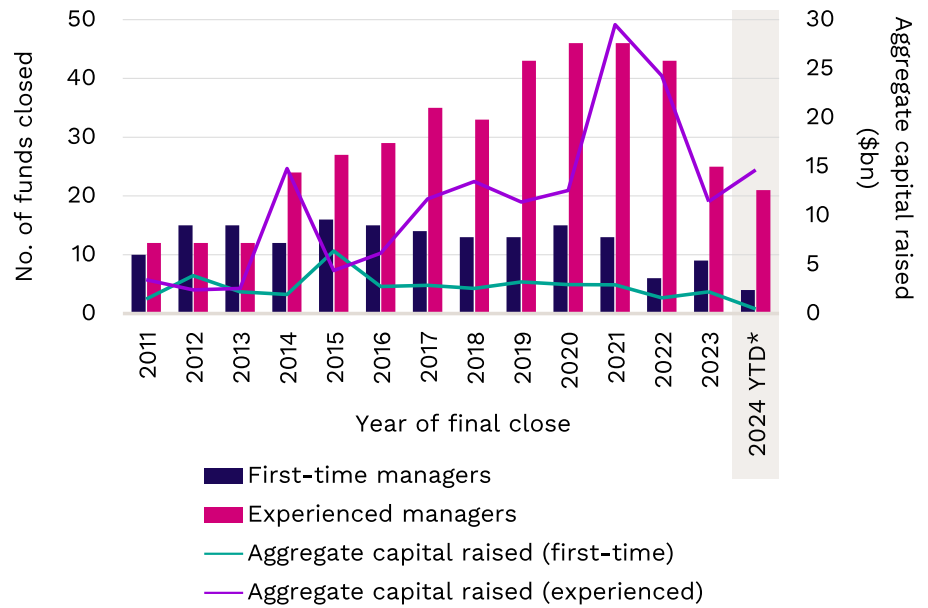
Source: Preqin Pro

When it comes to fundraising for renewables, first-time managers generally struggle compared with their established peers. Back in 2015, however, when infrastructure was in its adolescence, first-time managers peaked with 16 funds closing and briefly overtook experienced managers in terms of aggregate capital raised (Fig. 4.3). Now that infrastructure is an established asset class, managers can benefit from their previous track record, and this has led to well-known infrastructure managers launching larger renewable energy and energy transition funds to target the space. Since 2015, capital raised by first-time managers has stayed relatively flat.

⁴ <https://www.iea.org/news/global-electricity-demand-is-growing-faster-than-renewables-driving-strong-increase-in-generation-from-fossil-fuels>

Fig. 4.3: First-time managers finding less success in renewables

Aggregate capital raised with exposure to renewable energy, first-time vs. experienced infrastructure managers



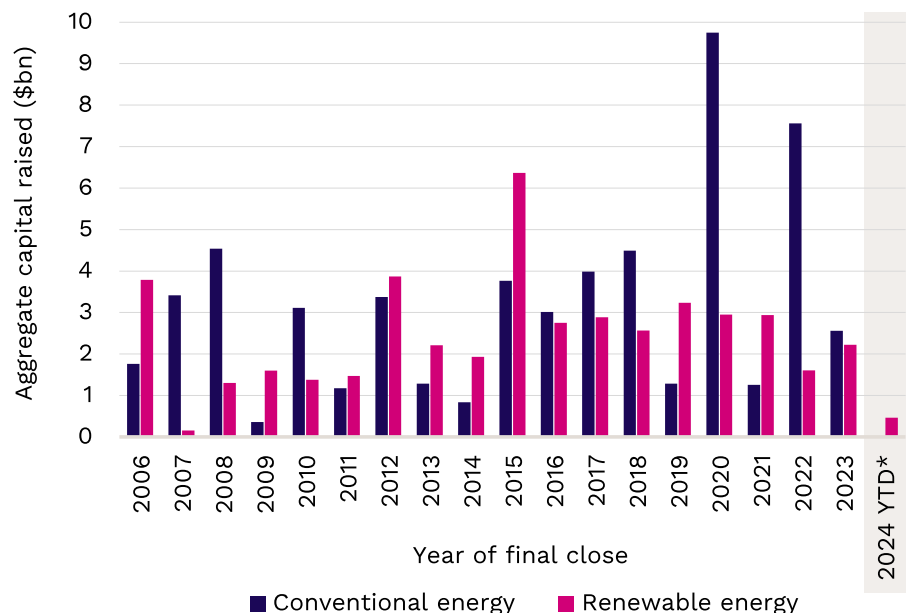
*YTD to Q3 2024

Source: Preqin Pro

Both experienced managers and first-time managers alike making their first move into the renewables sector are struggling with raising capital compared to other infrastructure sectors. In 2023, first-time managers saw a reduction of 65% in capital raised since their peak in 2015, and established managers experienced a 61% reduction since 2021. In 2015, as a result of the Paris Agreement, fundraising for first-time renewables fund managers was notably up on fundraising for first-time conventional energy fund managers. Although less pronounced, 2019 and 2021 also saw first-time renewables managers outpace conventional managers, with 70% of overall capital raised across the two strategies attributed to renewables for 2021 (Fig. 4.4). However, first-time conventional energy funds raised 70% more than first-time renewable energy

Fig. 4.4: First-time renewables lag first-time conventional

Capital raised by first-time energy funds by sector (\$bn)



*YTD to Q3 2024

Source: Preqin Pro

funds in 2020 and 79% more in 2022. The swing back to conventional energy was driven by natural gas production. Coal production had been steadily decreasing in this period,⁵ but natural gas production increased in North America in 2020 and has since maintained that level.

Deal value in North America leads the pack

Renewable energy deals have consistently accounted for more than half of the infrastructure deal volume⁶ since 2018, although the share of deal value held by renewable energy is not as consistent,⁷ as renewables deals tend to be smaller than conventional energy deals. In 2024, Europe still leads the overall share of deals for renewables, but the split of deal value is more even across the major regions (Fig. 4.5).

Although Europe is viewed as having the more established renewable energy sector, fund managers and investors in the region tend to have less appetite for risk. So while there are more renewables deals, they tend to be smaller in value than conventional energy deals. North America has fewer deals, but both managers and investors are more tolerant of merchant power risk in that region, contributing to appetite for larger average deal sizes. In the next few years, the compound annual growth rate for assets under management for value-added and opportunistic funds – strategies associated with greater risk – is forecast to be 9.88% for North American infrastructure,⁸ versus 7.81% for European.

5 <https://www.iea.org/articles/key-electricity-trends-2020>

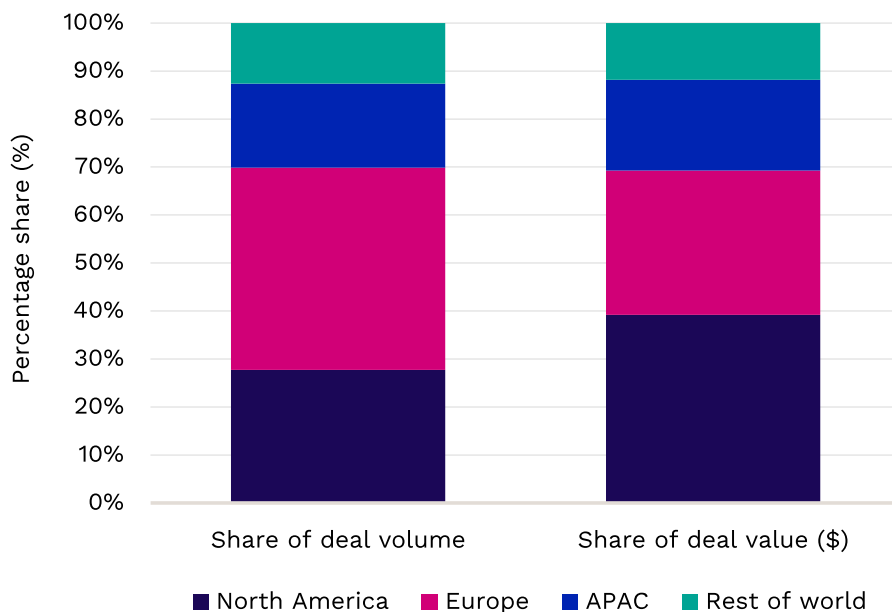
6 <https://www.preqin.com/insights/global-reports/2024-infrastructure>

7 <https://www.preqin.com/insights/research/quarterly-updates/q1-2024-infrastructure>

8 <https://www.preqin.com/insights/research/reports/future-of-alternatives-2029>

Fig. 4.5: Europe hosts more renewables deals, but for smaller amounts

Renewable energy deal volume and value by region, Q1–Q3 2024



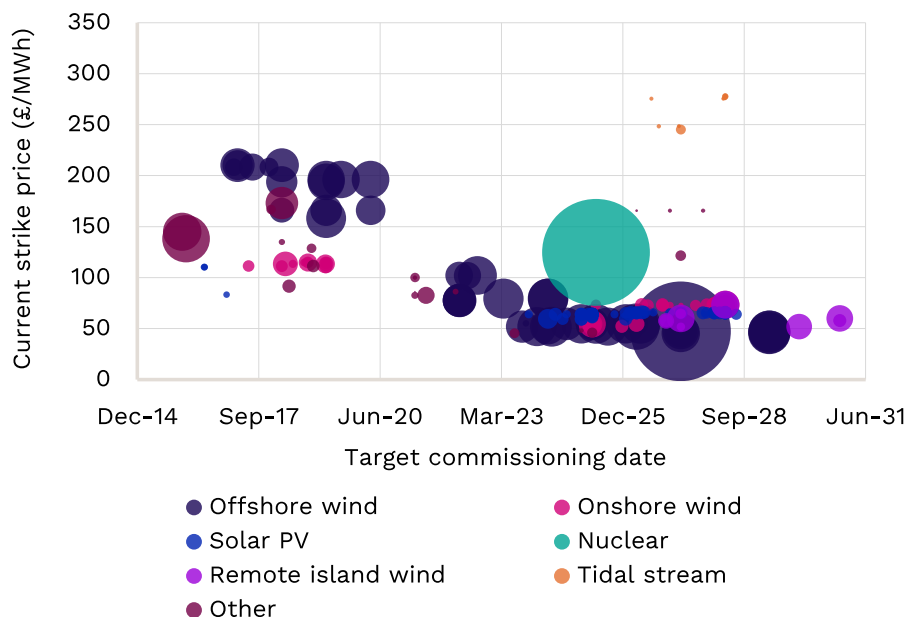
Source: Preqin Pro. Data as of October 2024

Competition driving down the price of technology

Competition within the renewables space is also driving down returns of new renewable developments, as the market becomes more congested. In the latest allocation round (AR6) for the Low Carbon Contracts Company in the UK, strike prices were, on average, noticeably lower than in previous years (Fig. 4.6). The previous allocation round, in 2023, failed completely.⁹ Deterred by surging costs surrounding new projects – due to inflation, high costs of borrowing, and a cap placed on strike prices by the government of the time – developers chose not to bid against returns projections that did not stack up.

Fig. 4.6: New renewable energy technology drives price shift in UK

Strike price and target commissioning date for UK contractors for different energy generation assets



Source: Low Carbon Contracts Company, AR6

Newer and more novel technologies tend to require a higher strike price to compensate for the lack of returns in pathfinder projects. As they reach scale, innovative sources of energy can help diversify low-carbon power generation and reduce reliance on singular sources. Tidal stream technology is far less developed than wind technology, but because water is denser than air, lower velocities are required to produce the equivalent energy. The 15 tidal stream projects commissioned as part of AR6 received strike prices 71% above the average in this allocation round. However, commission dates for these assets are much further away, to give the sponsor time to prepare for these riskier projects and secure offtake agreements.

Renewables re-establishing their market position

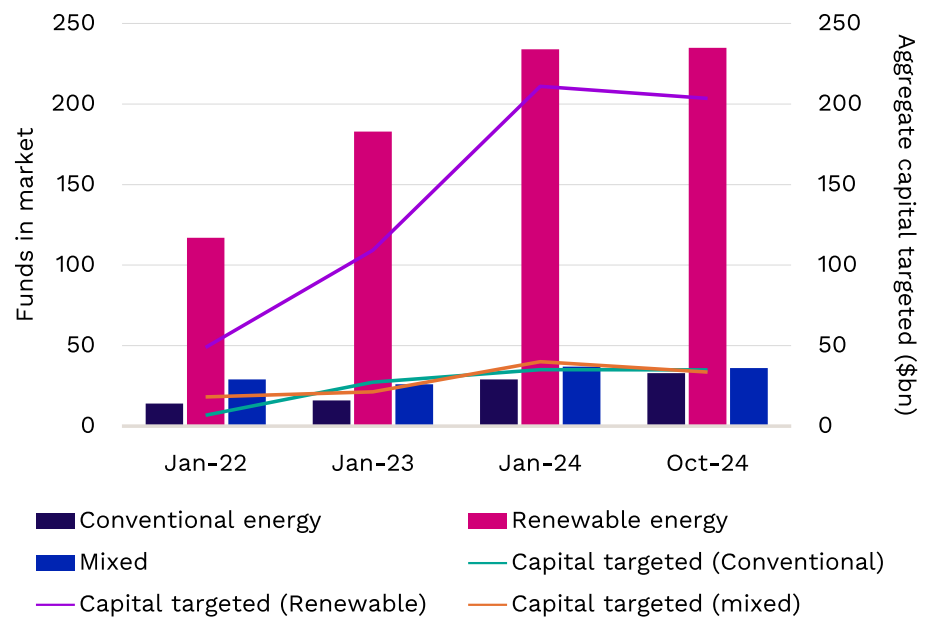
Since the 2022 rebound of conventional energy fundraising, renewable energy funds have slowly been re-establishing their dominance within infrastructure energy funds. The 235 renewable energy funds currently in the market account for 77% of all energy funds, maintaining a trend of 70%-plus market share since 2022 (Fig. 4.7). The aggregate capital being targeted by these funds has also doubled since the start of 2023, as the transition to renewable energy regains momentum. With interest rates being cut and inflation waning, development costs are starting to fall.¹⁰

⁹ <https://www.ft.com/content/be6c1348-1df0-438d-ae88-da19783bf3b5>

¹⁰ https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2024/Sep/IRENA_Renewable_power_generation_costs_in_2023.pdf

Fig. 4.7: Overwhelming majority of energy funds are renewables

Energy funds in market and aggregate capital targeted by type (\$bn)



Source: Preqin Pro. Data as of October 2024

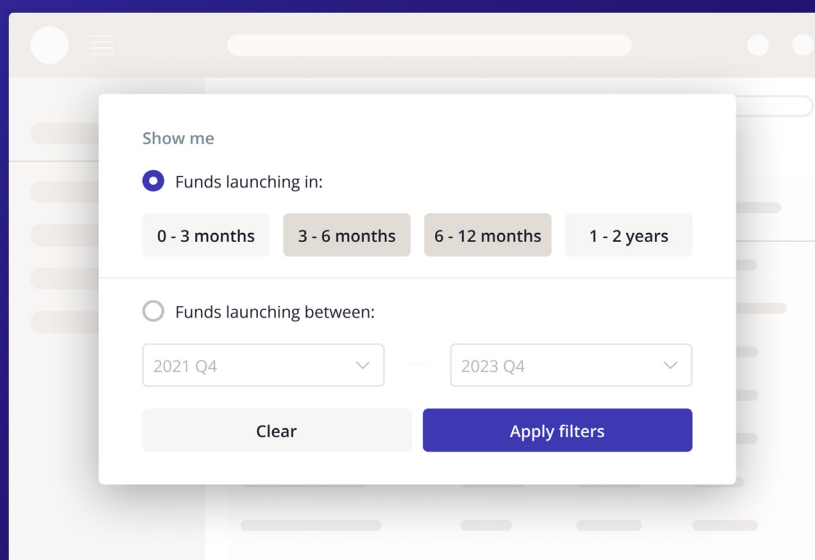
The transition to renewable energy continues to make progress, with an estimated 5,500GW of renewable capacity¹¹ set to become operational by 2030, and a further \$700mn committed to decarbonization at COP28¹² (with a view for continued investment). With COP29 taking place at the end of this year, governments have a clear role to play in influencing the development and rolling out of renewable energy. Firm commitments will only solidify renewables' position as a primary infrastructure sector.

11 <https://www.iea.org/reports/renewables-2024/executive-summary>

12 <https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era>

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→ Infrastructure debt in the spotlight

The case for infrastructure debt is tied as much to the growth of the asset class as to the credit cycle





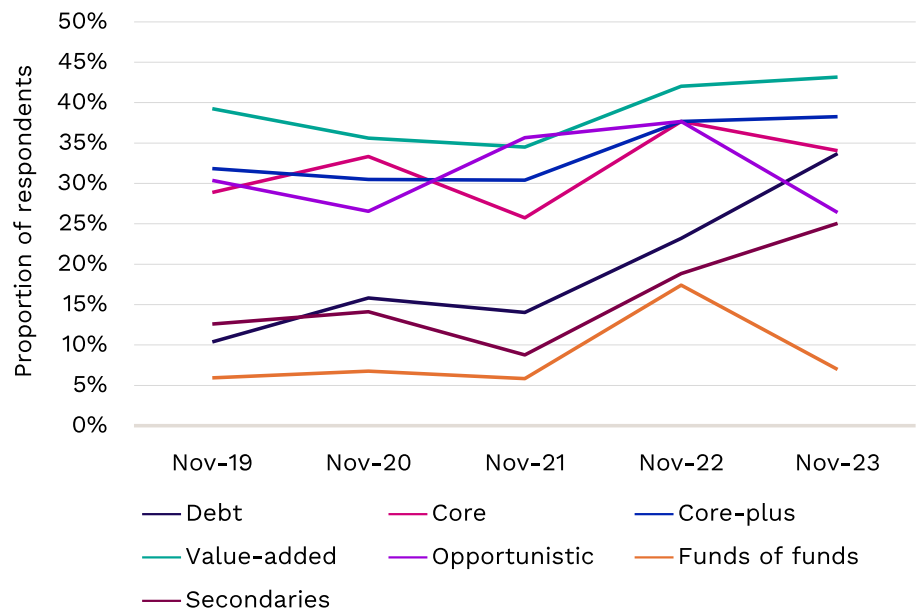
Alex Murray, PhD
 VP, Head of Real Assets
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With so much attention on private debt, the debt opportunities in infrastructure have been somewhat overshadowed. While still a minority, as of June 2023, infrastructure debt funds make up around 12% of assets under management (AUM) for the unlisted infrastructure asset class. By comparison, the same figure stood at 5% in 2012.

Investors are aware of these funds' potential to provide access to returns from higher interest rates. We know this because infrastructure investors have consistently reported elevated interest in debt funds over the past two years. In November 2021, 14% believed infrastructure debt funds had the best potential; by November 2023, this had risen to 34% (Fig. 5.1).

Fig. 5.1: Infrastructure debt seen as equally attractive as core infrastructure

Investors were asked: 'Which fund types present the best opportunities in infrastructure?'



Source: Preqin Investor Surveys, November 2019–2023

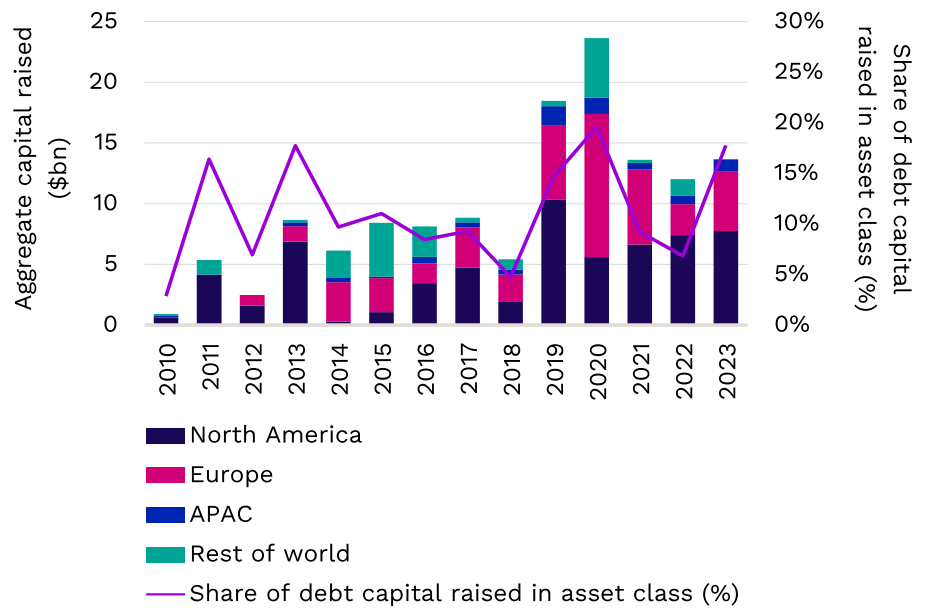
Appetite for infrastructure debt strategies has risen on the back of higher interest rates. However, this may wane as the easing of inflationary pressures provides room for central bankers to loosen policies. Also, while they aid returns, higher interest rates had little to do with the emergence and early growth of the private debt asset class. As such, the case for infrastructure debt is not limited to the potential for higher returns in tighter credit markets.

Infrastructure debt AUM still immature but proving resilient as fundraising has slowed

Infrastructure debt strategies are at an earlier stage of development than real estate debt, in part because the infrastructure asset class itself is less developed than real estate. The share of aggregate fundraising by such funds is also more volatile, averaging 14% over 2019–2023, with particular weakness in 2021 and 2022 (Fig. 5.2). That said, the strategy has been resilient in 2023, even as fundraising contracted sharply in the main asset class. In fact, infrastructure debt increased its share of overall fundraising to 18%, which is above the long-term average. As might be expected given infrastructure funds' broader geographic reach, their North American slant is much less prominent than for real estate, with 49% of the average annual capital raised by funds targeting the region, compared to 68% for real estate over 2019–2023.

Fig. 5.2: Infrastructure debt funds regain larger share of fundraising

Capital raised by infrastructure debt funds by primary region focus

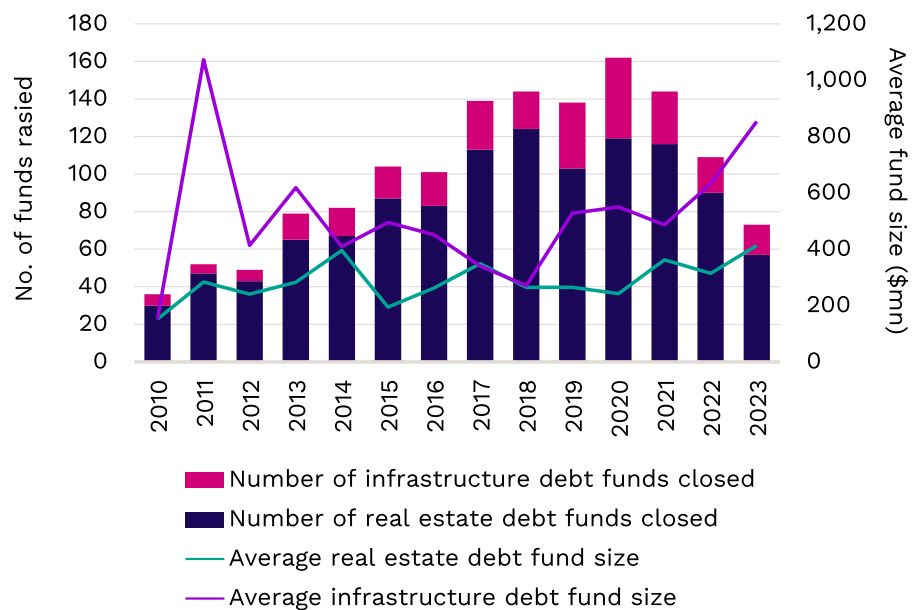


Source: Preqin Pro. Data as of January 2024

The average infrastructure debt fund is consistently larger than in real estate debt,¹ in line with the asset class’s greater concentration of fundraising. Infrastructure debt funds’ average size over 2010–2023 was \$512mn, versus \$287mn for real estate. This reflects the longer tail of middle and smaller market managers in real estate debt, as well as in equity funds. Recently, the average infrastructure fund surged to more than \$850mn in 2023, despite the number of funds closed falling back since 2020 (Fig. 5.3).

Fig. 5.3: Infrastructure debt funds grow larger than real estate debt funds

Number and average size of real asset debt funds



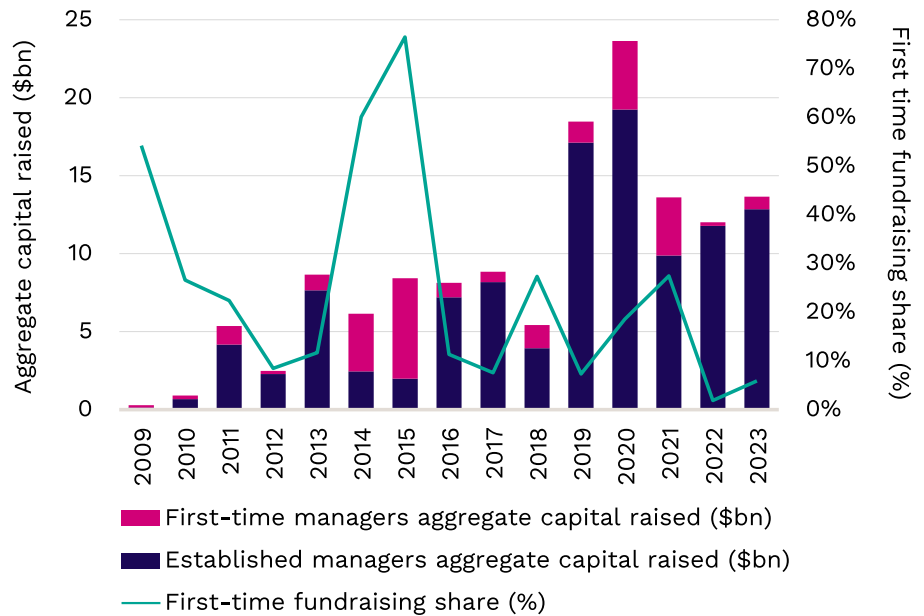
Source: Preqin Pro. Data as of January 2024

¹ <https://www.preqin.com/insights/global-reports/2022-preqin-global-infrastructure-report>

In 2014 and 2015, as infrastructure debt emerged in the asset class, the share of capital raised by first-time managers surged (Fig. 5.4). However, as the strategy has become more mainstream, established managers have dominated fundraising in recent years, securing an average 87% of the capital raised between 2016 and 2023.

Fig. 5.4: New infrastructure debt managers surged in 2014

Infrastructure debt capital raised by established and first-time managers



Source: Preqin Pro. Data as of January 2024

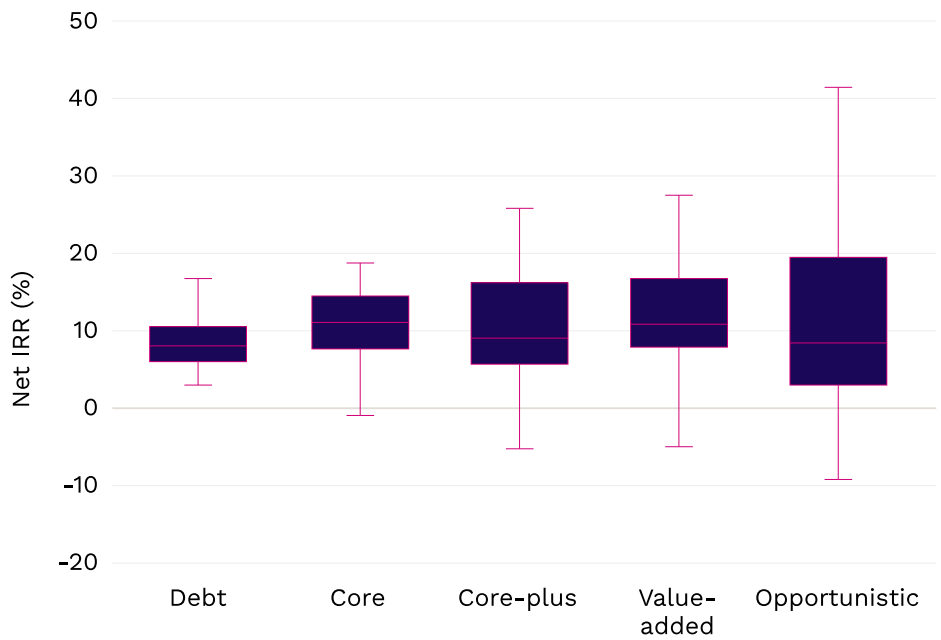
Infrastructure debt promises lower default risk than private debt

Infrastructure debt offers potentially lower exposure to risk than other alternative debt strategies. As the least risky equity asset class, its debt strategies face lower default risk than those across pure private debt. This is because infrastructure business models tend to contain lower risk, such as core and core-plus funds, which are often underpinned by long-term government or corporate offtakes. As a result, they face lower demand risk than businesses in other sectors to which private debt funds lend.

Aggregating the performance data across infrastructure funds over time and breaking it down by strategy provides insight on the mean internal rates of return (IRRs) and their dispersion. The funds are drawn from quite different sets of vintages, with core and core-plus groups prominent in the earlier days of the asset class, while more recently raised funds dominate the debt sample. The spread of IRRs is as expected in relation to relative strategy risk. Progressing up the scale of risk from debt to opportunistic strategies, IRR spreads broaden (Fig. 5.5). What stands out in the debt sample is the absence of negative IRRs in the bottom quartile, with an interquartile range between 6.5% and 10.1%. This reaffirms the inherent downside risk protection of debt strategies, particularly those lending to infrastructure core and core-plus funds, the lowest-risk equity funds across private markets.

Fig. 5.5: Higher-risk strategies exhibit broader IRR spreads

Infrastructure return dispersion by strategies, vintages 2011–2020



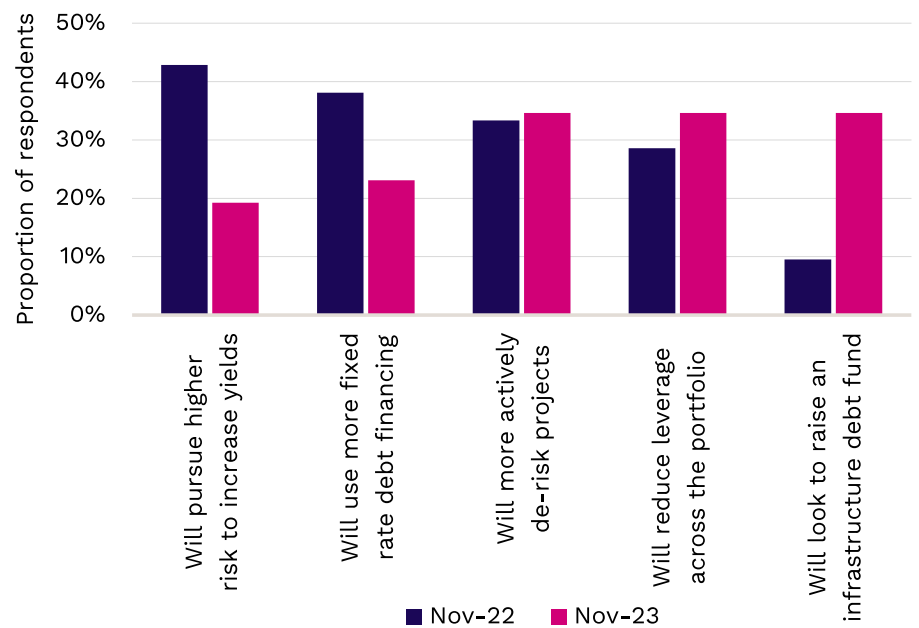
Source: Preqin Pro. Data as of January 2024

Infrastructure debt fundraising has reacted slowly to rising interest rates

Our infrastructure manager surveys over the past two years have asked GPs about how they were handling higher rates. In 2022, raising debt funds was the least popular response, at 10% (Fig. 5.6). But in 2023 this response was the joint most popular, alongside desires to reduce leverage across portfolios and to more actively de-risk projects, with 35% of infrastructure fund managers citing this intention. Managers may thus have missed an opportunity for real asset classes to make the most of higher

Fig. 5.6: Fund managers look to infrastructure debt fundraising

Infrastructure fund managers asked: ‘How will increasing interest rates affect your investment activity?’



Source: Preqin Fund Manager Surveys, November 2022–2023

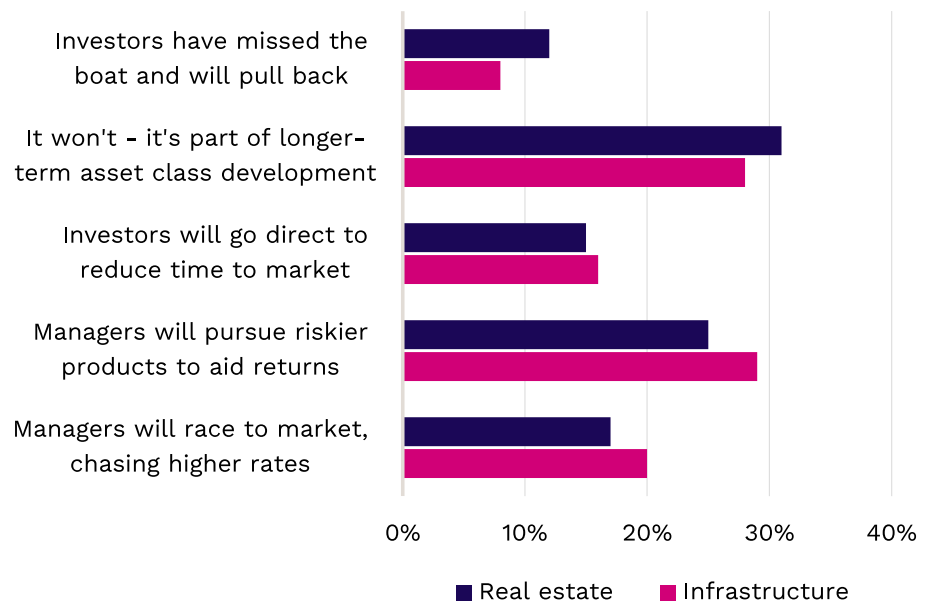
rates. Those dedicated to private debt will no doubt have been more attuned to the conditions, but infrastructure as an asset class is dominated by equity strategies, so only the minority with an established footprint in debt funds will have been ready to capitalize.

On the potential longer-term growth of infrastructure debt funds, many believe their future is part of a longer-term development of the asset class. In our real estate and infrastructure global webinars earlier in 2024, we asked our audience of managers, investors, and service providers, among others, for their views on the impact of reducing rates on the development of debt funds. Responses were broadly similar between asset classes. In real estate, 31% of respondents thought reducing rates would not hamper the growth of these strategies (Fig. 5.7), as they are part of the asset class’s longer-term development. This response was the second most popular among infrastructure webinar respondents, at 28%. Most popular was the belief that managers will pursue higher-risk products to support returns. This aligns with the challenges facing even equity funds in infrastructure,² whose return proposition in an elevated rate environment faces challenges from more liquid fixed-income opportunities.

² <https://www.preqin.com/insights/global-reports/2024-infrastructure>

Fig. 5.7: Real asset debt will develop with asset class maturity, not interest rates

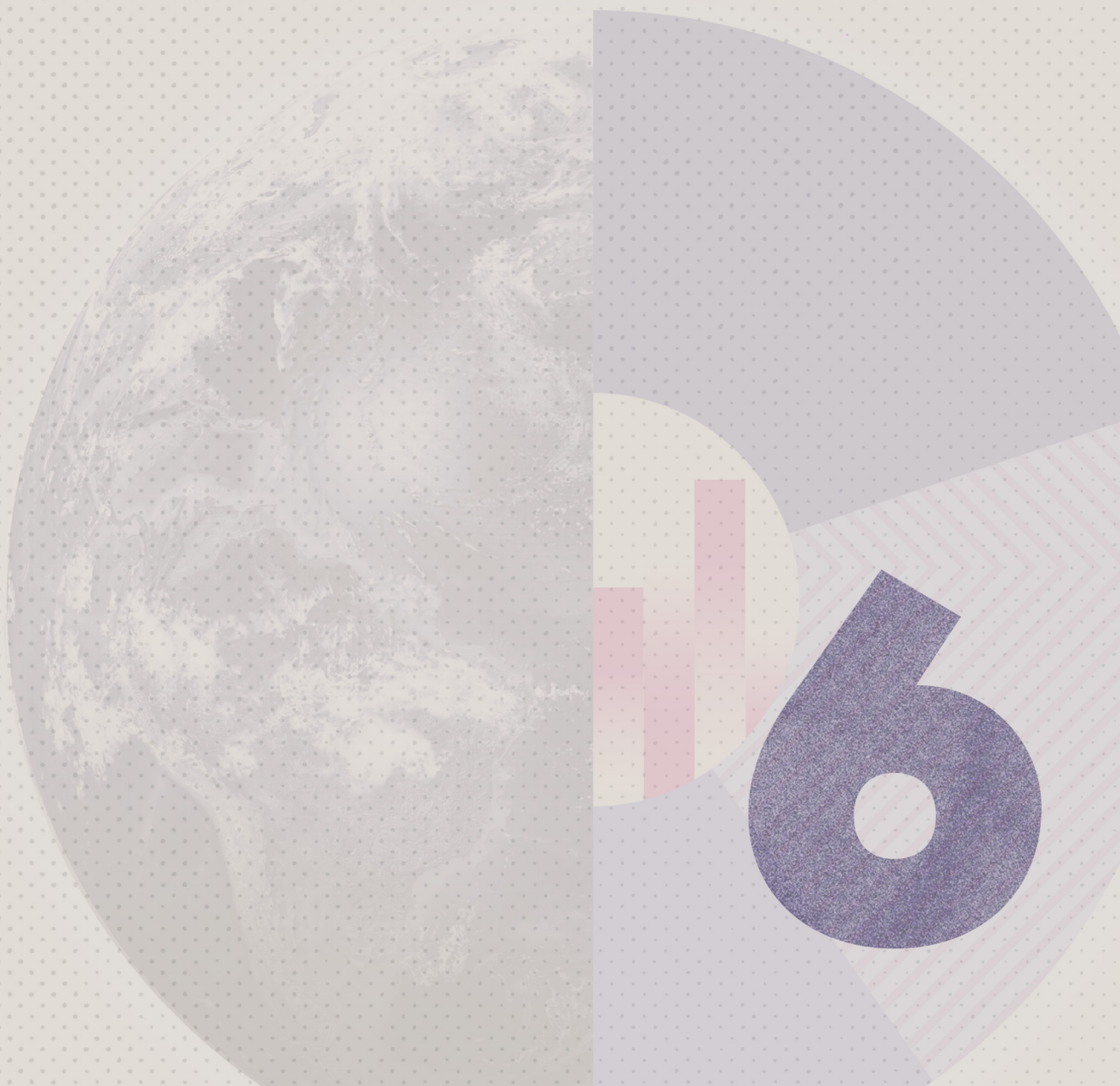
Survey asked: ‘How will reducing rates impact the appetite for real asset debt strategies?’



Source: Global real estate and infrastructure webinars, Preqin, January 2024

→ Infrastructure in emerging markets

Infrastructure deal-making differs markedly in Asia and Latin America & the Caribbean



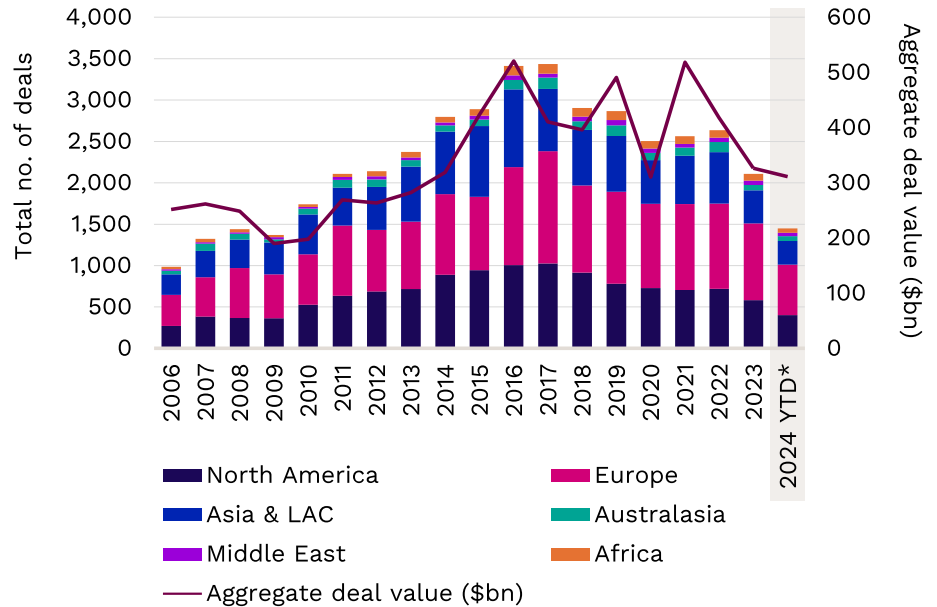


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Emerging market infrastructure has traditionally lived in the shadow of the European and North American markets. Asia and Latin America & the Caribbean have together contributed around 24% of total infrastructure deal volume since 2006 (Fig. 6.1). Recent macroeconomic uncertainty has had a negative impact on the market share of these regions.

Fig. 6.1: Market share of Asia and Latin America & the Caribbean infrastructure deals has reduced over time

Total number and value of infrastructure deals by region



*YTD to Q3 2024

Source: Preqin Pro

As of the third quarter of 2024, these regions accounted for just 19.6% of global infrastructure deals. This is partly due to North America’s early lead in the asset class, prompting a 27.8% market share. Europe, which continues to take the lead on environmental, social, and governance (ESG) and green infrastructure initiatives,¹ accounted for more than 40% of global infrastructure deal volume in the same period.

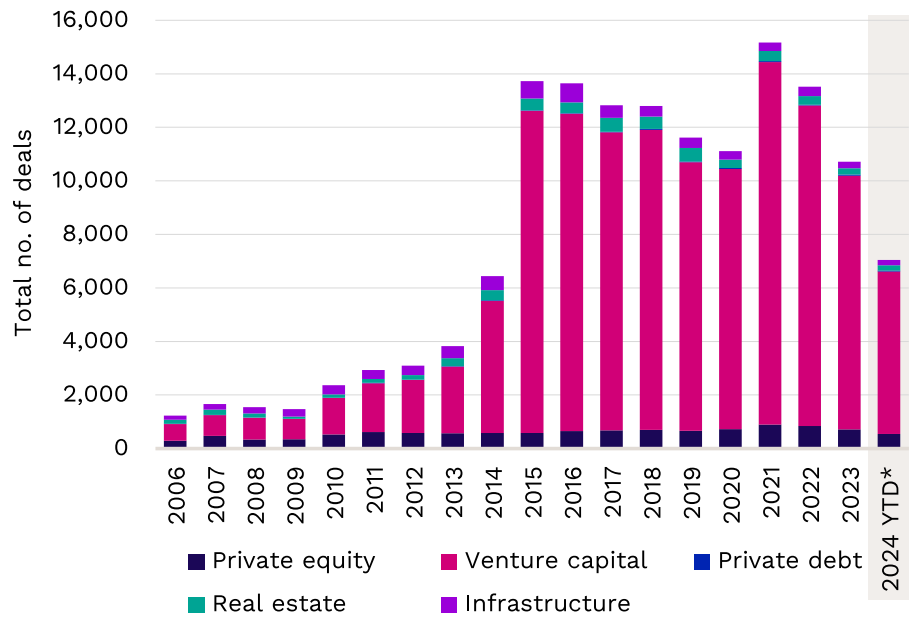
Infrastructure in Asia’s deal market has been further overshadowed in recent years

Deal-making differs markedly between Asia and Latin America & the Caribbean. In Asia, private capital investments have leaned heavily toward venture capital (VC) for nearly two decades, strongly encouraged by the region’s rapid economic growth and policy reforms. Since 2006, VC deals have grown disproportionately, with particularly rapid growth since 2014, accounting for nearly 90% of total deal volume in the past decade (Fig. 6.2). This VC boom has reshaped the investment landscape, eclipsing infrastructure. Consequently, infrastructure accounts for a declining share of Asian deals – down from around 12.9% between 2006 and 2014 to just 3.3% in the past decade.

¹ <https://www.preqin.com/insights/research/reports/esg-in-alternatives-2024>

Fig. 6.2: VC overshadows other asset classes, including infrastructure

Total number of deals by asset class in Asia



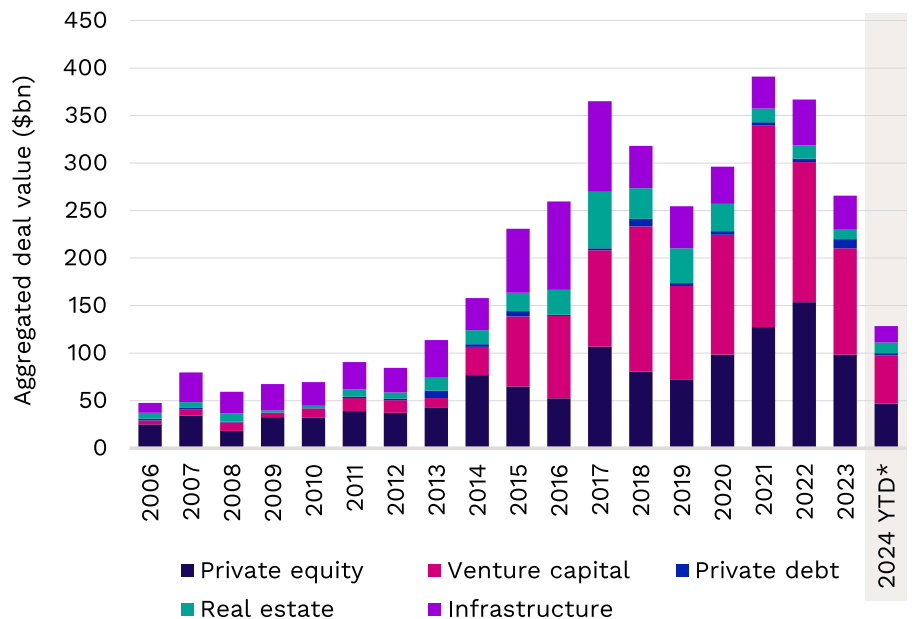
*YTD to Q3 2024

Source: Preqin Pro

Deal values followed a similar trend, with VC accounting for a larger share since 2015 and infrastructure struggling to maintain its ground (Fig. 6.3). Despite reasonably consistent infrastructure deal volumes over the past two decades, infrastructure deal value has lagged overall private capital deals.

Fig. 6.3: Infrastructure deal value has been relatively consistent

Aggregate deal value by asset class in Asia



*YTD to Q3 2024

Source: Preqin Pro

One primary factor contributing to Asia’s limited growth in infrastructure private investing is the dominance of state-owned enterprises (SOEs) in large markets such as China. Government ownership often limits opportunities for private investment, driving capital toward either smaller projects in other markets or infrastructure developments which may have less strategic significance. Capital has flowed more readily into VC as a result, particularly in tech-driven sectors with higher target returns. Preqin’s Future of Alternatives² predicts APAC’s VC assets under management (AUM) will be four times larger than the region’s infrastructure AUM as of 2024.

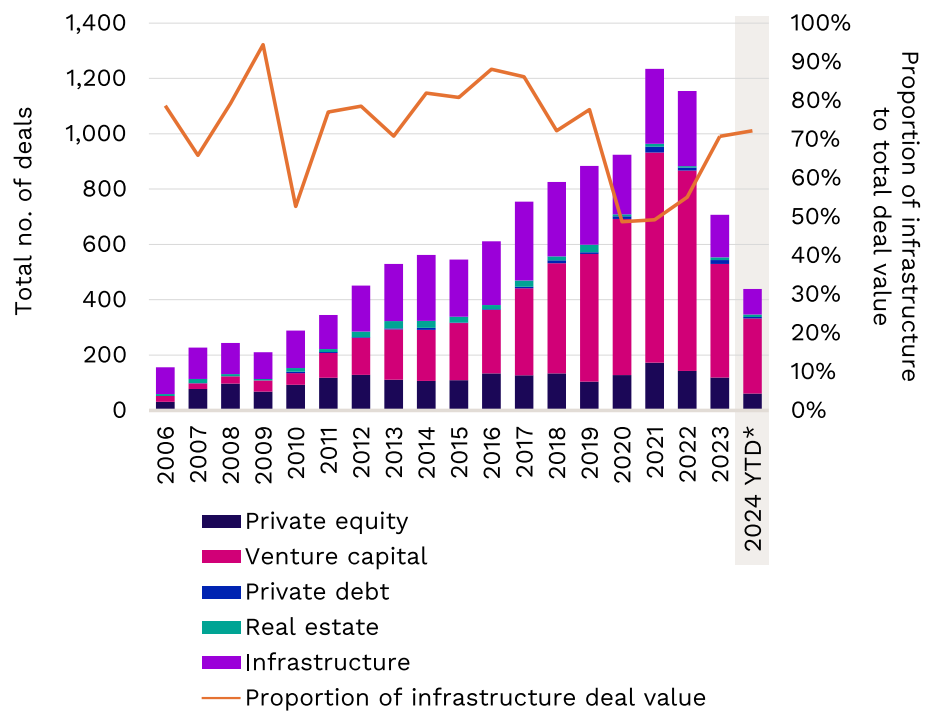
Latin America & the Caribbean plays catch-up

Infrastructure is a more prominent component of the investment landscape in the Latin America & the Caribbean region than it is in Asia. Although infrastructure deals in Latin America & the Caribbean lag Asia in absolute value, they dominate within the region (Fig. 6.4), accounting for about 70% of total private capital deal value over the past decade, compared with 17.2% for Asia. This highlights the importance of economic infrastructure, such as transport and utilities, to the development of countries in the region.

² <https://www.preqin.com/insights/research/reports/future-of-alternatives-2029>

Fig. 6.4: Volume of infrastructure deals has been declining

Total number of deals by asset class in Latin America & the Caribbean



*YTD to Q3 2024

Source: Preqin Pro

Infrastructure fundraising also trails Asia. Over the past decade, Asia’s top 10 fund managers have raised \$83bn, vastly outpacing Latin America & the Caribbean’s \$16bn. Eight of Asia’s largest fund managers are based in China, where their primary focus continues to be domestic projects (Fig. 6.5), whereas Latin America & the Caribbean’s fund managers typically invest across a number of countries in the region. This reflects a lower concentration in infrastructure opportunities by country and a more diversified geographical approach to infrastructure capital deployment.

Fig. 6.5: Asia managers are mainly based in China

Top 10 infrastructure fund managers based in Asia, Latin America & the Caribbean

Asia

Firm	Headquarters	Total capital raised in past 10 years (\$bn)	Estimated dry powder (\$bn)	No. of infrastructure funds currently managed	Year established
CCCC Fund	China	15.9	0.5	12	2014
KB Asset Management	South Korea	14.1	2.3	130	1988
KDB Infrastructure Investments Asset Management	South Korea	10.9	1.6	145	2003
Beikong Nannan Capital	China	8.6	0.5	5	2016
Power China Capital	China	6.8	0.4	2	2015
China Insurance Investment Fund	China	6.6	1.3	1	2015
China Merchants Capital	China	6.3	0.3	1	2012
Elion Resources	China	4.9	0.1	1	1988
Tongshang Fund	China	4.6	0.9	1	2017
Yuzi Puchuang Equity Investment Fund Management	China	4.1	0.2	3	2015

Latin America & the Caribbean

Firm	Headquarters	Total capital raised in past 10 years (\$bn)	Estimated dry powder (\$bn)	No. of infrastructure funds currently managed	Year established
Mexico Infrastructure Partners	Mexico	4.1	0.4	9	2012
BTG Pactual	Brazil	3.4	1.7	8	1983
Perfin Investimentos	Brazil	1.8	0.8	22	2002
Melody Capital Partners	Puerto Rico	1.5	0.3	3	2012
Alom Infraestructura	Mexico	1.4	0.2	6	2003
Brl Trust	Brazil	0.9	0.0	1	2005
CAF-AM Administradora de Activos Uruguay	Uruguay	0.9	0.1	3	2001
Ashmore Management Company Colombia	Colombia	0.7	0.3	3	1992
GBM Infraestructura	Mexico	0.5	0.4	2	1978
Infraestructura Asset Management Colombia SAS	Colombia	0.5	0.1	1	2018

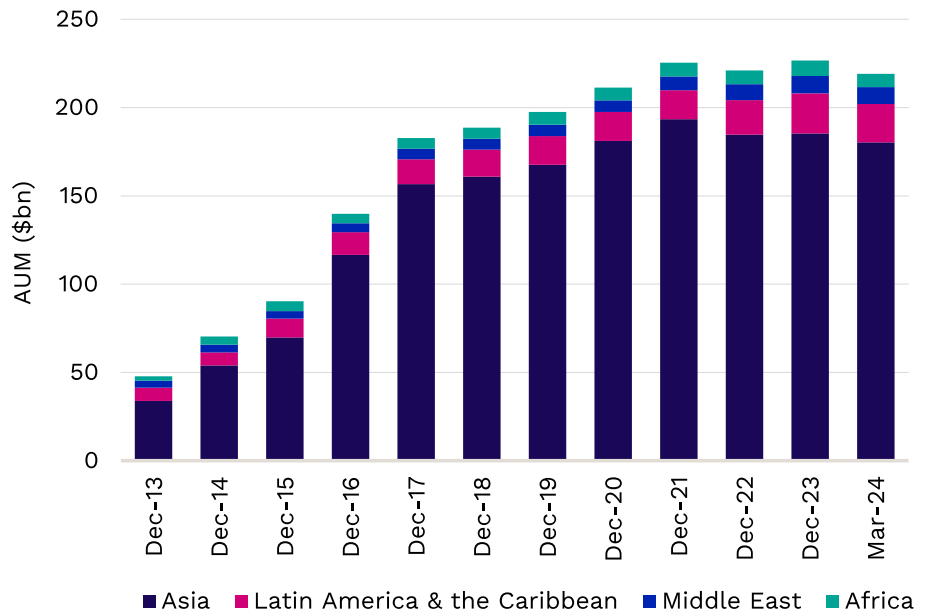
Source: Preqin Pro

Renewable infrastructure anchors Asia and Latin America & the Caribbean, while digital infrastructure gains momentum

Although Asia and Latin America & the Caribbean have distinct investment landscapes – Asia’s infrastructure AUM of \$180bn is eight times larger than Latin America & the Caribbean’s \$22bn as of March 2024 – they share some similarities (Fig. 6.6). Renewables, for example, remain a central focus in both regions. In 2006, renewables accounted for 11.4% of infrastructure deals in Asia; between the first and third quarters of 2024 that figure had grown to more than 40% of the total deal volume. This more than threefold increase over the course of nearly two decades (Fig. 6.7) has

Fig. 6.6: Asia-based infrastructure AUM is eight times larger than Latin America & the Caribbean

Infrastructure AUM by manager’s location

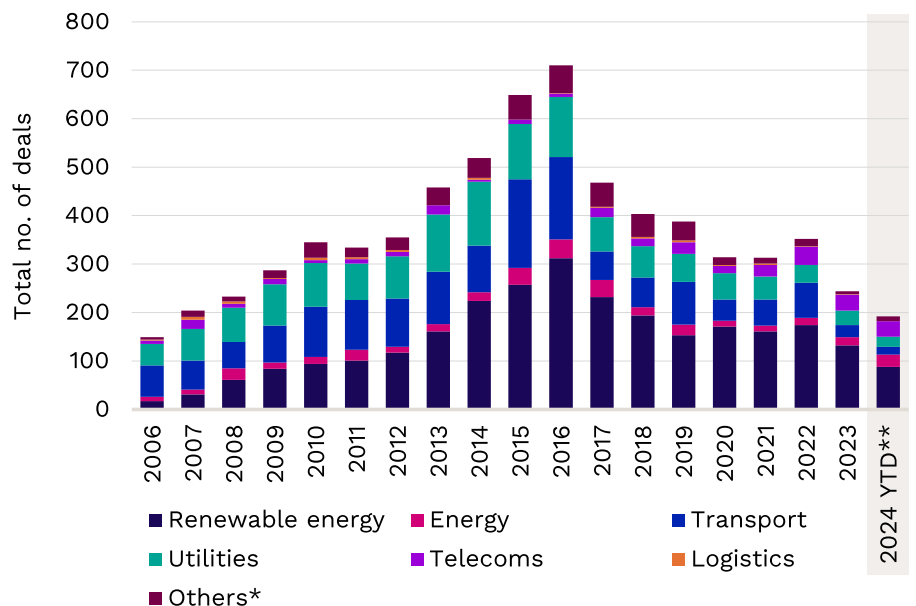


*YTD to Q3 2024

Source: Preqin Pro

Fig. 6.7: Renewable deals grow by more than threefold in Asia

Infrastructure deal volume by sector in Asia



*Others include economic, logistics, and diversified

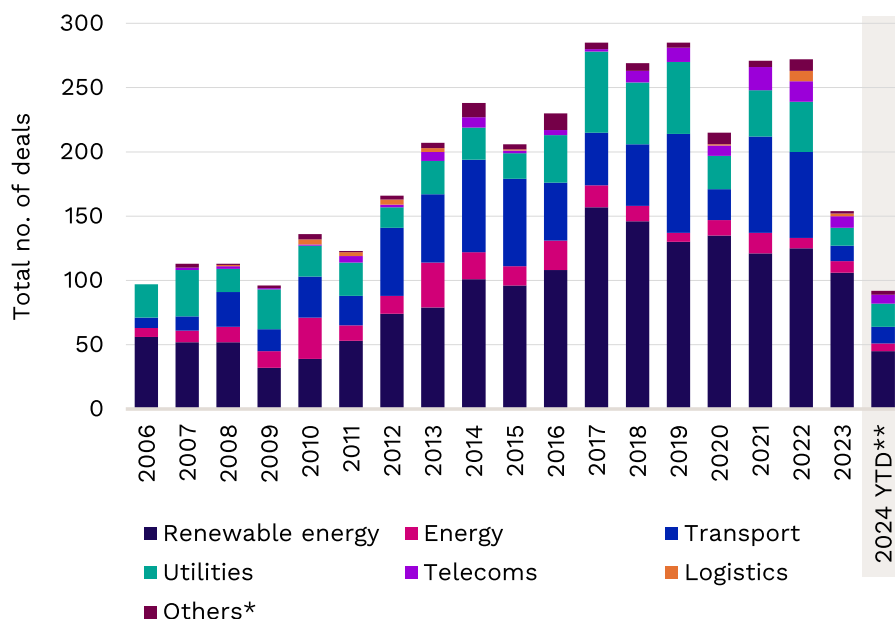
**YTD to Q3 2024

Source: Preqin Pro

mainly been driven by ambitious climate goals set by major Asian countries heavily dependent on fossil fuel and natural gas. In Latin America & the Caribbean, renewables have consistently dominated, accounting for almost half the infrastructure deals completed since 2006 (Fig. 6.8). This buoyancy is underpinned by the abundance of renewable resources in the region and substantial financial support from international agencies and banks.

Fig. 6.8: Renewables have consistently accounted for majority of infrastructure deals

Total number of infrastructure deals by sector in Latin America & the Caribbean



*Others include economic, logistics, and diversified
 **YTD to Q3 2024

Source: Preqin Pro

Yet in the past four years, sectoral shifts have emerged, with telecoms a growing area of investment. Since 2020, the telecoms sector, which includes digital infrastructure, has seen increasing deal activity in both Asia and Latin America & the Caribbean, driven by demand for data centers to support AI development and cloud storage as well as 5G infrastructure. From 2021 to the third quarter of 2024, Asia’s average share of telecoms deal volume was 12.2% – a significant increase on the 5.4% average recorded since 2006. In Latin America & the Caribbean, the average share also rose, from 3.0% in 2006 to 6.5% between 2021 and the third quarter of 2024. We believe that data centers in Asia will come online faster than those in Latin America & the Caribbean – especially in China, where President Xi Jinping’s push to build a ‘digital China’³ has come under increasing export restrictions on computing technology from the US.

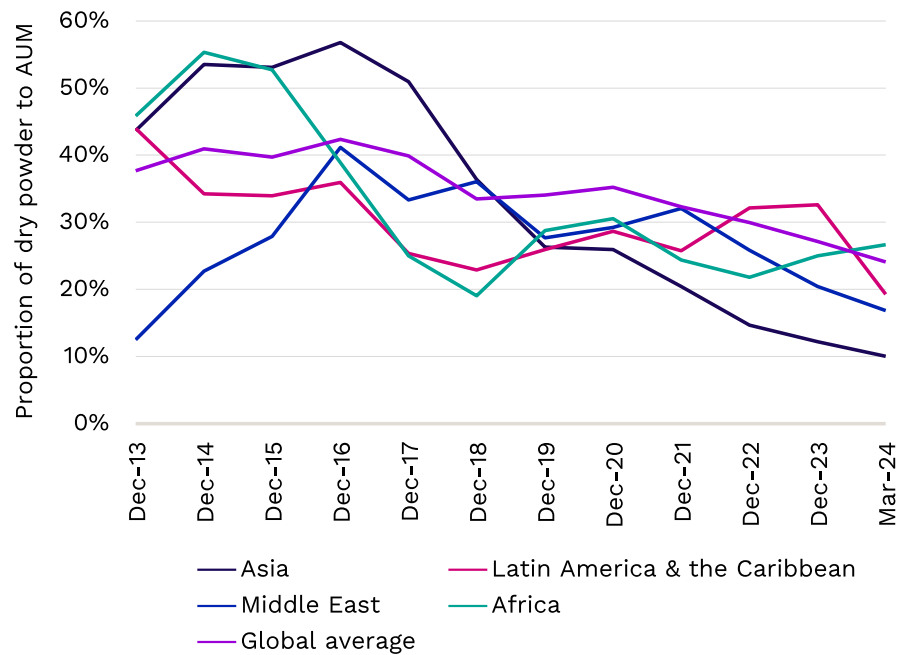
With dry powder trending lower, valuations may come under pressure

The global infrastructure deal landscape has shown resilience amid rising interest rates, but softer fundraising has impacted dry powder levels. As of March 2024, the global dry powder share of AUM has reached a new low of 24%. For Asia, that figure was at just 10%, a significant drop from its 2016 peak of 56.8%. This suggests that valuations may come under pressure if this dwindles further. Dry powder for Latin America & the Caribbean, meanwhile, stands at 19.3%, aligning closer to the global average (Fig. 6.9). This difference in dry powder proportions suggests that deal-making in Asia may become more selective, focusing on higher-potential sectors that could deliver more reliable returns.

3 <https://www.reuters.com/technology/china-invests-61-bln-computing-data-center-project-official-says-2024-08-29/>

Fig. 6.9: Asia-based share of dry powder experiences huge decline

Infrastructure proportion of dry powder to AUM by manager location



Source: Preqin

Latin America & the Caribbean still holds substantial growth potential – it has a \$1.8tn infrastructure gap, according to the Global Infrastructure Hub – but we expect the region’s focus to remain on crucial infrastructure such as renewables, transport, and utilities. However, waning interest from fund managers and investors may pose a challenge, as only 32% of fund managers and 44% of investors see opportunity in the region (Fig. 6.10).

Fig. 6.10: Latin America experiences less interest compared with Asia

Emerging markets targeted by infrastructure fund managers and investors in the next 12 months



Source: Preqin Investor and Fund Manager Surveys, November 2024

→ Our survey: Taking the pulse

Interest rate concerns are softening, but worries over geopolitical tensions and deal competition place new demands on old strategies



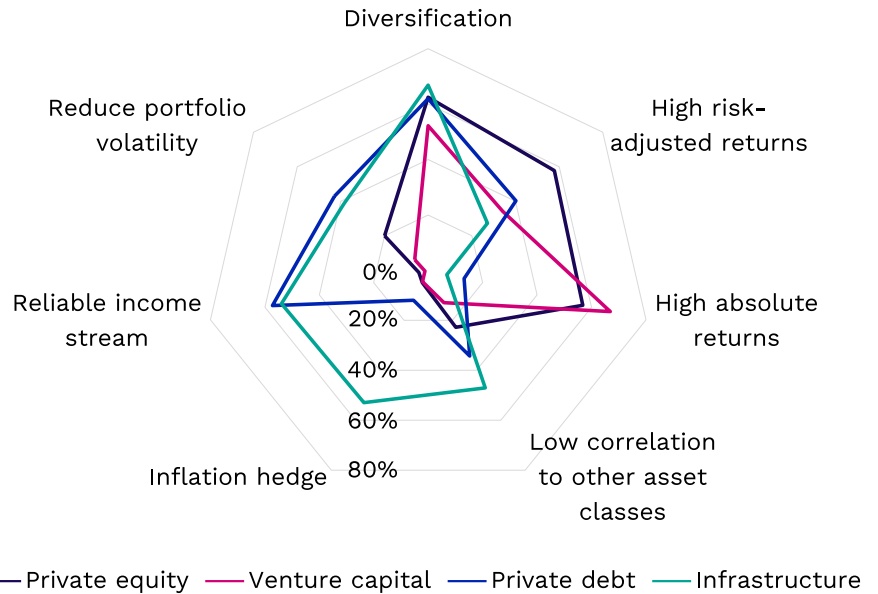


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Subdued infrastructure fundraising in 2023 has continued into 2024, but investors still value the asset class for its diversification benefits (67%), inflation hedge (53%), and as a reliable income stream (54%) (Fig. 7.1). In the current market, where holding periods in private markets have lengthened and liquidity has been a concern, asset classes that can provide a steady income can allay investor concerns on illiquidity.

Fig. 7.1: Reliable income stream a key reason for infrastructure investment

Investors' main reasons for investing in alternative asset classes

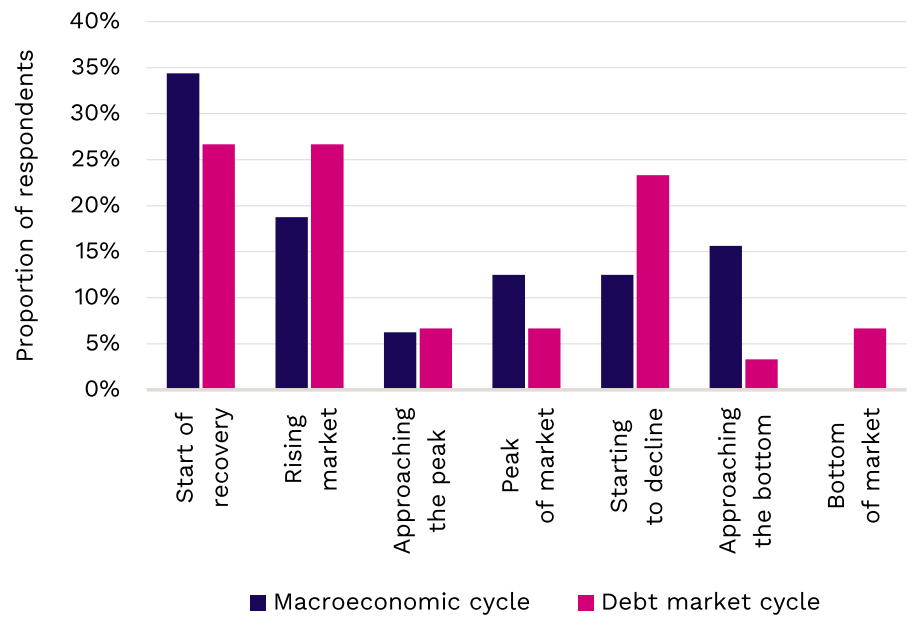


Source: Preqin Investor Survey, November 2024

Fewer investors report feeling the macroeconomic cycle is starting to decline (31% to end-November 2024 versus 43% in November 2023), but for this third or so of investors the defensive characteristics of the asset class continue to be paramount. This comes alongside the sentiment of a rising (30%) and peaking (25%) equity market, which adds to investor interest in infrastructure's less risky nature. Although more than a third (34%) of infrastructure managers believe the macroeconomic cycle is at the start of a recovery (Fig. 7.2), this figure falls to 21% for investors, suggesting managers are currently more optimistic.

Fig. 7.2: Managers see the start of recovery for the macroeconomic cycle

Infrastructure managers' views on current market cycles



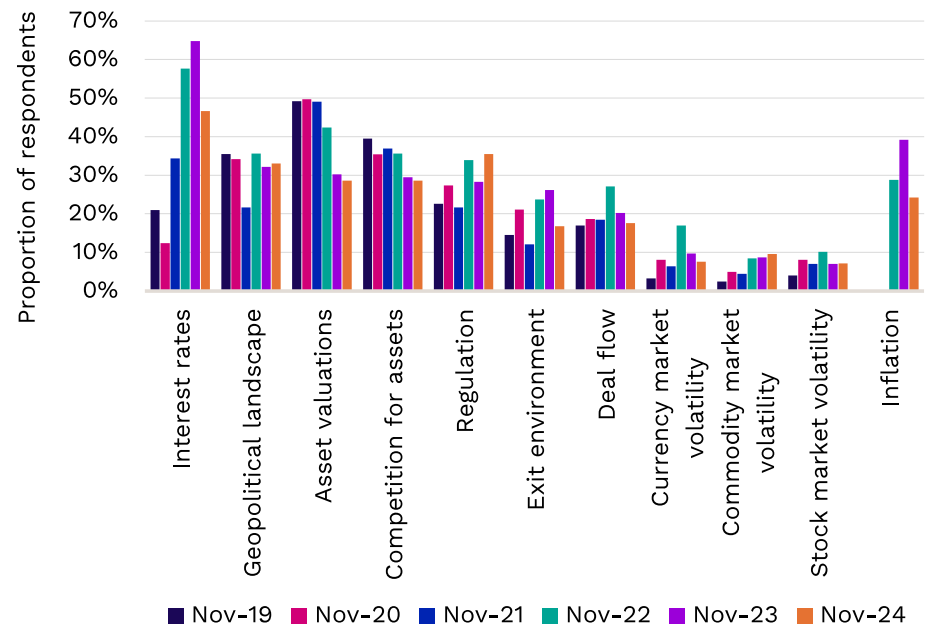
Source: Preqin Fund Manager Survey, November 2024

Regulation and geopolitical tensions becoming a bigger concern

Interest rates remain relevant, with nearly half (47%) of investors reporting them as a primary concern in November 2024, albeit down from 65% of investors in November 2023 (Fig. 7.3). Although rates have begun to moderate, infrastructure assets still require high levels of gearing to drive competitive returns.

Fig. 7.3: Regulation is more of a worry for infrastructure investors

Infrastructure investors views on the key challenges for return generation in the next 12 months



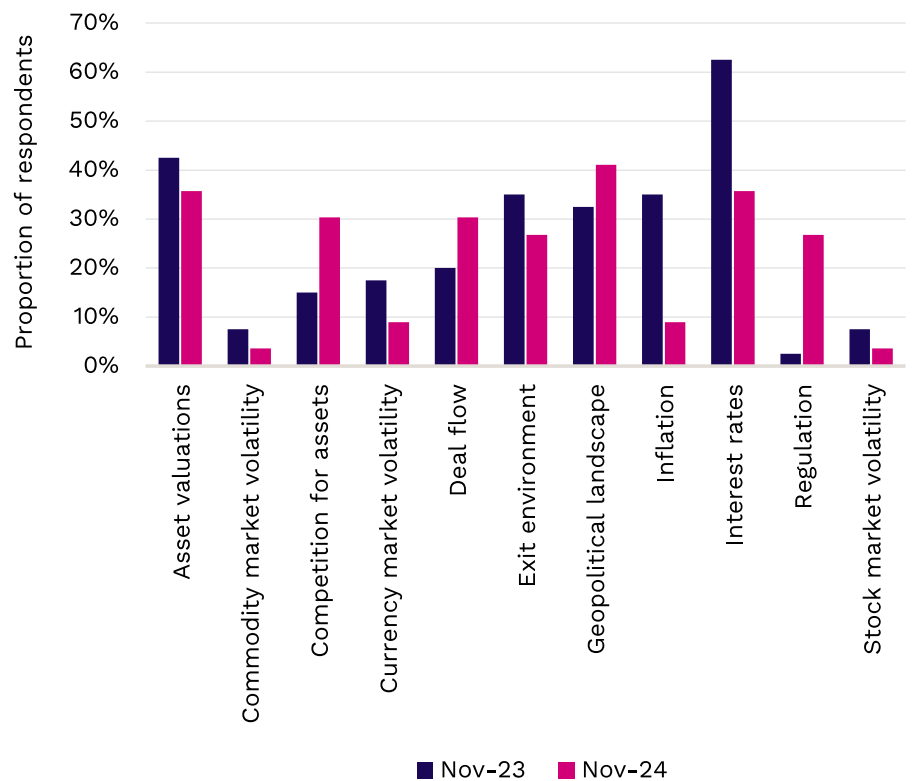
Source: Preqin Investor Surveys, November 2019–2024

Regulation, on the other hand, is a growing concern for infrastructure investors – up from 28% of those surveyed in November 2023 to 35% in November 2024. Regulatory uncertainty from new governments in major developed markets could impact returns. Any rolling back on the Inflation Reduction Act’s tax credit schemes, which underpinned a surge of fundraising in 2022, will likely have implications for renewable energy infrastructure projects in the US.

For infrastructure managers, the geopolitical landscape has risen to paramount importance (41%) and regulation rose in importance from 3% in 2023 to 27% in 2024 (Fig. 7.4). This is understandable, given nearly half of the global population¹ witnessed general elections this year. Political tensions and potential reshoring considerations, driven by a trend of deglobalization, will have an impact on unlisted infrastructure, not least through the price of imported technology to deliver the energy transition.

Fig. 7.4: Regulation becomes a greater concern for infrastructure managers

Infrastructure managers’ views on the main challenges to return generation in the next 12 months



Source: Preqin Fund Manager Surveys, November 2023–2024

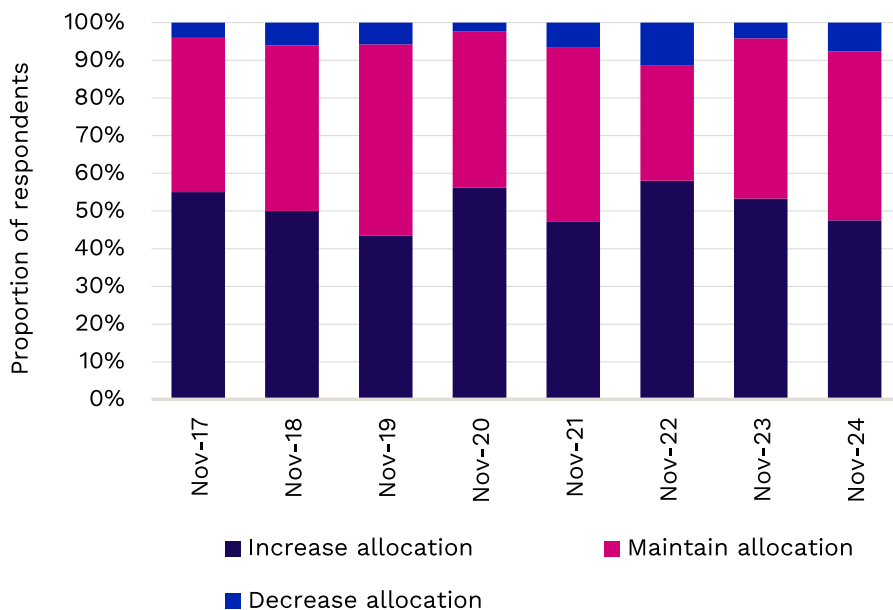
¹ <https://www.reuters.com/graphics/GLOBAL-ELECTIONS2024/gdvzmkjkw/>

Investors report a small growing interest in committing more capital in the short term

Fewer investors expect to increase their allocations to infrastructure over the long term – down from a 2022 peak of 58% to 48% – which could hamper long-term growth (Fig. 7.5). Despite this, short-term commitment expectations have moved in the other direction, with more than a third (37%) of investors looking to commit more capital over the next 12 months, while 49% expect to commit the same amount and 13% expect to commit less. This is an improvement on 2023 sentiments, when fewer than a third (32%) of investors expected to commit more capital to the asset class, and can be seen as a potential growth signal for it.

Fig. 7.5: Nearly half of investors look to increase their allocation

Investors’ expected allocation to infrastructure funds over the longer term



Source: Preqin Investor Surveys, November 2017–2023

Over half of fund managers believe social infrastructure will drive investment

In line with short-term commitment expectations, the median current allocation for many investor types is below target in 2024. Endowments, foundations, government agencies, and private sector pensions all remain under-allocated to infrastructure funds. That said, government agencies – and, in particular, sovereign wealth funds – had set particularly high allocation targets for 2023.

Infrastructure fund managers report shifting tailwinds for long-term growth in the asset class. The energy transition and decarbonization is still a factor for the majority of managers (83%), but increasing the capacity of social infrastructure has also become a key growth driver – up from 29% in 2023 to 58% in November 2024 (Fig. 7.6). Public-private partnership deals in Australia, Canada, and the UK drove socially minded infrastructure momentum in the 2000s, but the sector has fallen back since 2017 (see ‘Year in review: 2024’ chapter).

Fig. 7.6: Adding capacity to social infrastructure is a long-term driver

Infrastructure fund manager predictions for the asset class’s primary driver of private capital investment over the next 10 years



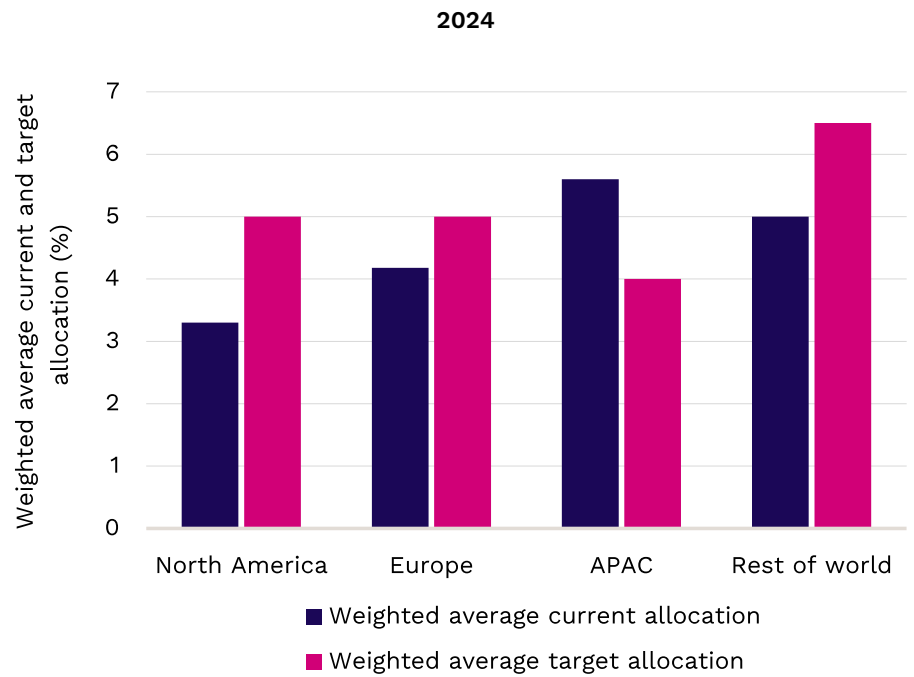
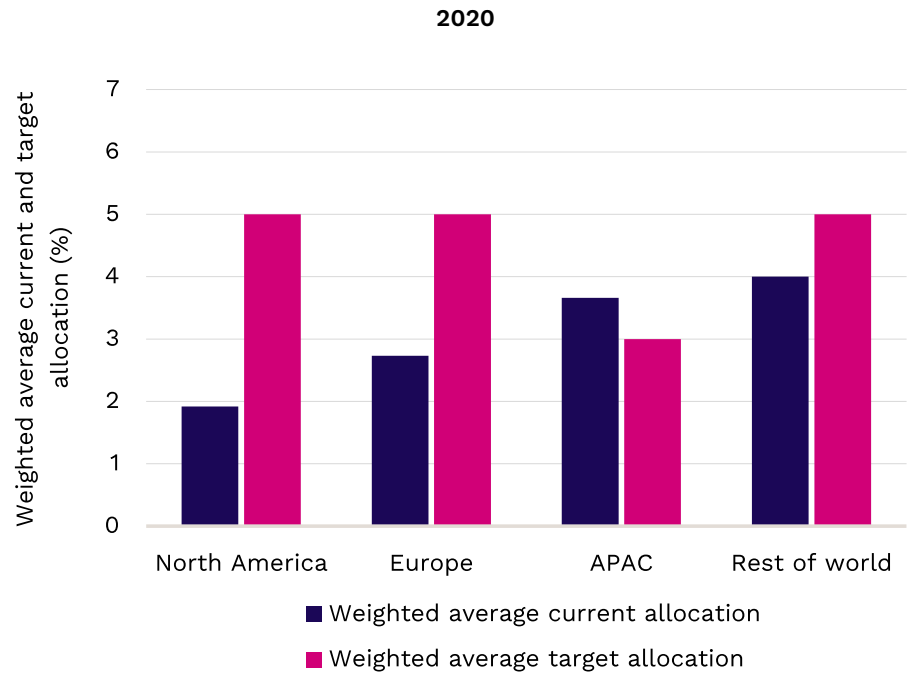
Source: Preqin Fund Manager Surveys, November 2022–2024

Looking regionally at LP commitments vs. target allocations to infrastructure, we can see that LPs based in APAC over-allocate to infrastructure. In 2024 to date, APAC LPs’ weighted average over-allocation is 2 percentage points (ppts) – with actual weighted average allocations of 6% and a weighted average target allocation of 4% (Fig. 7.7). This is an increase on 2020’s 1ppt over-allocation. All other primary regions have remained under-allocated to their weighted targets for both time frames. There is, nevertheless, a feeling that growth could still come from the APAC region,² given tailwinds of growing energy consumption, digital adoption, and urbanization. It is also a region in which LP mandates for infrastructure are more commonplace, particularly for core and debt strategies; APAC accounts for 40% of core mandates and 53% of debt mandates (Fig. 7.8). This shows a level of scrutiny by these investors, as they look to outline their own mandates rather than committing to funds already on the market.

² <https://www.infrastructureinvestor.com/asia-is-more-important-than-ever-for-infras-biggest-gps/>

Fig. 7.7: APAC investors over-allocate to infrastructure

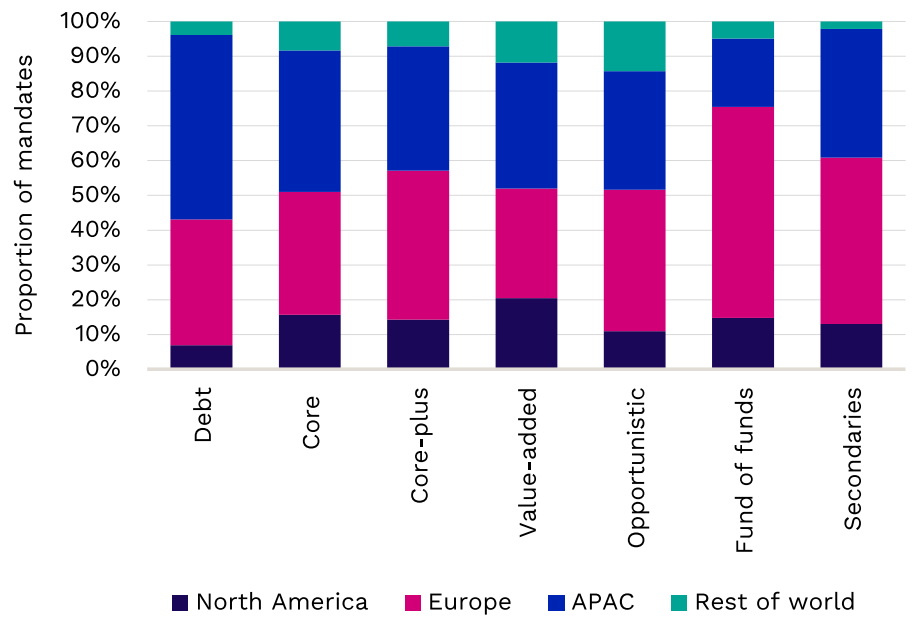
Weighted average current and target allocation to infrastructure by investor region (2020 vs. 2024)



Source: Preqin Pro. Data as of October 2024

Fig. 7.8: APAC and Europe have more fund mandates

Proportion of mandates by infrastructure strategy and region



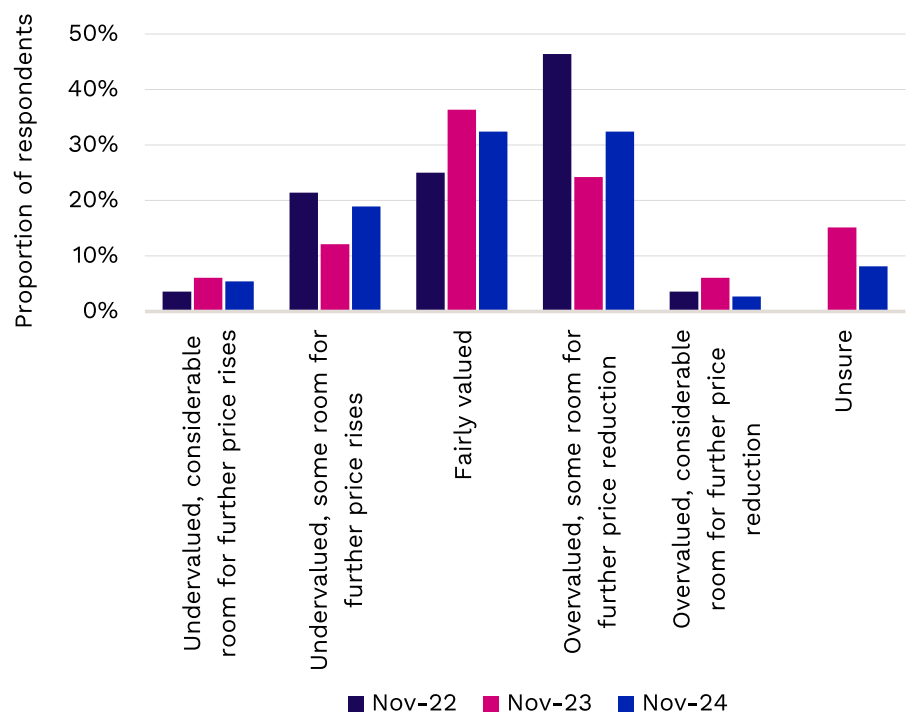
Source: Preqin Pro. Data as of October 2024

Managers and investors have a disconnected perception of infrastructure asset pricing

Infrastructure managers and investors are not completely aligned when it comes to their views on asset prices. Managers are beginning to see infrastructure assets as overvalued, with 32% suggesting there was some room for price reduction – up from 24% in November 2023 (Fig. 7.9). Some managers may try to act quickly to find assets that they perceive are still undervalued.

Fig. 7.9: Asset prices moderated compared with last year

Infrastructure manager views on portfolio company/asset pricing

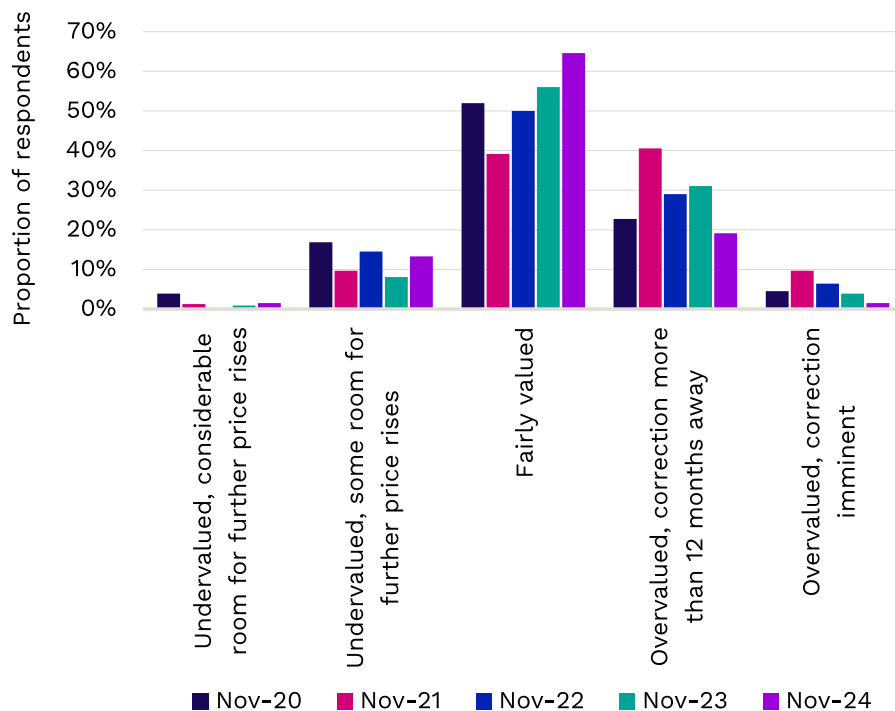


Source: Preqin Fund Manager Surveys, November 2022–2024

There is more consensus among investors on current asset pricing, with nearly two-thirds (65%) of investors stating infrastructure assets are fairly valued. Nearly a fifth (19%) of investors believe assets are overvalued and that a correction will come, but not for at least 12 months (Fig. 7.10). The benefit of this disconnect is that investors seem to be more optimistic than managers about the current opportunities, which could create a tailwind for fundraising in the asset class.

Fig. 7.10: Infrastructure remains fairly valued

Infrastructure investor views on portfolio company/asset pricing



Source: Preqin Investor Surveys, November 2020–2024

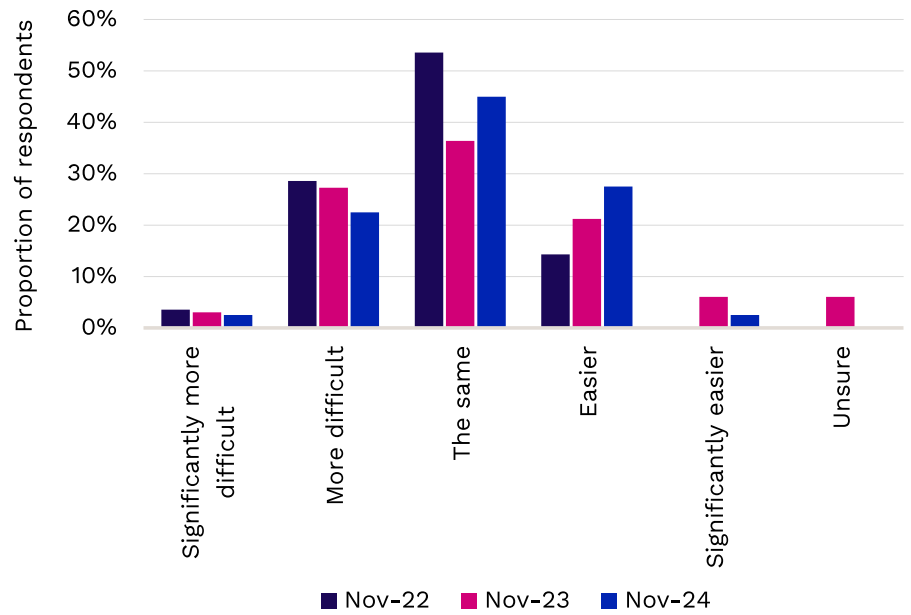
Managers anticipate potential challenges with competition over deals

Deal activity has slowed in recent quarters (see ‘Year in review: 2024’ chapter), but managers seem optimistic about finding attractive investment opportunities over the next 12 months. Although 45% of managers expect it will be similarly difficult to find attractive investment opportunities in the next 12 months, 28% expect it to be easier, up from 21% in 2023 and just 14% in 2022 (Fig. 7.11). This sparks some optimism for deal flow returning, although competition for transactions might also be a challenge; 43% of managers believe competition over transactions will be tougher over the next 12 months, up from 21% in 2023 (Fig. 7.12). This anticipated increase in competition could be contributing to a perceived overpricing of assets.

That said, increased competition for assets could prompt more exits, through the driving up of exit valuations – which would, in turn, stoke the fundraising market by enabling LPs to re-commit returned capital. Nearly half of managers (48%) predict increased exit activity over the next 12 months, up from 29% in 2022 (Fig. 7.13).

Fig. 7.11: Managers feel infrastructure deal origination has become easier

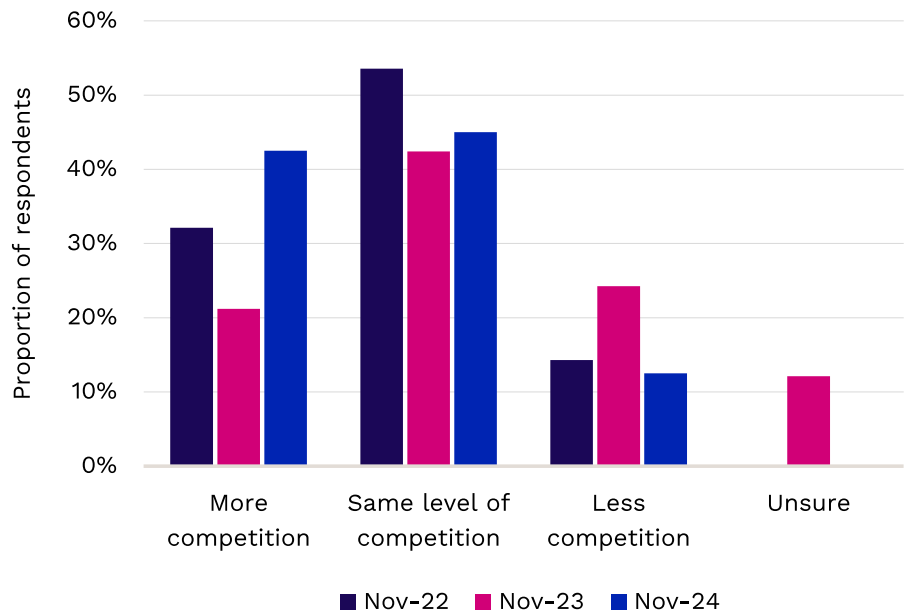
Infrastructure managers' views on the difficulty of finding attractive investment opportunities compared with 12 months ago



Source: Preqin Fund Manager Surveys, November 2022–2024

Fig. 7.12: Managers report more competition

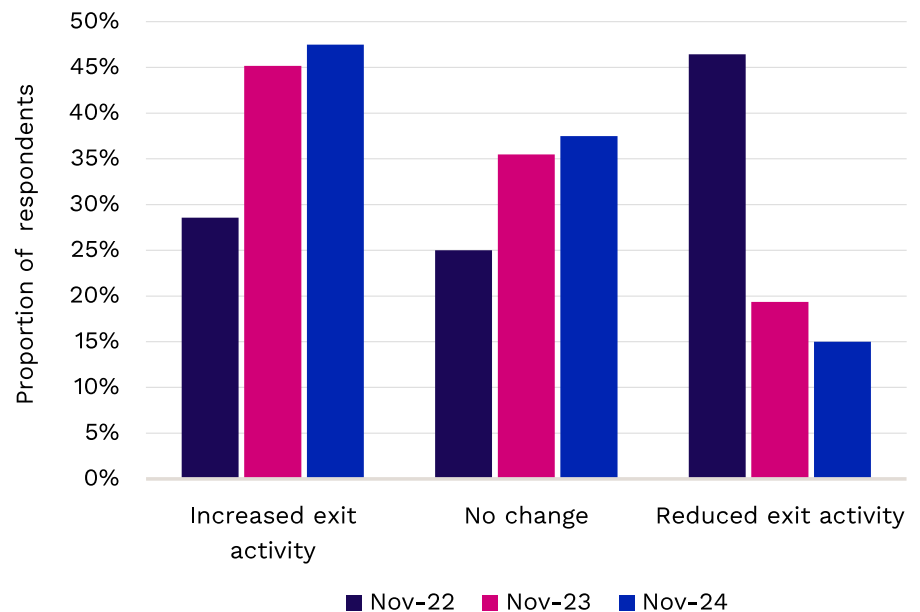
Infrastructure managers' views on competition for transactions over the past 12 months



Source: Preqin Fund Manager Surveys, November 2022–2024

Fig. 7.13: Managers expect a slight increase in exit activity

Infrastructure managers' views on how the exit environment will change over the next 12 months



Source: Preqin Fund Manager Surveys, November 2022–2024

Investors are increasingly satisfied with infrastructure performance

When it comes to investor satisfaction, there have been marginal improvements this year. Investor satisfaction was at an all-time low in 2023, with just 14% of investors saying they felt their infrastructure investments had exceeded their expectations over the past 12 months. In 2024, this crept up to 15% (Fig. 7.14). That said, the share of investors who felt their infrastructure assets fell short of their expectations fell to 13% in 2024, down from 16% in 2023. By comparison, satisfaction levels were higher, in terms of the proportion of investors that felt the performance ‘exceeded expectations’, for private debt and hedge fund investors, but lower for private equity, venture capital, and real estate investors.

Cautious investor optimism is reflected in the 23% that believe their infrastructure portfolios will perform better in the next 12 months, while only 4% thought performance would get worse (Fig. 7.15). That said, nearly three-quarters (73%) feel performance will continue as is.

Investors believe the best opportunities are to be had in core-plus and value-added strategies – particularly core-plus, which was cited by more than half (54%) of respondents. Given some disappointment in past performance of other infrastructure strategies, investors appear willing to take on more risk with their infrastructure investment strategies in the hope of garnering better returns.

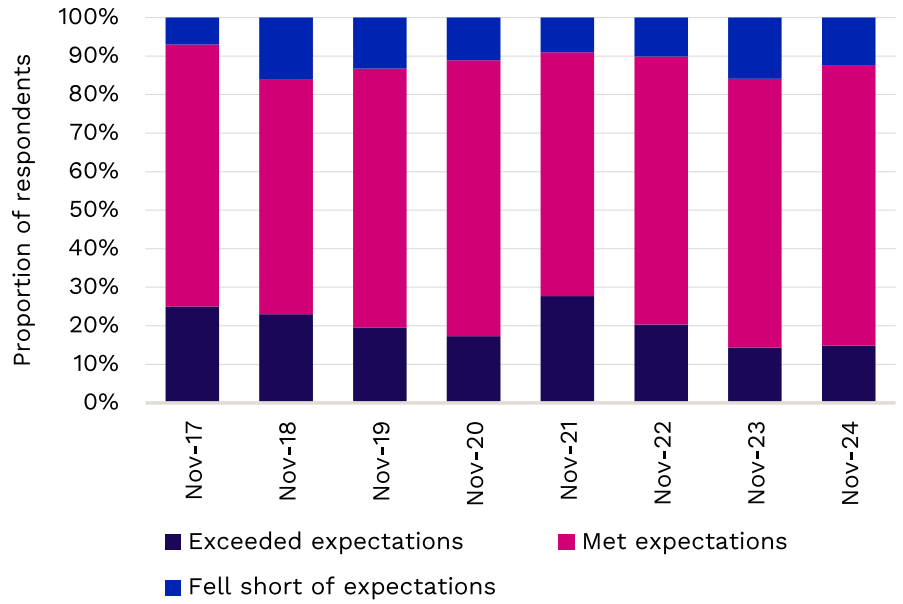
Investors view the US and India as key markets for growth

Investor interest across developed markets has remained relatively unchanged over the past five years, while emerging market trends have solidified over the past three. An overwhelming majority of investors (92%) identified the US as the developed market region presenting the best opportunity in 2025, up from 84% in last year’s survey.

In emerging markets, the trend of India usurping China has persisted. Continuing a post-pandemic shift of favor, India is now seen by 47% of investors as the best opportunity, compared with just 15% favoring China. Much of this sentiment is likely driven by geopolitical tensions and regulatory uncertainty – both of which are key concerns for managers and investors alike.

Fig. 7.14: Investor satisfaction improves marginally for infrastructure

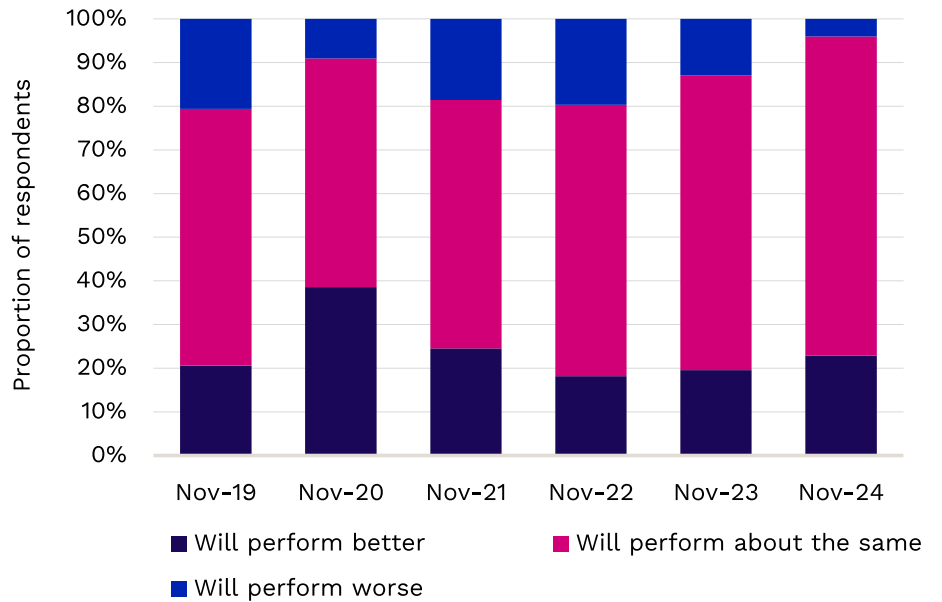
Extent to which investors feel their infrastructure investments have lived up to expectations over the past 12 months



Source: Preqin Investor Surveys, November 2017–2023

Fig. 7.15: Investors are slightly more optimistic in the short term

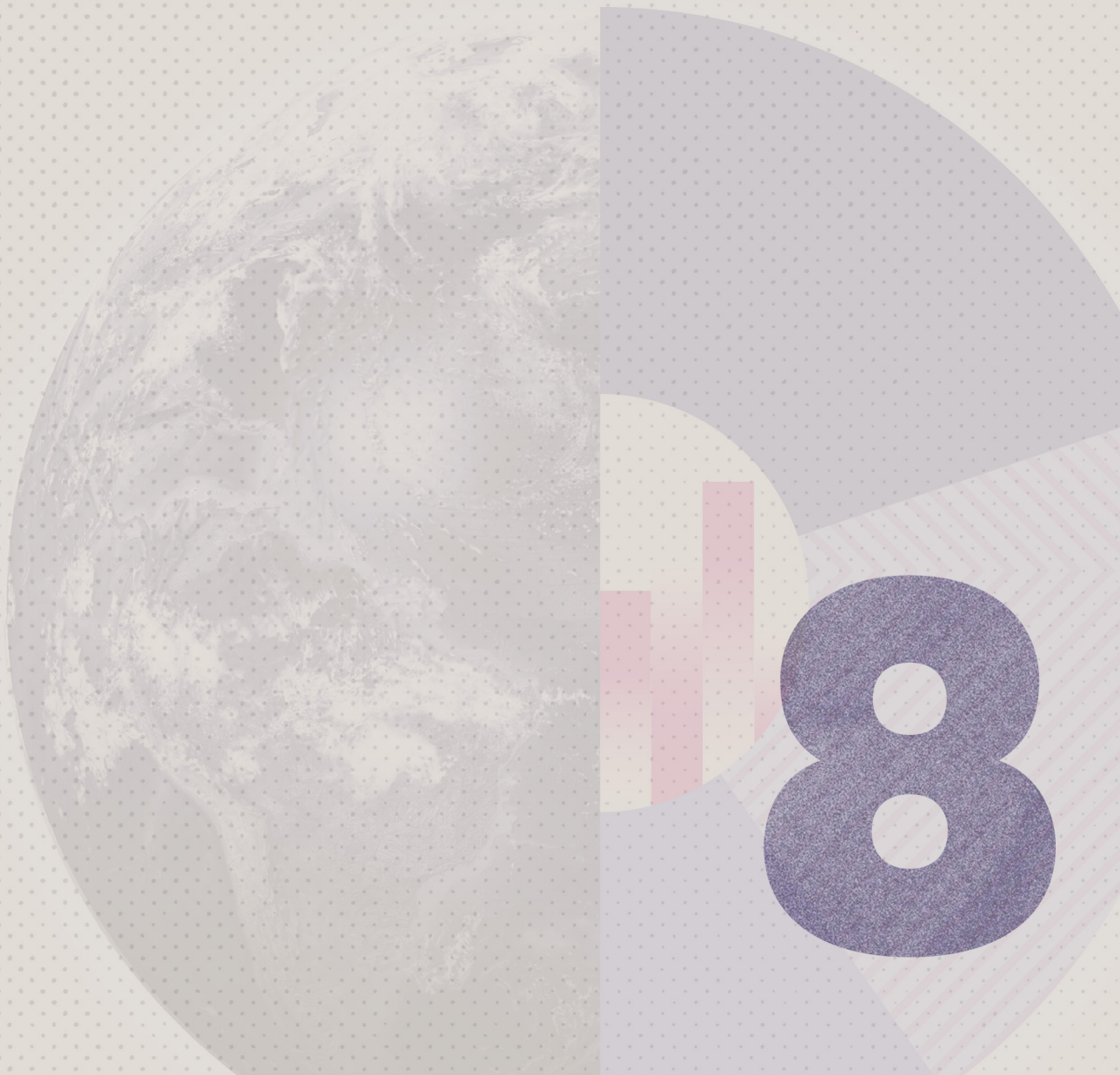
Investor expectations for the performance of their infrastructure portfolios in the next 12 months



Source: Preqin Investor Surveys, November 2019–2023

→ Infrastructure: Fees and terms

Management fee rates have been volatile, discounts and offsets lower fees, and GP commitments convey alignment of interests



8



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Infrastructure is a peculiar asset class: it is the smallest of private markets and yet its funds are, on average, the largest. This is perhaps one reason that its fundraising figures look lumpy. After its best fundraising year ever in 2022, raising \$164bn, that figure tumbled to \$92bn in 2023, its lowest point since 2017. Fundraising in 2024 is forecast to improve.¹

Below we examine infrastructure management fee rates, cumulative net fees vs. gross expected fees, and carry fees. We find that infrastructure fees are fairly generous to LPs.

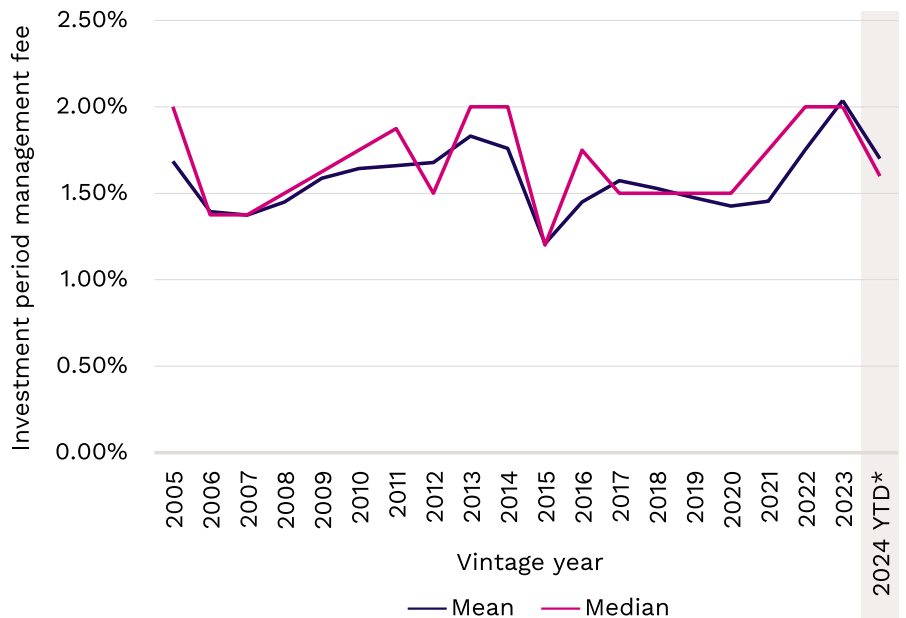
Management fee rates are elevated from historical norms

As of June 2024, infrastructure management fees were at a three-year low. The mean was 1.70% and the median was 1.60%, down from 2023 highs of 2.04% and 2.00% respectively (Fig. 8.1). The 2024 readings are nevertheless above the long-term averages, between 2014 and 2023, of 1.58% (mean) and 1.50% (median).

¹ <https://www.preqin.com/insights/research/reports/future-of-alternatives-2029>

Fig. 8.1: Infrastructure fee rates at a relative high point

Infrastructure funds – average management fee by vintage year



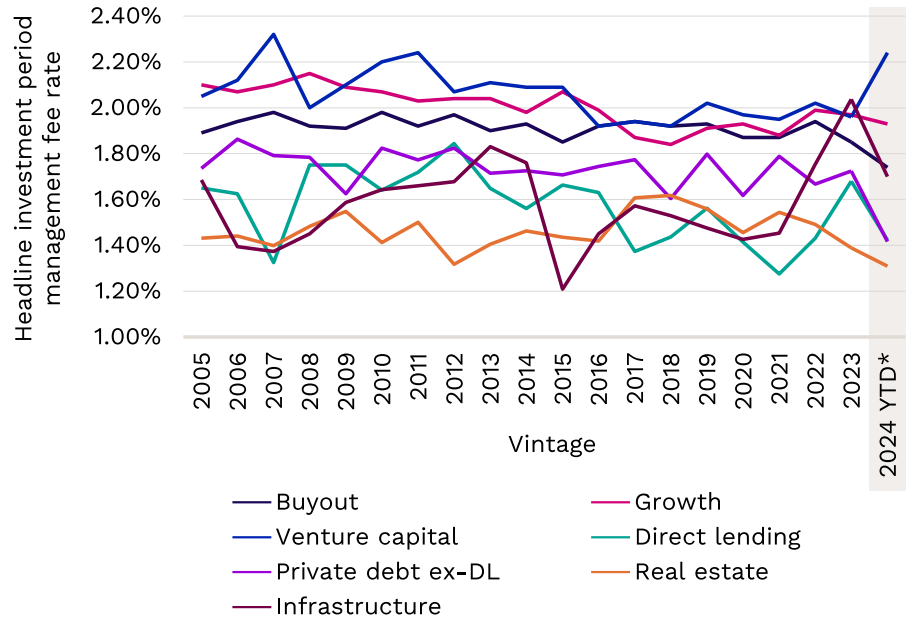
*2024 (funds raised YTD and closed)

Source: Preqin Pro. Data as of June 2024

Compared to mean management fees for other asset classes, infrastructure fees have been more volatile since 2005 (Fig. 8.2). In 2023, mean management fee rates topped all asset classes, jumping above those of private equity and venture capital. This could be related to the fundraising environment unique to infrastructure.

Fig. 8.2: Infrastructure joined the rank of higher fee rates found in private equity and VC

Mean management fee rates across fund types



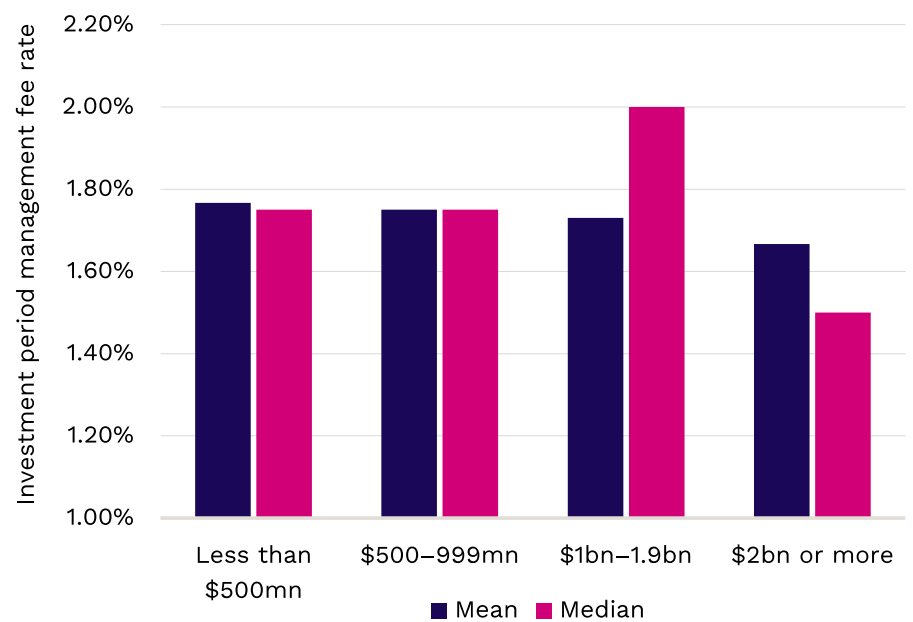
*2024 (funds raised YTD and closed)

Source: Preqin Pro. Data as of June 30, 2024

Within the asset class, management fee rates vary by fund size. The largest funds – of \$2bn or more – have the lowest fees, with a mean average of 1.67% and a median of 1.50% (Fig. 8.3). Other asset classes’ fee rates vary by fund size as well, although in the case of private equity and private debt both the largest and smallest fund sizes have the lowest fees.

Fig. 8.3: Funds of \$2bn or more have the lowest management fee rates

Infrastructure funds – average management fee rate by fund size (raising and closed 2023 and 2024 funds)



Source: Preqin Pro. Data as of June 30, 2024

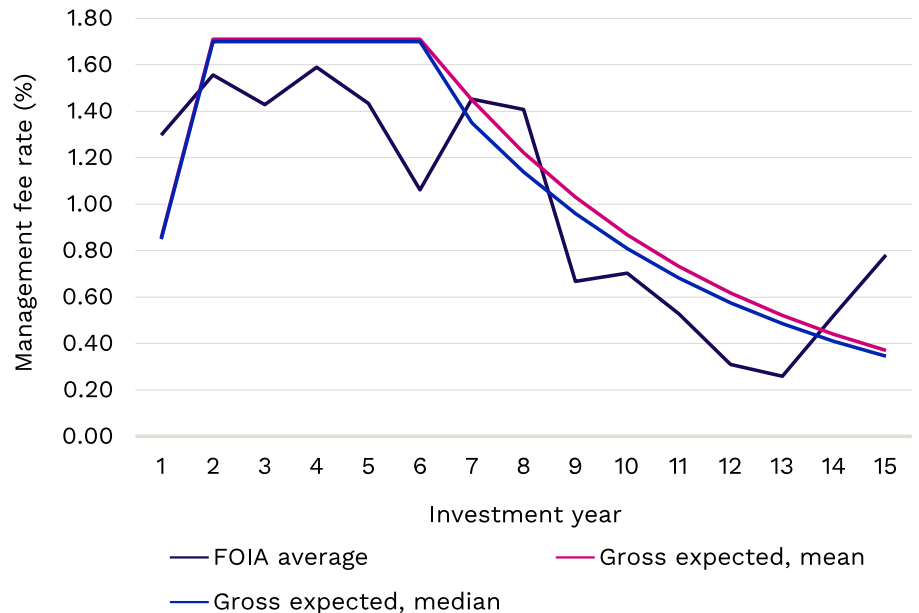
With at least two factors – fundraising and fund size – apparently related to fee levels, fee rates could go up or down in the near future. On the one hand, fee rates could remain elevated if fundraising is in line with Preqin’s forecasts. On the other, if fund sizes continue to grow, or if rates revert to longer-term averages, that could push fees down.

Discounts make net fees paid lower than expected gross

Based on Freedom of Information Act (FOIA) data, we found that over a 12-year fund lifespan, the cumulative average of net management fees in infrastructure was 13.43% of an investor’s commitment. The bulk of the management fees are paid out during the investment period (IP), after which fees dwindle significantly. For a 15-year fund lifespan, the cumulative average rose to 15.00% of an investor’s commitment (Fig. 8.4). For each of these lifespans, infrastructure recorded the second-highest cumulative net management fees paid, after venture capital – albeit about 5 percentage points (ppts) less.²

Fig. 8.4: Infrastructure management fees actually paid are lower than headline fees

Management fees by investment year as a percentage of commitment: comparison between gross and net



Source: FOIA and Term Intelligence

The cumulative management fee is based on a few things: fee rate, fee basis, and fee duration – less offsets, discounts, waivers, and rebates. Above we discussed fee rates. During the IP, infrastructure fund management fees are based on initial commitment in 70% of limited partner agreements (LPAs), according to Preqin’s Term Intelligence,³ whereas all post-IP LPAs are based on actively invested capital. The duration is a function of the fund’s term: IP plus post-IP plus any term extensions. For raising, and closed 2023 and 2024 vintage funds, infrastructure had the highest mean IP

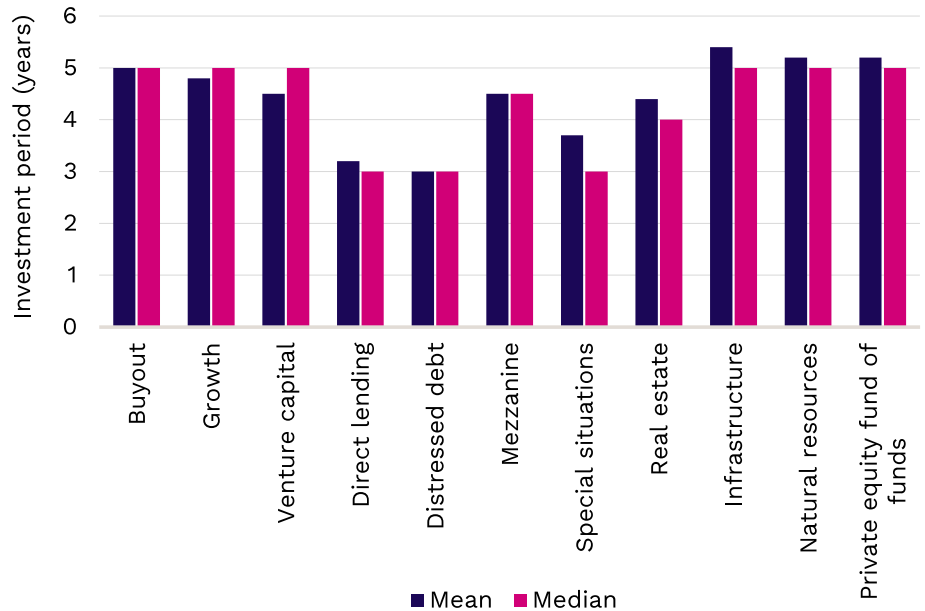
² See The 2024 Preqin Private Capital Fund Terms Advisor for full analysis of all asset classes – for additional information on data sources and model assumptions, see the chapter called ‘Data sources, definitions, and appendix on the management fee model’ – <https://www.preqin.com/insights/research/reports/the-2024-preqin-private-capital-fund-terms-advisor>

³ <https://www.preqin.com/our-products/term-intelligence>

length – 5.4 years. Its median of five years was similar to most other asset classes' IP lengths – outside of private debt and real estate, which were shorter (Fig. 8.5). Due to infrastructure funds' fee rate and longer duration, gross fees can be higher than for other asset classes.

Fig. 8.5: Infrastructure funds have the longest mean investment period

Average length of investment period by fund type (raising and closed 2023 and 2024 funds)

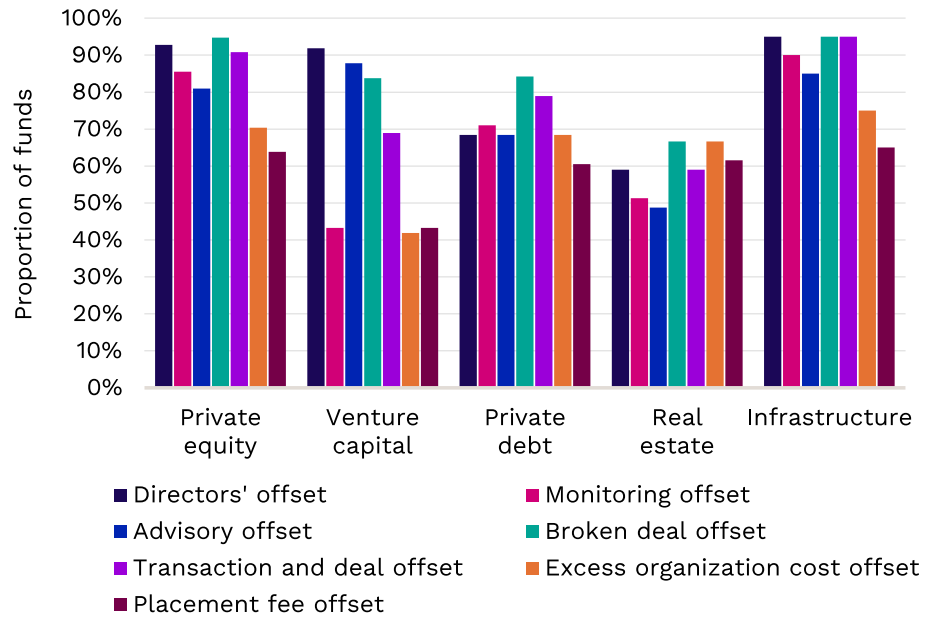


Source: Preqin Pro. Data as of June 30, 2024

Management fees can be lowered by offsets and discounts, and these are more common in infrastructure than in other asset classes. Directors' fees, broken deals, and transaction and deal fees are offset in 95% of infrastructure LPAs (Fig. 8.6). Early-close investors in infrastructure funds – and those making large commitments – receive management fee discounts in 40% and 39% of LPAs respectively, rivaling fee discounts in real estate funds (Fig. 8.7).

Fig. 8.6: Infrastructure fee offsets incidence resemble those of private equity

Management fee offsets incidence by asset class (vintages 2020 onward)*

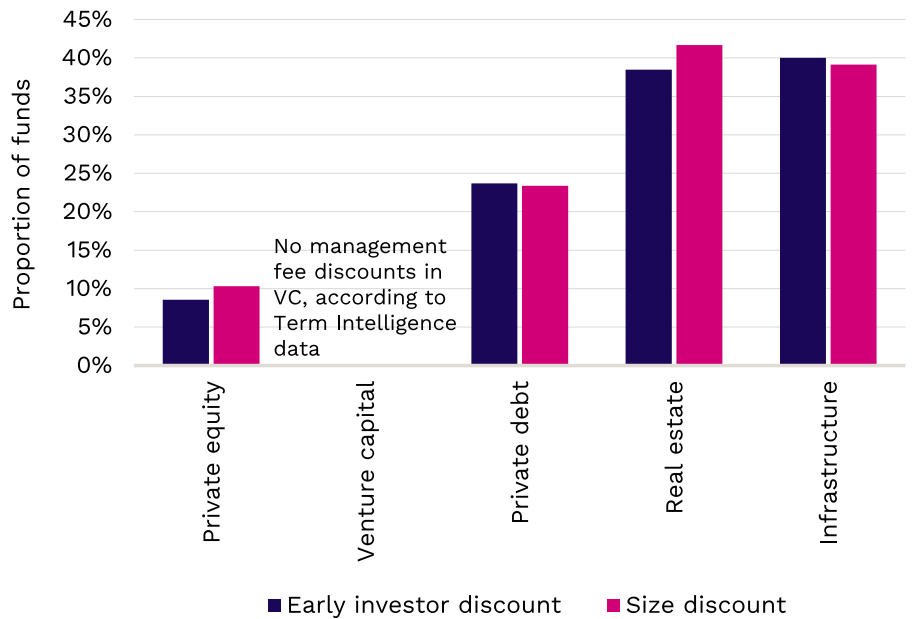


*All funds are closed

Source: Term Intelligence

Fig. 8.7: Infrastructure funds most likely to have early investor discounts

Incidence of discounts by asset class (vintages 2020 onward)*



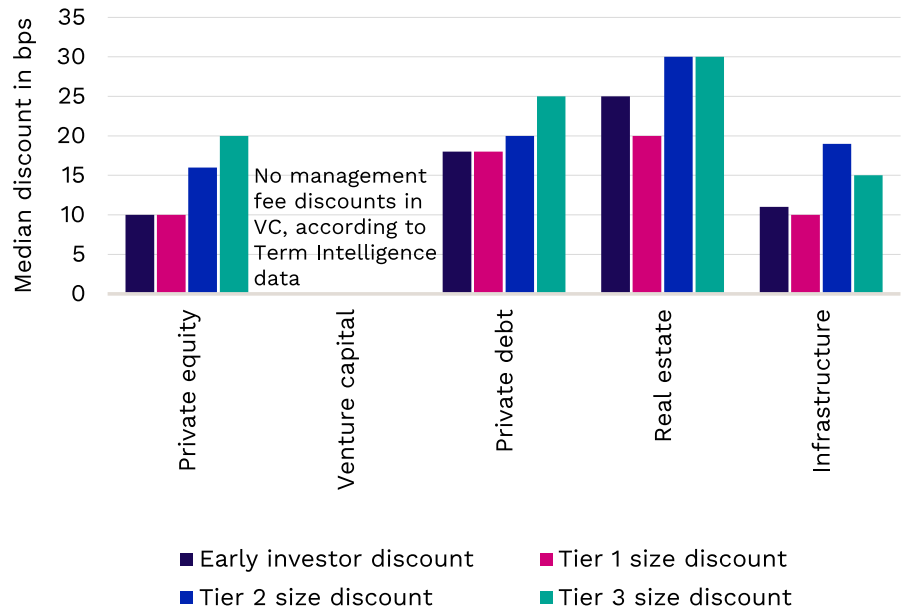
*All funds are closed

Source: Term Intelligence

However, these discounts are modest compared with those in other asset classes. Early investor discounts – typically reserved for commitments prior to the first close – have a median of 11 basis points (bps), similar to those found in private equity (Fig. 8.8). Discounts for larger commitments range from 10 to 19bps – again, similar to private equity. We note that additional discounts are sometimes found in side letters.

Fig. 8.8: Infrastructure fee discounts relatively low compared to other asset classes

Median size of discounts by asset class in basis points (vintages 2020 onward)*



*All funds are closed

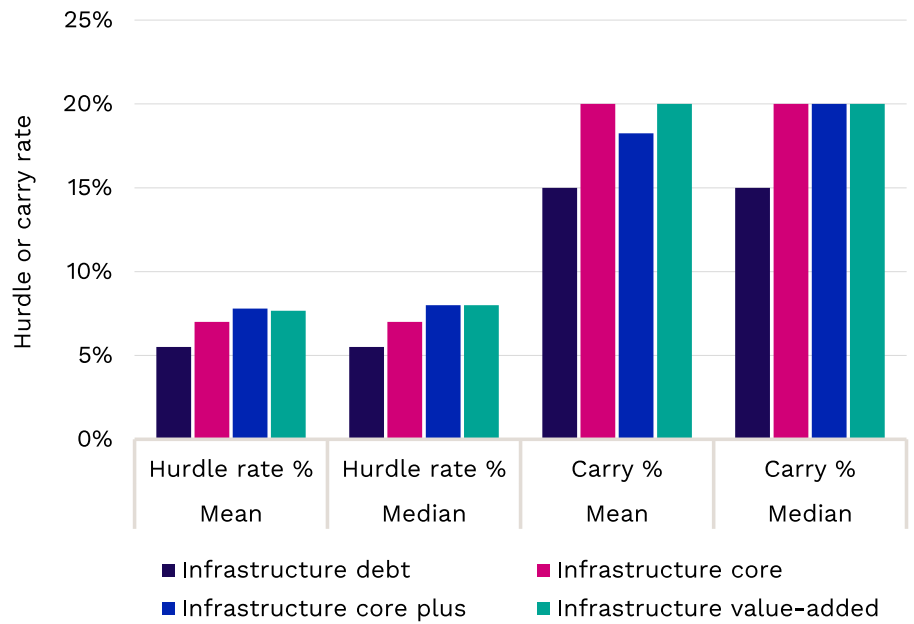
Source: Term Intelligence

Carry structures vary by strategy

Compared with management fees, infrastructure fund carry rates are more stable, although they vary in proportion to a strategy’s risk-return profile. At the low end of the scale, infrastructure debt has a median hurdle rate of 5.5% and median carry rate of 15% (Fig. 8.9). Infrastructure value-added, at the high end of the scale, has a median hurdle rate of 8.0% and a median carry rate of 20%.

Fig. 8.9: Hurdle rate increases with riskier strategy

Mean and median hurdle rate by strategy (vintages 2020 onward)*



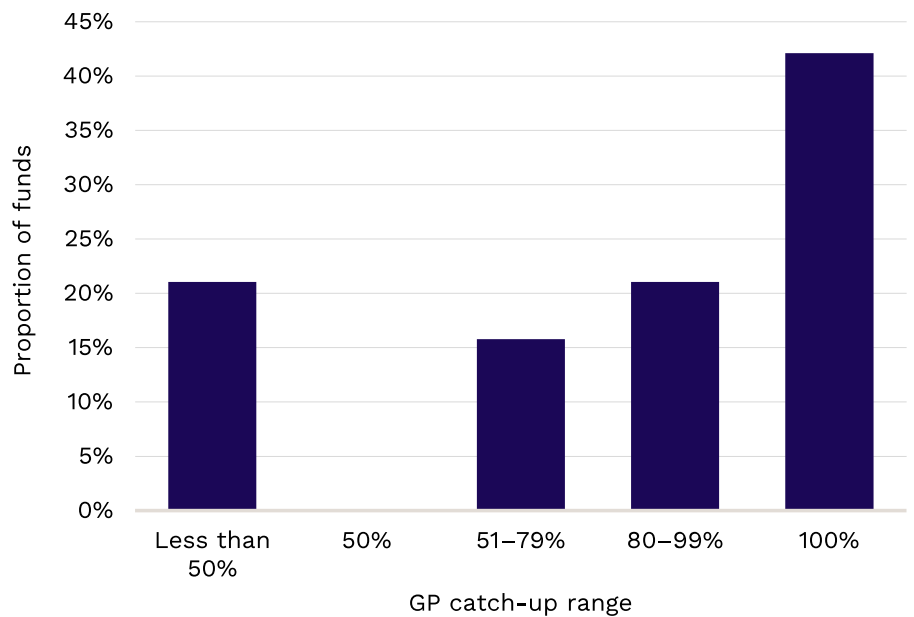
*All funds are closed

Source: Term Intelligence

Catch-up rates for raising and closed 2023 and 2024 funds look similar to those in private equity, with 42% of infrastructure funds having catch-up rates of 100% (Fig. 8.10). On average, they are 66%. As the distributions to paid-in capital ratio (DPI) has decreased – and investors consider how to maximize cashflows at all stages of the distribution waterfall – the GP catch-up rate has, anecdotally, become a point of negotiation, with LPs preferring a lower GP catch-up.

Fig. 8.10: Most common GP catch-up rate is 100%

GP catch-up rates in infrastructure (raising and closed 2023 and 2024 funds)



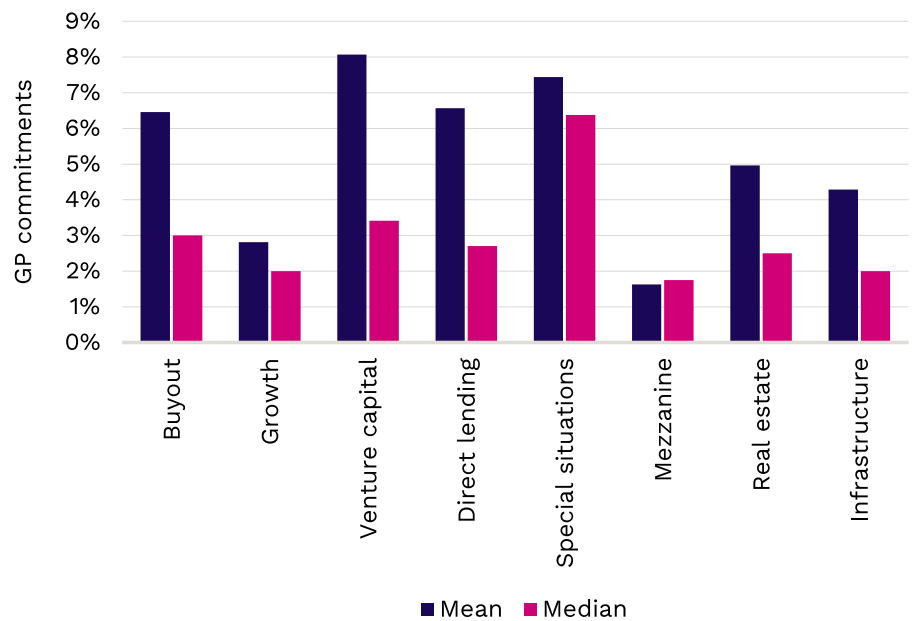
Source: Preqin Pro. Data as of June 2024

LP commitments meet best practice, but investors may want more GP skin in the game

In recent investor sentiment surveys, LPs have indicated that GP commitments to funds are increasingly important. According to best practice, a GP should commit at least 2% of the fund’s size in cash. In infrastructure, the median GP commitment for raising and closed 2023 and 2024 funds was 2.00%, although the mean skewed higher, at 4.28% (Fig. 8.11). While these figures meet best practice, they are lower than GP commitments to other fund types. However, given that infrastructure funds are, on average, larger than other fund types, the absolute value of GP commitments in infrastructure funds is comparatively higher. We further note that Brookfield Infrastructure typically commits more than 25%, which can contribute to the right skew.

Fig. 8.11: GPs often commit 2% of fund size or more across fund types

Average GP commitment as a percentage of fund size, by fund type (raising and closed 2023 and 2024 funds)



Source: Preqin Pro. Date as of June 2024

For additional details on fund terms, please read The 2024 Preqin Private Capital Fund Terms Advisor.⁴

⁴ <https://www.preqin.com/insights/research/reports/the-2024-preqin-private-capital-fund-terms-advisor>

Predictions

1 Renewables fundraising targeting North America will slow

North America-focused fundraising will continue to slow in the first half of 2025 off the back of uncertainty around the future of tax credit subsidies put in place by the Inflation Reduction Act. Removal or diminishing of subsidies will likely benefit conventional energy-focused funds targeting the region, as well as European and APAC renewable energy funds that will be able to absorb LPs' ambitions for energy-transition allocations. In time, these stronger inflows for funds targeting European renewables could push valuations higher than those of North American assets, where regulatory uncertainty will linger for the medium term.

2 Reducing rates will underpin a resurgence in deal volumes

The deals market will begin to recover over 2025 as interest rates continue to moderate. With the Federal Reserve's latest quarter-point cut – and broad expectation at the time of writing for another 100-basis-point loosening over 2025 – a new equilibrium should emerge in which volumes recover, as early-vintage funds come under increased pressure to sell and distribute. Buyers will feel the benefit of lower rates in pricing leverage, but with dry powder now diminishing, they can afford to be selective and seek better value for money on entry.

3 Fundraising, particularly for mega funds, will remain weak in H1 2025

The leveling-off of funds in market is a reaction to the huge expansion of funds seeking capital. The number of funds in market increased 1.92x in the 33 months to September 2024 and targeted aggregate capital rose by 2.58x. Both have slowed recently. That the growth of aggregate capital targeted has decelerated more sharply than the growth in number of funds suggests the most experienced managers are delaying bringing follow-on mega funds to market. We predict this trend will continue until the backlog of larger funds in market is cleared, with fewer \$5bn-plus funds to be launched in the first half of 2025. Managers will be increasingly selective about when they bring new funds to market and, in light of unprecedented competition, should be more strategic than ever in designing their funds to respond to peer offerings and LP appetites.

4 Telecoms will cement its growth and host the largest deals of 2025

In 2012, telecoms deal value amounted to just \$6.5bn for the year – the same as the waste management sector, accounting for just 2% of infrastructure's aggregate deal values. Since then, particularly from 2016 and further hastened by the global pandemic, telecoms' growth has outpaced all other infrastructure sectors. As of the third quarter of 2024, it is the largest single sector by deal values, with \$65bn of deals accounting for 30% of the market. We predict telecoms will cement its growth over 2025, to take a greater share of the largest deals than in any previous year. The recent dawn of AI will drive demand for data centers and the swathes of systems that underpin increasingly data-intensive services and products.

