

Infrastructure Quarterly: Q3 2024

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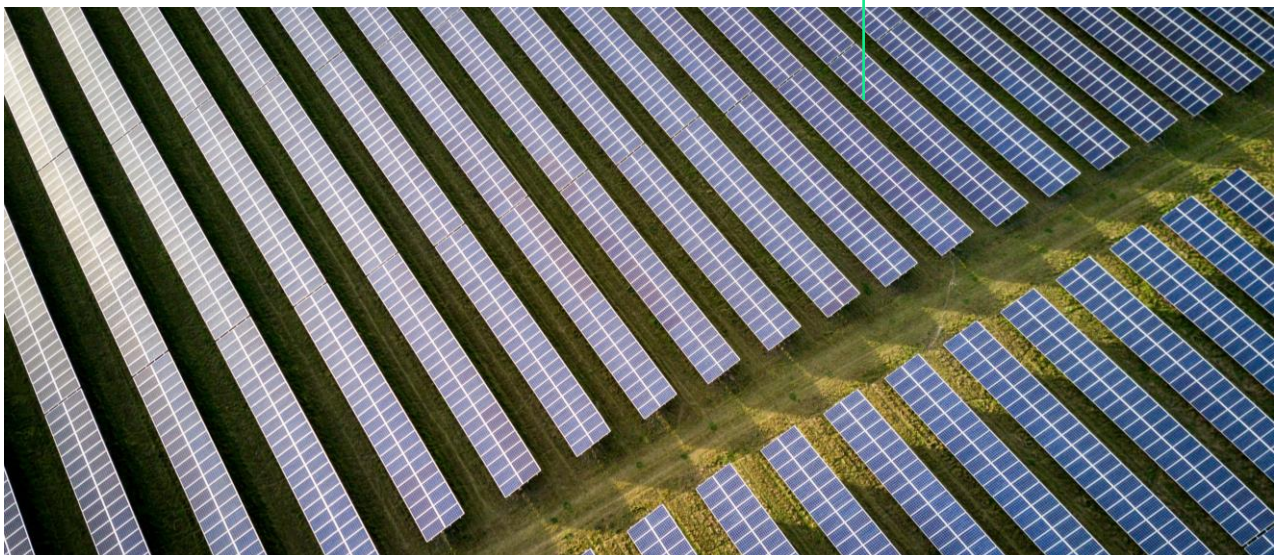
Tough calls

In an election-packed year, political clarity emerges with every election result. The presidential race for the White House is on, geopolitical tensions are brewing, inflation is easing but the economic outlook is still unsettled. Against this backdrop, the central banks have to make tough decisions on when and by how much to cut interest rates. Following the early moves by the European Central Bank and the Bank of England, the Federal Reserve followed with a bold 50-basis points cut in September. A pivot to reducing interest rates is positive for long-duration infrastructure assets and could support the ongoing rebound in listed rate-sensitive sectors such as utilities and digital towers.

Investors have to balance the need for defensive strategies—to protect against slower economies, with the desire for growth as the mainstream expectations point to higher-for-longer terminal bond yields. The buildout of AI-purposed infrastructure continues at a record speed, and with it comes the need for data centers, (preferably clean) power and grid infrastructure. In Q2 2024, some investors questioned the pace of Generative AI use and the profitability of AI applications but the case for the underlying digital infrastructure remains solid.

In this edition of Infrastructure Quarterly, we look at the moderating headwinds in infrastructure fundraising and investment activity which point to the start of a much-awaited reset amidst a boom of clean energy and data demand. We also feature a Q&A with Board members of IRIS (the Investment Research in Infrastructure Society) on the challenging journey to achieve data transparency in unlisted infrastructure.

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Market performance

Infrastructure returns keep to trend

Assessing the performance of unlisted infrastructure is not an easy task. We monitor a mix of marked-to-market indices such as EDHECinfra and appraisal-based indices. Since the start of the rate hikes in early 2022, EDHECinfra reported a dip in its flagship infra300 index to 8.1% in 2022, followed by a strong recovery of 14.1% in 2023. The annualized performance through Q2 2024 is on par with its 10-year track record (**Figure 1**). By sector, renewables and contracted power contributed the most to Q2 returns. Appraisal-based indices—such as the MSCI Private Infrastructure Asset index, are catching up with the rate impact. Data is delayed but as of Q1 2024, the total annualized return for MSCI Private infrastructure stood at 8.9%, out of which 3.6% was a consistent income return.

As bond yields stabilized throughout 2024, the credit spreads for corporate issuers followed. Before the Bank of Japan’s sudden move on interest rates towards the end of July, the credit spreads tightened compared to the last five years for both speculative and investment grade corporate market credit (**Figure 2**). The Bank of Japan’s action caused market volatility at the subinvestment end of the credit spectrum with some reports of a lack of appetite for ABS (asset-based securitizations) deals. Separately, the latest default data continues to speak to the downside protection of infrastructure. The two-year average cumulative default rate for infrastructure remains low at 0.9%, compared to 3.7% for nonfinancial corporates (S&P Ratings, October 2023).

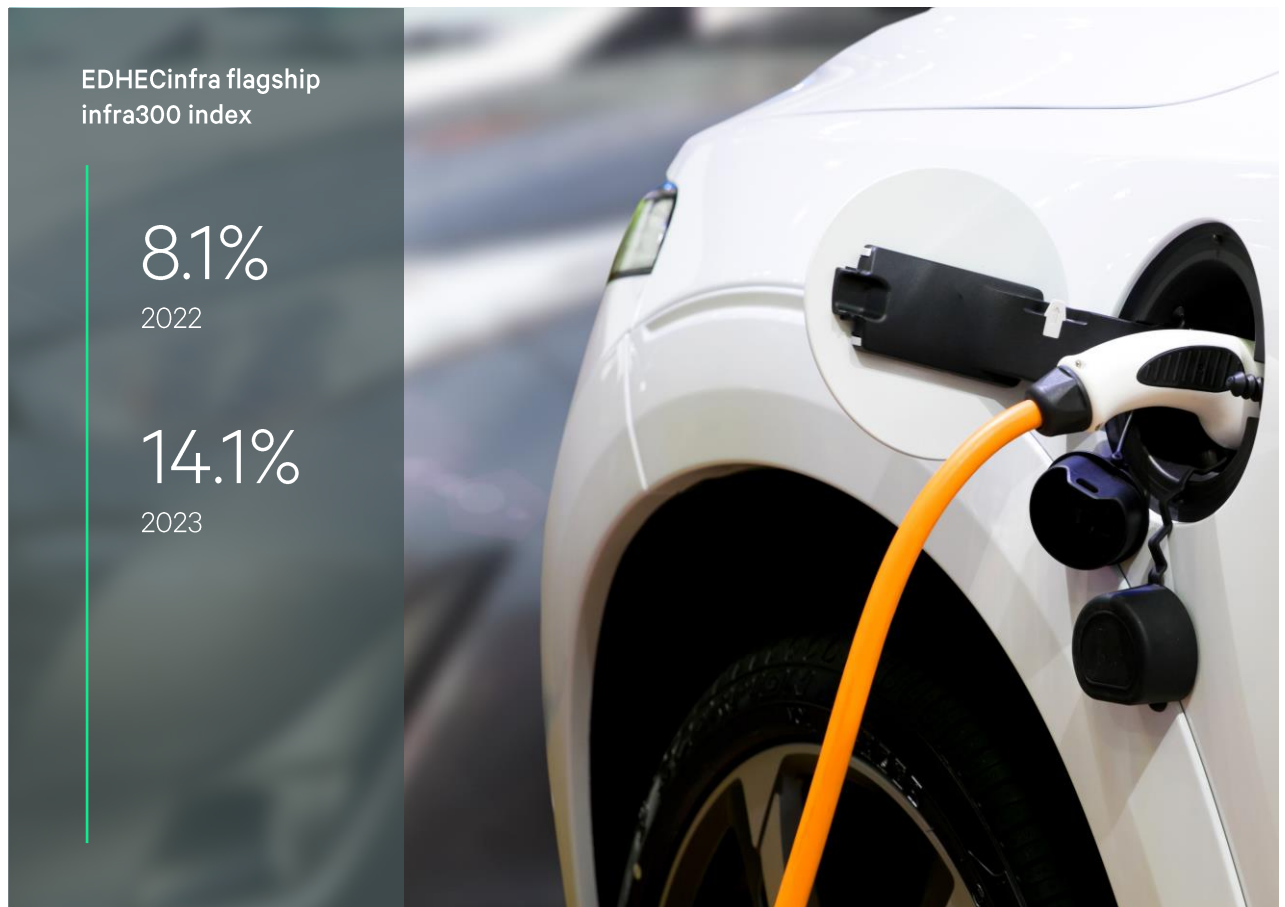
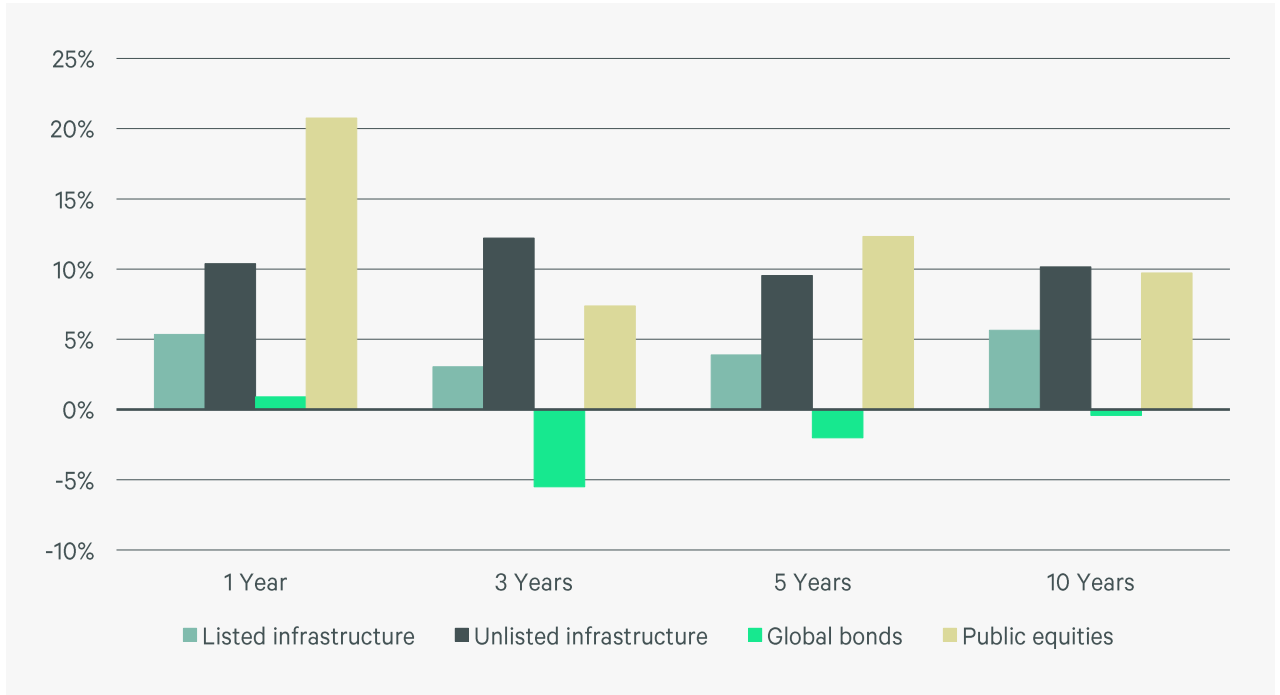
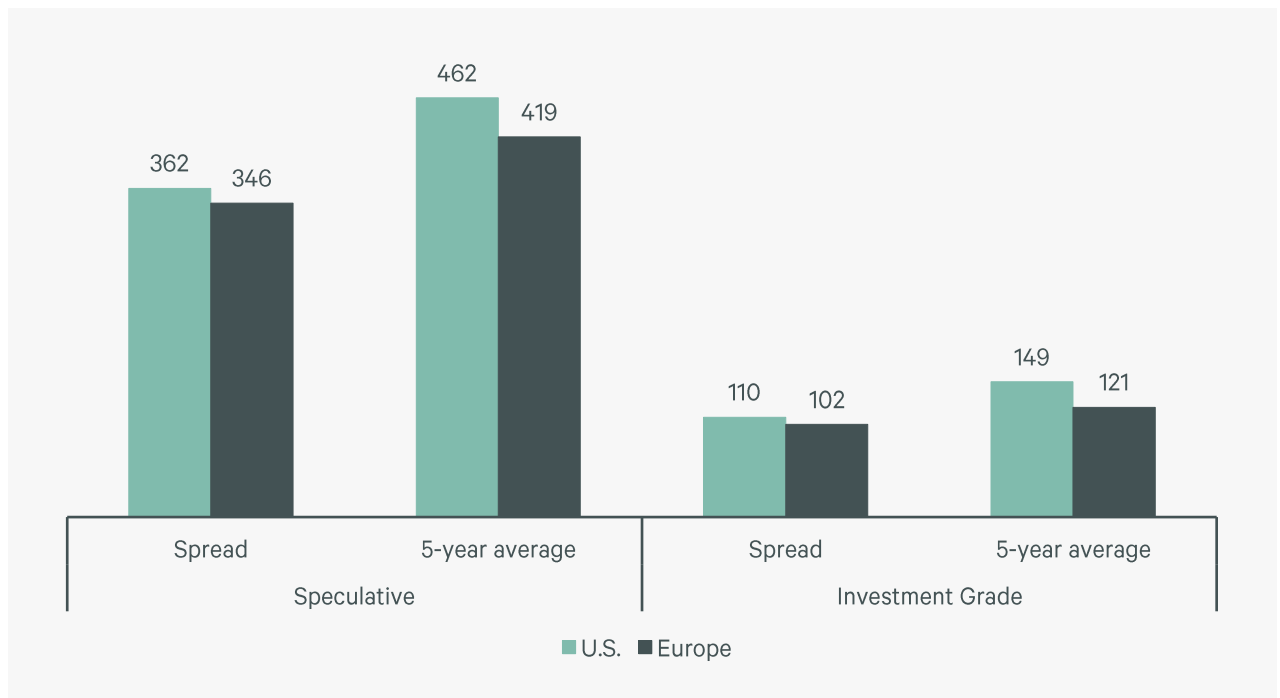


Figure 1: Annualized total returns for listed and unlisted infrastructure, bonds and equities (as of Q2 2024)



Source: EDHECinfra, Factset. Unlisted infrastructure: EDHEC infra300 equally weighted, local currency as of Q2 2024, gross of fees. Listed infrastructure: FTSE Global Core Infrastructure 50/50 index in USD as of Q2 2024. Bonds: Bloomberg Global Aggregate Fixed Income index in USD as of Q2 2024. Equities: MSCI World index in USD as of Q2 2024. For illustrative purposes only. Current market conditions differ from prior market conditions; including during prior periods of stress and dislocation. There can be no assurance any prior trendswill continue.

Figure 2: Secondary corporate market credit spreads (basis points)



Source: S&P Global Ratings Credit Research & Insights, This Week in Credit July 25, 2024.

Signs of fundraising revival

Infrastructure funds raised just over \$40 billion in the first half of 2024 which is a positive advancement compared to the same period last year (**Figure 3**). This momentum could persist in H2 2024 with at least 117 funds actively engaged in raising over \$196 billion, according to Infralogic Fund Market Tracker. However, funds looking for capital are spending longer ‘on the road’ and there is a clear pattern emerging between the successful and less successful capital raises. In the first half of the year, these were split equally in half.

Infrastructure debt funds have the dry powder and diverse strategies to complement the traditional project finance lenders. Infrastructure debt accounted for a small share of total capital raised since the start of the year, but fund managers had a substantial \$28 billion of dry powder to deploy from earlier vintages (Prequin, as of October 2024).

\$40B

Raised in infrastructure funds in H1 2024

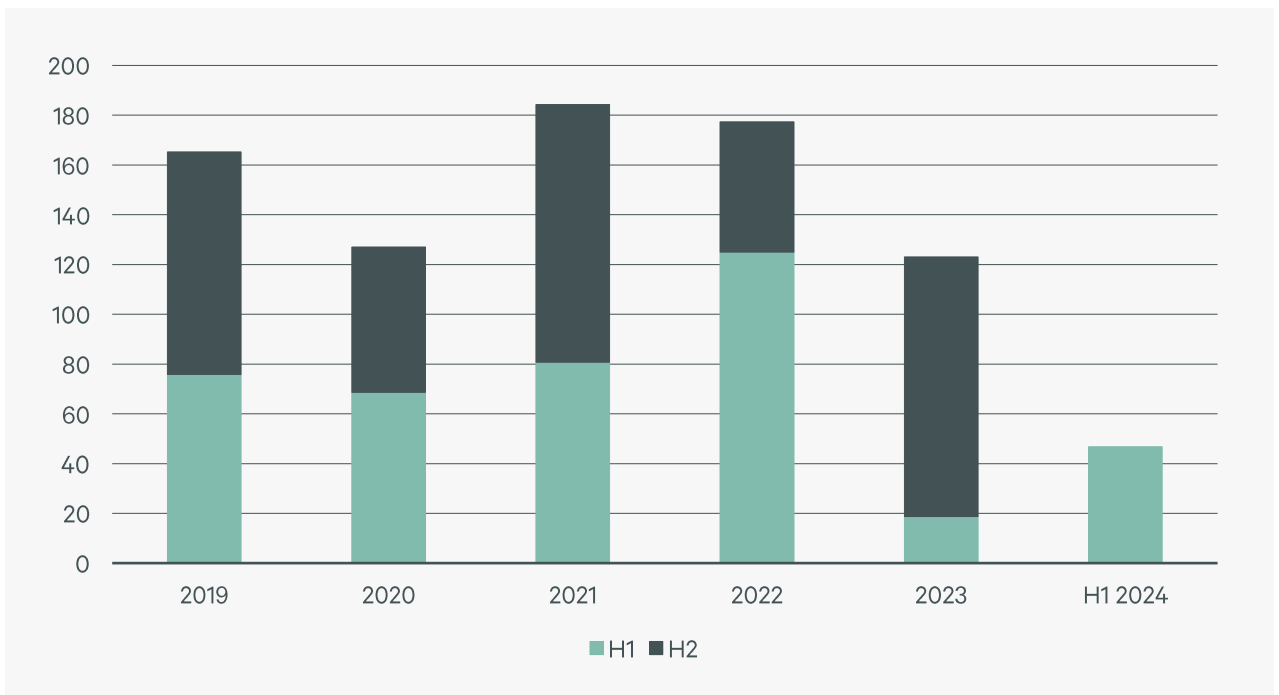
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Funds activity engaged in fundraising

\$196B

Expected to be raised in H2 2024 (Infralogic Fund Market Tracker)

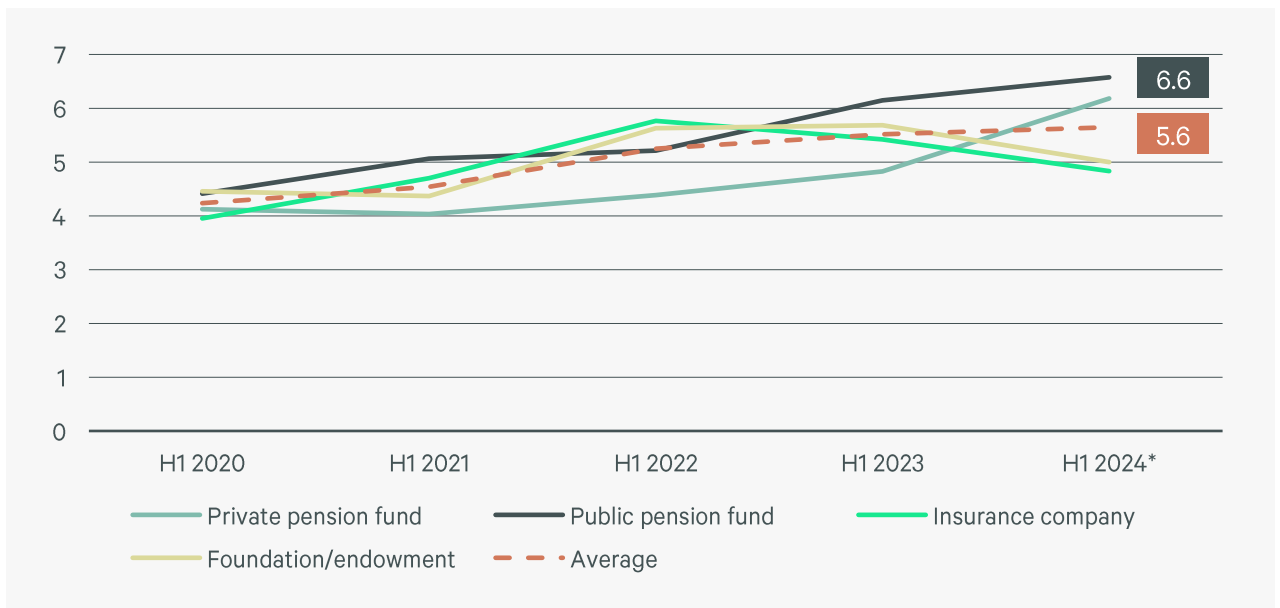
Figure 3: Infrastructure fundraising, value (\$ billions)



Source: Infrastructure Investor, H1 2024 report.

The average allocation to infrastructure for all institution types continues to rise (**Figure 4**). This trend highlights a growing confidence in infrastructure as a stable investment option. Public pension funds are leading in average allocation, while private pension funds have seen the largest year-over-year (Y-o-Y) increase reaching 6.2%. The 2024 annual survey by Hodes Weill and Associates and Cornell University speaks to the same trend of institutional investors increasing allocations globally. More importantly, institutions remain underallocated to infrastructure at 123 bps below target allocations. We see an increased interest for hybrid portfolios (listed and private infrastructure) among high net worth investors who need liquidity but struggle to access private markets due to the lack of scale.

Figure 4: Infrastructure allocation by institution type (average, % of AUM)



Source: Infrastructure Investor, Investor Report H1 2024.

*Please note that 2024 growth may be misrepresented due to the denominator effect in place for most LP investment portfolios.



Deals

Investment activity still waiting for a reset

In the first half of 2024, infrastructure investment volumes were contracting but the pace has moderated (**Figure 5**). Financing conditions generally tend to be supportive for infrastructure companies and refinancing transactions have returned to the levels seen before the policy rate hikes. The latest analysis by real assets data specialist Realfin shows that the share of canceled infrastructure and energy transactions has declined significantly over the past few years and is down to 1.6% of total volumes in H1 2024.

The largest Y-o-Y increases in investment volumes are seen in transport, the power sector and digital infrastructure. Mergers and acquisitions (M&A) activity in transport grew by 50%, backed by closed deals in airports, rail leasing, and European train and bus operators. In the power sector, battery storage investment has doubled in amount compared to previous years. In digital infrastructure, investors closed large-scale transactions such as a \$9.2 billion capital equity raise by Vantage Data Centers and a \$6.2 billion refinancing and sale of a majority stake in France's XpFibre.

The share of energy deals has declined over time and its composition has changed as companies and investors embark on the decarbonization journey. While gas pipelines and LNG export terminals still account for the lion's share of energy deals, there is an increased desire to invest in hydrogen, district heating networks, biogas and biofuels. All values are based on Infralogic data.

Figure 5a: Private infrastructure dealmaking, values by deal type (\$ billions)

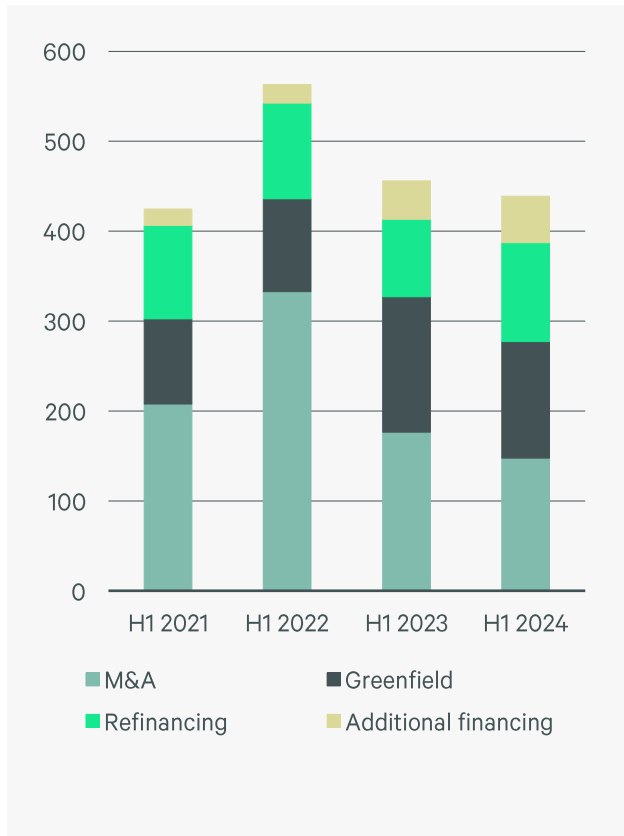
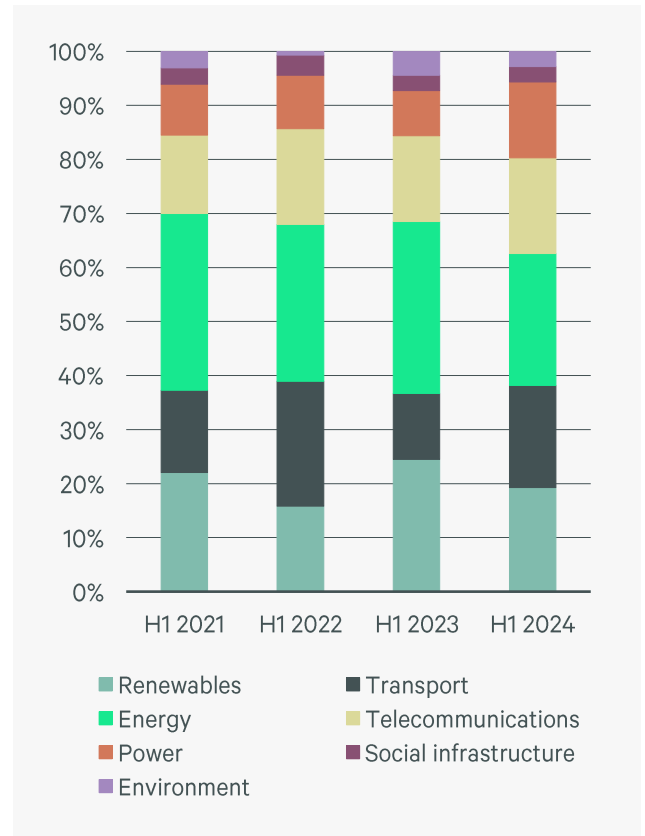


Figure 5b: Private infrastructure dealmaking, market share by sector (%)



Source: Infralogic Ranking report, H1 2024.

Q&A

During the IPE Infrastructure and Natural Capital Awards Conference in September 2024, we had the chance to speak with Board members of the Investment Research in Infrastructure Society (IRIS). We unpack the topic of the evolution of data and unlisted infrastructure benchmarks and why we need more transparency with **Serkan Bahceci, Head of Research at Arjun Infrastructure** and **Gianluca Minella, Head of Infrastructure Research at InfraRed**.

Question

Serkan, why do we need more transparency in infrastructure data?

Answer

Infrastructure is a wide asset class with many sectors. We regularly place assets such as solar panels, water pipes, piers, and runways in the same investment vehicles. Infrastructure is also highly dependent on the rules and regulations of the land; as these are essential assets for the functioning of the economy, policymakers keep a close eye on them, usually through direct or indirect regulation, which tends to vary significantly across jurisdictions.

The common denominator among the very different types of assets from different jurisdictions is financial performance. As a result, any analysis of the aggregate financial performance requires a good understanding of the underlying investments. Without the necessary bottom-up transparency from the data providers, comparing and contrasting is impossible.

Gianluca, tell us about some ways we can harness data for infrastructure research?

Infrastructure benchmarks are very helpful to get a sense of the overall historical performance of the asset class. In recent years, we have also seen the emergence of factor models for infrastructure. These tools can help assess the risk exposure of infrastructure assets to factors such as interest rates and inflation and the expected behavior of net asset values across different macroenvironments. For investors focusing on other alternative asset classes beyond infrastructure, factor models provide a powerful way to measure exposures to similar factors and think about diversification.

Technology today enables us to leverage individual asset cash-flows and run more sophisticated portfolio optimizations. This helps us understand the benefits and risks that individual assets bring to the overall portfolio and informs potential dispositions and target acquisitions.

For more on the Infrastructure Researchers Society, visit the IRIS website: <https://www.infrastructuresociety.com/> and sign up to the distribution list to receive notifications about upcoming events.

Sector insights

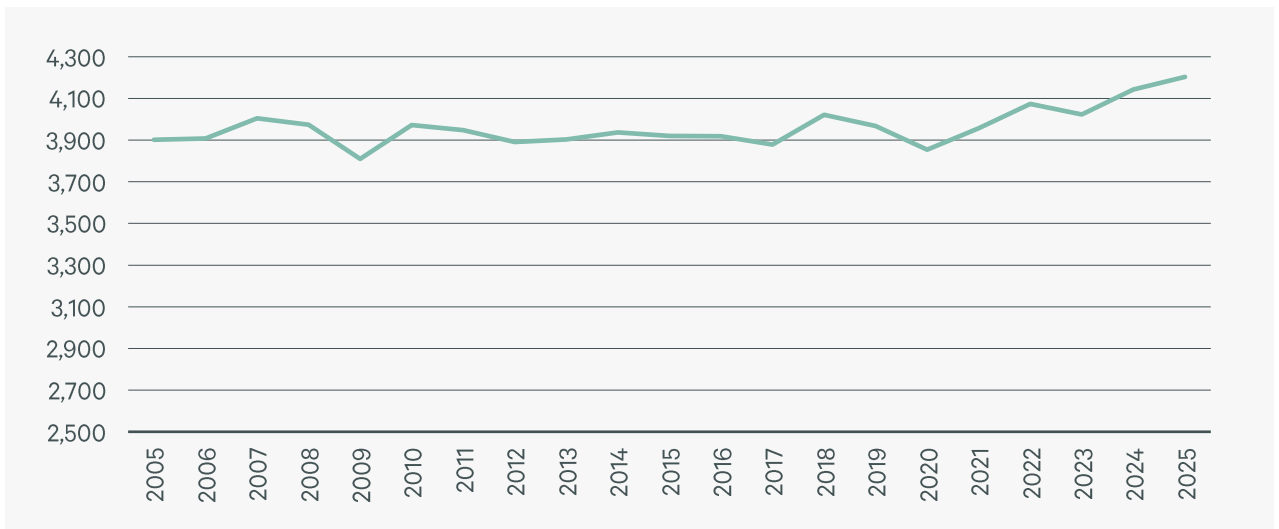
Power and utilities

U.S. power utilities are preparing for a boom in power demand from the electrification of transport and power-intensive data centers (**Figure 6**). In its latest Short-term Energy Outlook, the U.S. Energy Information Administration forecasts that the U.S. power sector will generate 1% more electricity in 2025, largely coming from the industrial sector. Generation from utility-scale solar is growing strong across all states with the most gains expected in Texas and California. Solar accounted for 59% of U.S. generating capacity additions in the first half of 2024, supported by the development of new battery storage capacity.

European power prices have fallen materially since the worst point of the energy crisis in the middle of 2022 and gas storage levels in Europe are seasonally strong, reported at 84.7% at the end of July 2024 (Pexapark). This comes on the back of accelerated energy infrastructure investments by Germany and other European countries to lessen the reliance on Russian natural gas. However, the European power markets are yet to be appeased as energy insecurity keeps power prices elevated. Russia’s sabotage of energy infrastructure in Ukraine continues to present a material risk. The Greek prime minister, quoted by the Financial Times, attributed this as one of the factors contributing to the doubling of power prices in Southeast Europe this summer.

U.S. power utilities are preparing for a boom in power demand from the electrification of transport and power-intensive data centers.

Figure 6: U.S. power generation by year 2005-2025 (billion kilowatthours or kWh)



Source: U.S. Energy Information Administration, Short-term outlook, September 2024, total net generation by U.S. power sources. 2024 and 2025—forecasted.

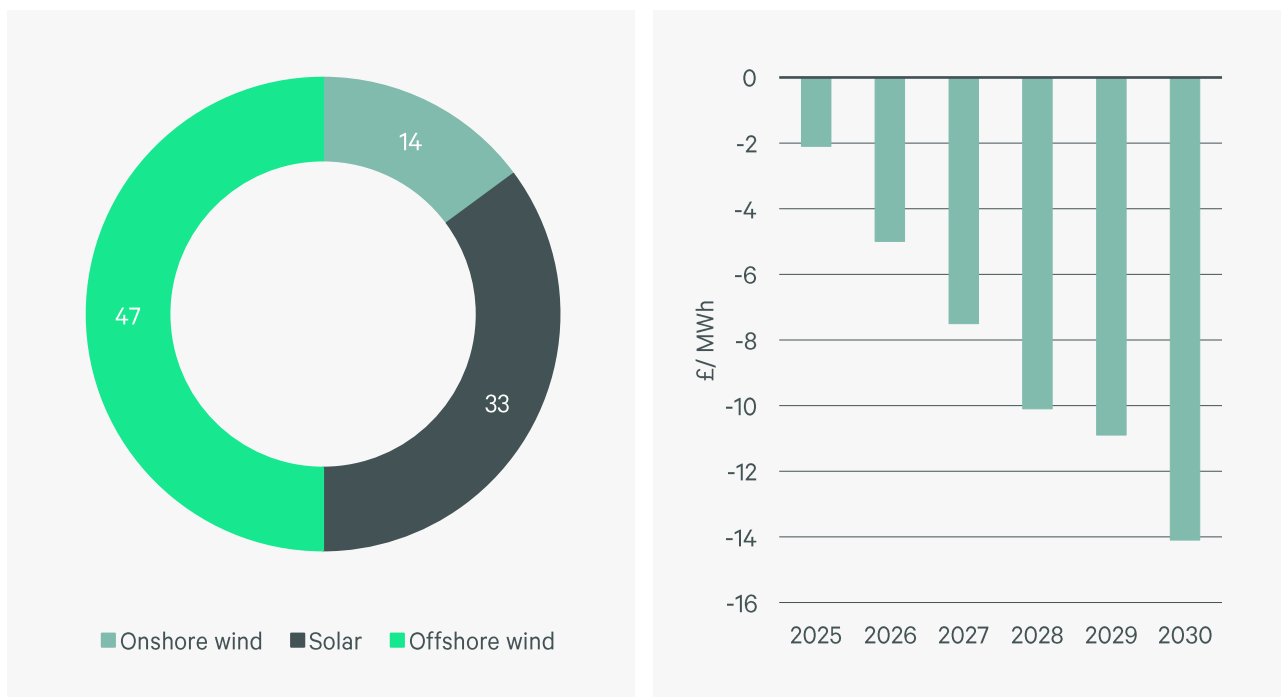
Renewables

Clean energy policies feature heavily in election campaigns and will determine the political commitment to sustainability and the pace of investment in energy transition. The new Labour government in the U.K. has pledged to double onshore wind, triple solar capacity and quadruple offshore wind (**Figure 7**). In July 2024, Great British Energy (GBE) was created with the backing of £8.3 billion of public funds to invest in clean power projects. In partnership with the Crown Estate, the GBE will target up to £60 billion of private investment, focusing on offshore wind development.

The increase in the renewable capacity will impact the U.K. generation mix and lead to lower power prices compared to the baseline, according to the energy market research platform Modo Energy. This is based on Modo Energy’s expectation that the renewables expansion will be funded under the contract-for-differences (CfD) framework with a marginal cost of zero (**Figure 7**). To achieve the ambitious targets, governments need a new approach to auctions, planning and a continuation of grid connection reform. Transmission and distribution networks are struggling to keep pace with the strong penetration of renewable energy generation. Due to their low marginal costs and strong seasonal and daytime patterns, renewables are leading to an increasing frequency of negative market prices. Battery storage colocated with solar and wind farms emerges as a default solution to mitigate the price impact on the wind and solar operators’ cash flows.

In the United States, prices for renewables power purchase agreements (PPAs) have moderated in line with wholesale power prices and the ongoing glut in solar panels. This follows months of climbing renewables PPA prices to cover higher development and funding costs, according to LevenTen Q1 PPA price index. Renewables penetration continues to increase in the U.S. with generation by utility-scale solar facilities expected to increase by 34% nationwide according to the U.S. Energy Information Administration. Reports, however, are common of interconnection delays, permitting challenges and difficult access to high-voltage transformers for offshore wind.

Figure 7: Incremental renewables capacity under a U.K. Labour government (GW) and estimated change in U.K. power prices, compared to baseline

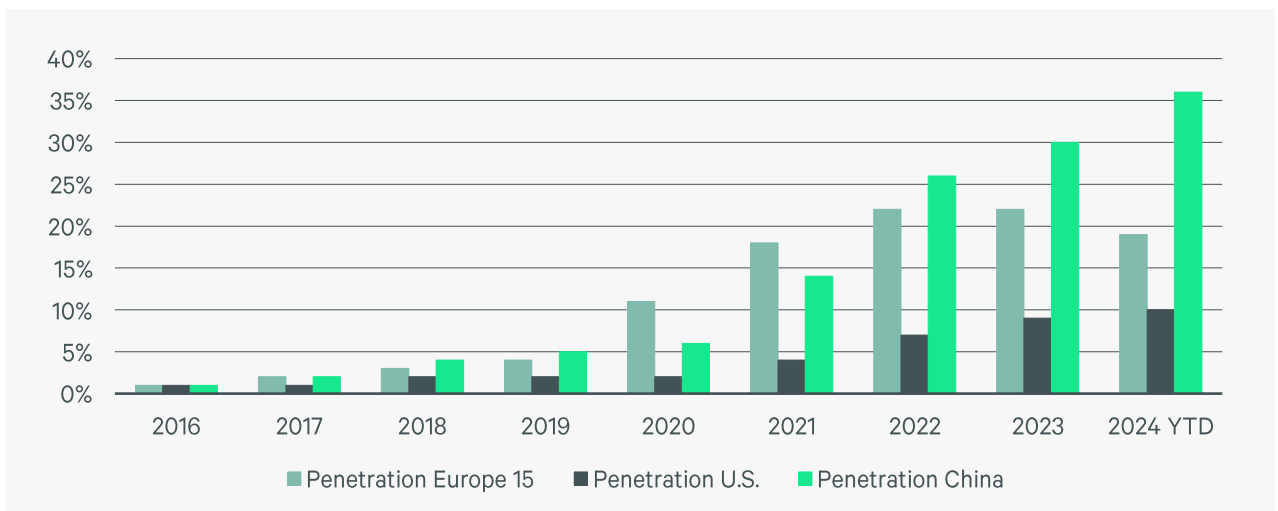


Source: Modo Energy, What Labour’s election victory means for batteries, July 5, 2024. GW=gigawatt.

Transport

The electrification of the transport fleet is a powerful investment theme, shaped by public policy and consumer demand. In China, electric vehicles are reaching price parity with internal combustion engines due to fierce price competition and the rollout of new models. The rate of EV penetration varies significantly by region, being strong in China and the U.S. but flat across Europe’s 15 countries (**Figure 8**). Subsidies and EV pricing dynamics will determine the pace of EV sales as will the availability of accessible and affordable EV charging infrastructure.

Figure 8: Electric vehicles penetration, share of EV volumes by region (2016-2024)



Source: S&P Ratings, Global auto sales forecasts, April 25, 2024. 2024 YTD=year to date, February 2024. Europe 15—Germany, France, U.K., Italy, Spain, Belgium, Austria, Netherlands, Denmark, Finland, Sweden, Norway, Switzerland, Portugal and Turkey.

Emissions reduction targets remain ambitious across countries but are slightly tempered as governments realize that it may take longer for the market to comply. S&P Ratings expects that the U.S. will reduce the EV penetration gap with Europe and China considering the incentives under the Inflation Reduction Act and investment in domestic supply chains. Heavy-duty vehicles account for a large share of carbon emissions and continue to benefit from strong support at the country and city levels. Green (zero-emissions) zones for freight are being introduced in 15 different cities across the globe and we see positive momentum in electric truck sales (International Energy Agency, Global EV Outlook 2024).

Geopolitical conflicts, the state of the economy and labor disputes lead to regional disruptions in transport volumes. China’s opening of international routes was positive for the recovery of global aviation but has benefitted Chinese airlines more than their global peers. Western airlines recently reduced routes to China partly due to the economic slowdown and partly due to rising operational costs as they face extended travel times to circumvent Russian airspace.

Overall, mobility trends have normalized after the pandemic with strong demand for leisure destinations. Sectors such as rail and mass transit are seeing mega-projects; S&P assigned an investment grade rating to the private rail project financing of a 235-mile, high-speed rail system from Miami to Orlando. On the risk side, Canadian railworkers staged a shutdown over wages of freight traffic on the country’s two largest railways. While the strike ended following government intervention, it signaled a potential threat to national and U.S.-wide supply chains and the economic reliance on rail for the export of Canada’s goods.

Digital infrastructure

Digital infrastructure continues to be supported by a host of data demand drivers. The Q2 earnings for Big Tech companies were mixed and led to large swings in their daily market capitalizations. Some investors have concerns that the Big Tech shares are overpriced due to strong enthusiasm about Generative AI. Data center developers, however, are still racing to bring new capacity online. As Google's CEO remarked, 'AI infrastructure is widely useful across the business'; for example, public cloud computing continues to grow globally and the market is expected to reach an estimated spend of \$675 billion in 2024 (**Figure 9**).

The U.K. government set out to designate data centers as critical infrastructure alongside 13 other sectors such as water, energy and emergency services. This highlights the importance of the infrastructure hosted in data centers and the need for government support against cyber attacks or extreme weather incidents. Experts see an increasing number of uses of Generative AI in utilities. Over the next two to five years, some predict a mass adoption of AI to forecast maintenance and enhance the resilience of power grids. For example, AI can analyze satellite images to manage vegetation better. It can also help decide the best time to charge a battery or to detect failure in wind turbines.

Fiber-to-the-home investments underperformed in several European markets and this has alarmed investors. Fiber optic networks remain the most reliable and effective technology for broadband access with very little substitution in the near term. Fiber has been adopted rapidly in major markets, overtaking cable and outdated copper-based DSL broadband. Fiber developers have struggled in markets with open access to the network and high levels of competition, for example between BT Group and alternative U.K. fiber network operators (**Figure 10**). Openreach's fiber broadband network is the largest in the U.K. and while fully owned by BT, it provides access to over 600 communication providers. This market fragmentation has meant that smaller developers lack the resources to scale up and achieve budgeted annual revenues per user.

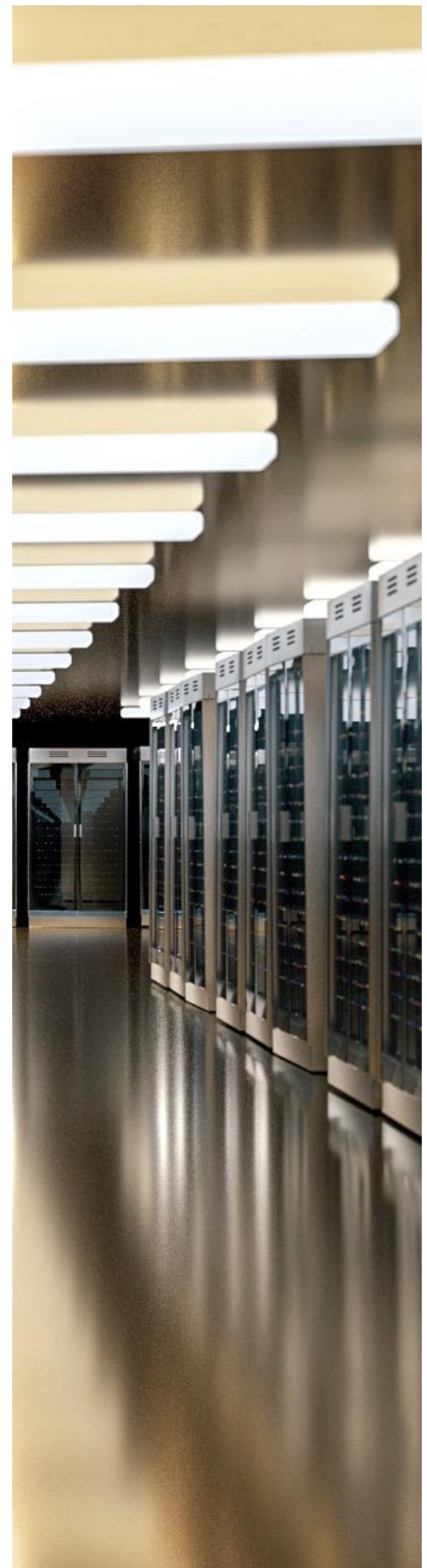
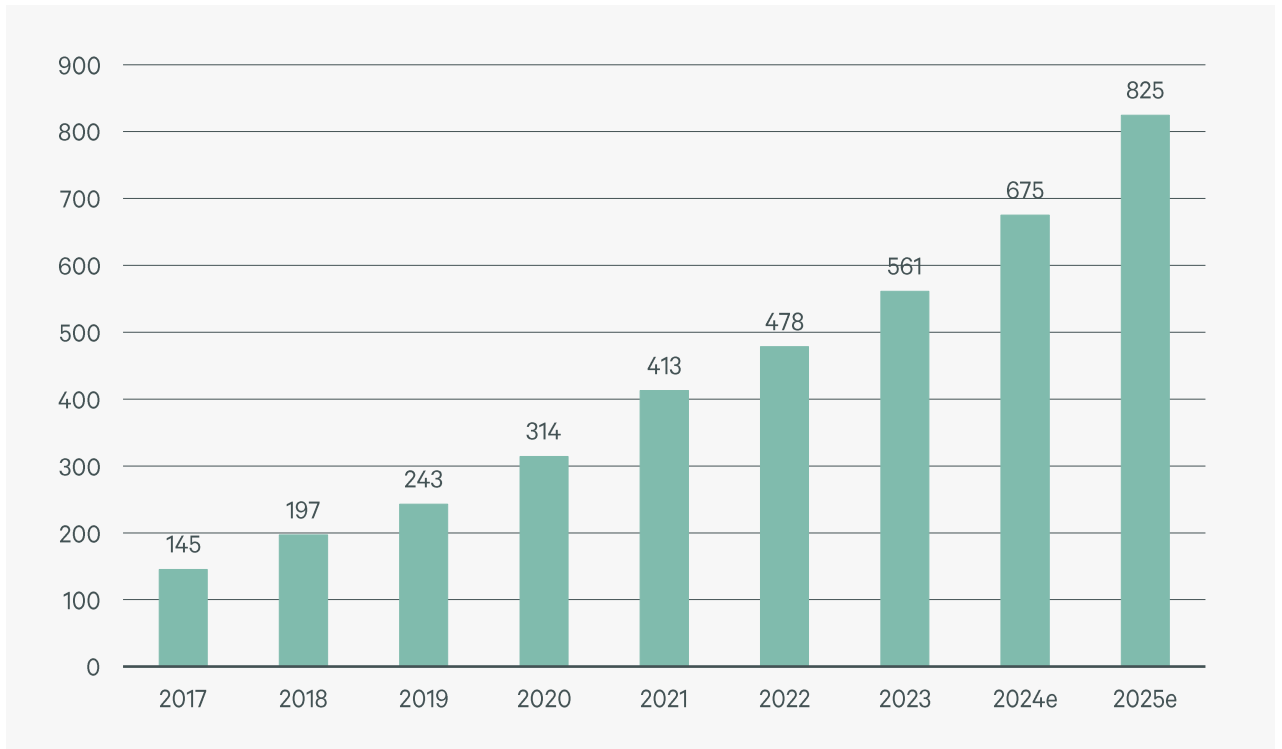
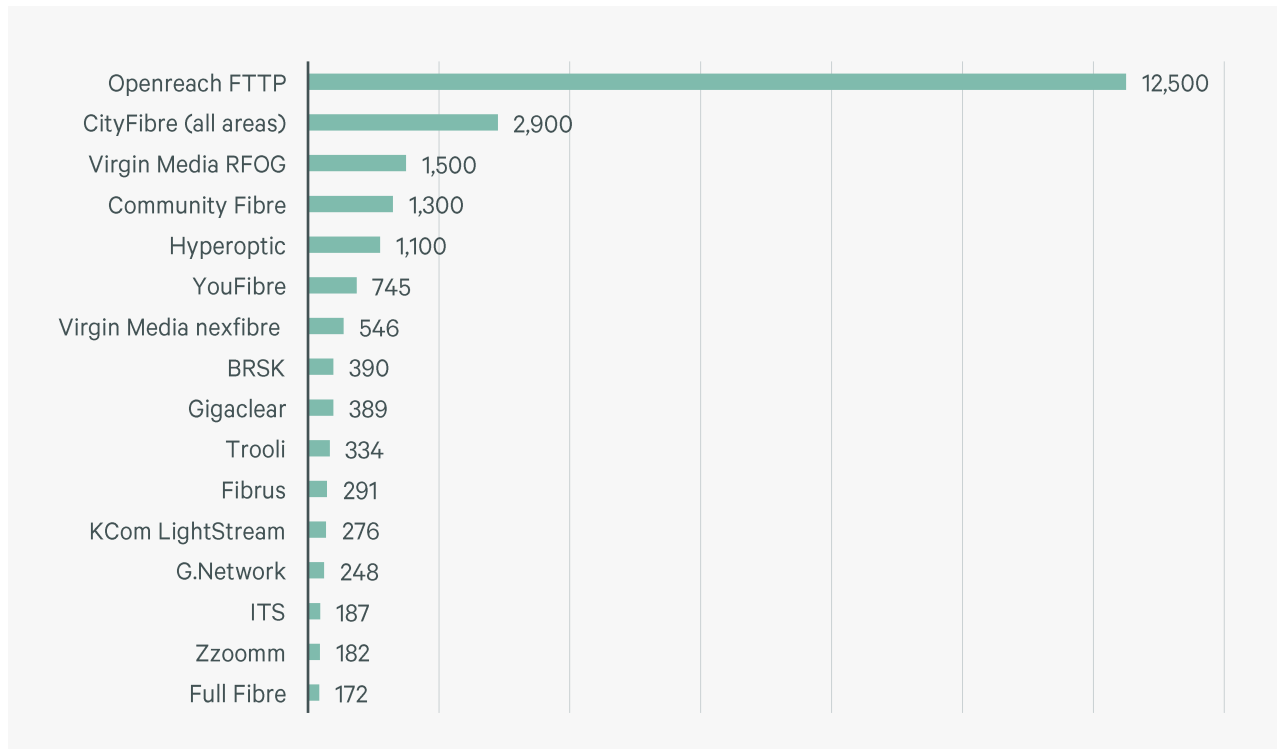


Figure 9: Public cloud services end-user spending worldwide 2017-2024 (\$ billion)



Source: Gartner, May 2024 as cited by Statista. E—expected.

Figure 10: Number of premises passed by full fiber networks in the U.K. by operator (in thousands)



Source: thinkbroadband, as cited in Statista, February 2024 'The State of Broadband: A Comprehensive Overview.'

Conclusion

So far in 2024, investors focused on the central banks' pivot to cutting policy rates, the state of their economies and simmering geopolitical conflicts. In this 'Great Balancing Act,' institutional investors continue to increase allocations to infrastructure, being attracted to its downside protection as well as the possibility to invest in once-in-a-generation themes of clean power and data. The wide variety of infrastructure assets and still evolving performance data mean that investors have to be diligent in identifying pockets of underperformance and skilled in creating factor-balanced portfolios.



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