DWS

Infrastructure Strategic Outlook 2023

Infrastructure Characteristics Shine Through The Turmoil

IN A NUTSHELL

- Significant economic turmoil – including recession - will continue to put pressure on markets, making the defensive characteristics of infrastructure more important than ever.
- The unlisted infrastructure market has not been immune from wider market caution but data continues to support a robust returns performance and solid fundraising and transaction outlook.
- There will be a continued focus on infrastructure characteristics as investors look to tap into the energy transition's growing opportunity. We expect that Europe will not only transform its energy sector, but also its wider economy through infrastructure investment.

Infrastructure Strategic Outlook 2023

Infrastructure Characteristics Shine Through The Turmoil

After years of investors growing their allocations towards infrastructure given its potential to offer a measure of inflation protection, cash yields and defensive assets, 2022 was the year where infrastructure's ability to live up to such attractive characteristics was truly tested – and we expect that 2023 will be no different. Recession, geopolitical shifts, and energy crises will be difficult to navigate and will impact individual assets differently, but we believe investors keeping an eye on the long-term (as all infrastructure investors should), should see a growing pipeline of capital deployment opportunities driven by the systemic themes of decarbonisation, digitalisation, and sustainability.

Europe will be the focal point for investors looking to tap these trends, where a confluence of macroeconomics, politics, regulations, and sector trends converge to make transformational infrastructure investment a strategic necessity[1].

Private market investors across all asset class are taking a variety of approaches when seeking to manage climate risks and to profit from the energy transition. These efforts need to step up to meet the expectations[2] published by the UN convened Net Zero Asset Owners Alliance, a group of 82 asset owners with over US$11 trillion in assets. We expect that more asset owners and consultants may formally or informally align with these requests, with a focus in 2023 on deeper implementation. Many infrastructure asset managers have been focusing on these types of actions for a number of years. The largest gap relates engagement with policy-makers.

[1] See https://www.dws.com/ insights/global-research-institute/a-framework-for-european-transformation/
[2] See https://www.unepfi.org/industries/the-net-zero-asset-owner-alliance-outlines-its-recommendations-for-asset-managers-in-private-markets/

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1 / Macro Update

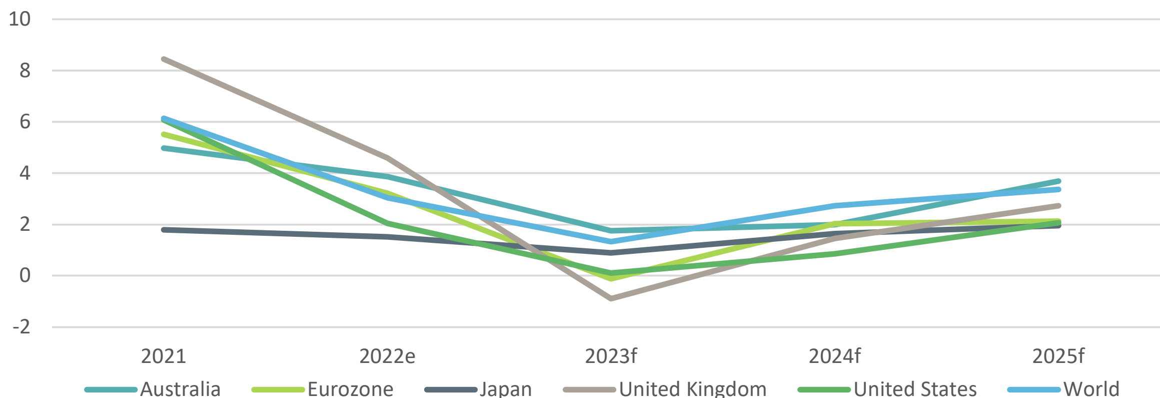
Significant economic turmoil will continue to pose risks to markets, making the defensive characteristics of infrastructure more important then ever.

1.1 Economic Growth Becomes Chief Concern

Inflation and interest rates were some of the main macroeconomic talking points of 2022 and while they will remain salient in 2023, recession will be at the forefront of concerns. Globally, we will likely see GDP growth slow to the weakest pace since the Global Financial Crisis and most advanced economies fall into recession over the course of 2023, as the turmoil of 2022 finally takes hold of the real economy. Economic growth forecasts currently point to a relatively shallow recession for most markets, but infrastructure assets which generate their revenues from consumer demand are likely to face pressure, while core and core+ assets without volume risk will see more resilient performance in the face of softer demand. That said, affordability concerns are likely to be at the top of the agenda for regulators, which could see limits placed on regulated assets' ability to react to the economic environment.

Of all the key infrastructure markets, the UK is set for the strongest contraction in 2023, given the exposure to similar macro pressures as other markets as well as to costs arising from Brexit and the aftermath of the October 2022 "mini-budget". The eurozone's recession will likely be milder, while the US is expected to only fall into a technical recession later in the year[3]. Risks are weighted to the downside for global economic growth, given the uncertain trajectory of China's reopening and the ongoing conflict in Ukraine.

Chart 1: Real GDP Growth (% Chg y-o-y)



Source: Oxford Ecnomics. Note: e/f=estimate/forecast.

1.1 Inflation To Remain Sticky

While inflation is set to have peaked in most markets over late 2022, helping to relieve some cost-of-living pressures, core inflation is likely to remain sticky and continue to pose earnings risk for infrastructure assets less able to adapt. Driving the reduction in inflation in 2023 will be the reduction in energy prices and container shipping rates and a lessening of other supply-chain pressures, with market expectations seeing inflation come down to a 'new normal' rate, lower than 2022 but significantly above recent years. The US will likely see inflation average around 4.7% over 2023, while in the eurozone it will likely settle at 5%; however, there is a significant risk of sporadic spikes given the current unpredictability of global energy markets and trade[4].

With inflation set to remain above trend, we believe that infrastructure's historical track record and ability to perform well through economic downturns as well as in high-inflationary environments should continue to make the performance of the asset class an important component of overall market returns in 2023. A key risk for investors to watch in the 2023 inflationary environment will be

[3] Oxford Economics, December 2022
[4] Oxford Economics, December 2022

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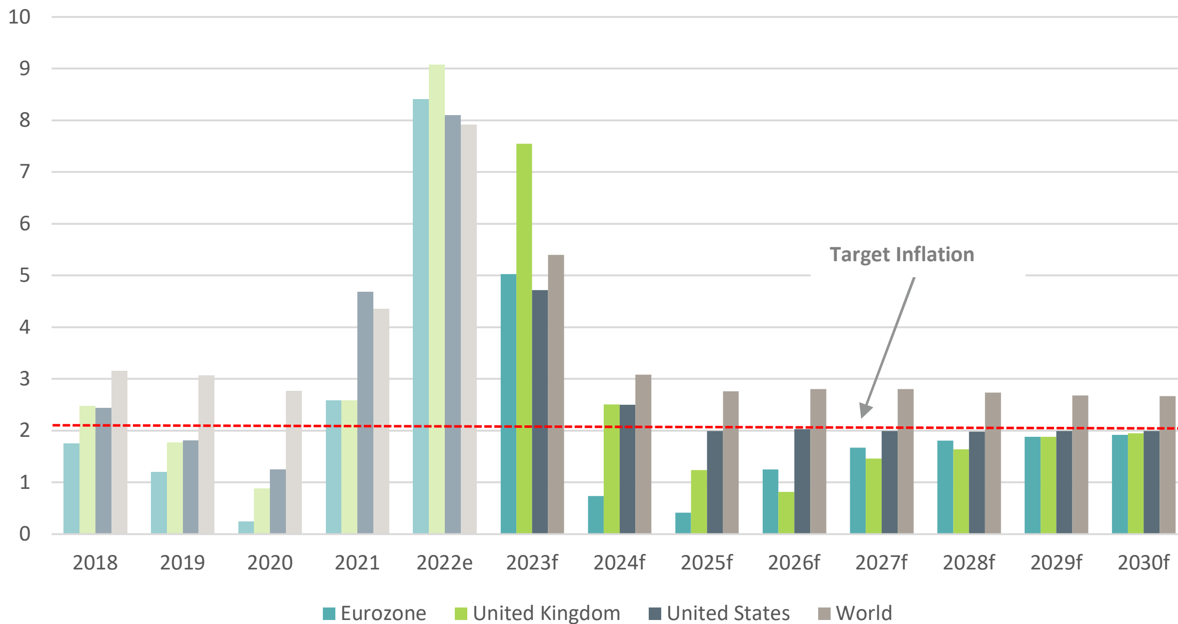
elevated capital costs and material input costs. Assets will see continued material cost pressures with metal prices, energy prices and in particular labor costs remaining elevated, even if the pace of cost increases slows.

Chart 2: Consumer Price Index (% Chg y-o-y)



Source: Oxford Ecnomics. Note: e/f=estimate/forecast.

1.2 Rates To Top Out, But Unlikely To Fall

With inflation peaking, interest rate increases will start to reach terminal values in 2023. Even with inflation moderating, it is unlikely that we will see central banks cutting their policy rates significantly – if at all – over the year, given the core inflation rate is set to remain above target for many markets. Controlling inflation will remain the core objective of most central banks, even at the expense of economic growth.

In addition to higher borrowing costs for capital expenditure, with rates having risen and set to remain higher than they have been for many years, the impact on discount rates and infrastructure valuations will be increasingly prevalent in the market. The extent to which valuations will be impacted will depend on how quickly an asset has been able to adjust revenue streams to boost cash flows. In the more rigid core market, this may see valuations decline relative to core plus, assets within which often have greater flexibility to adjust revenue streams and renegotiate contracts. Likewise, assets where valuations were normalised to reflect the anomalous nature of the persistent low rate environment will see their valuations hold up relative to those assets which may have benefitted from low discount rates in recent years.

This repricing will occur at a time when the denominator effect will be at the forefront of LP allocation planning, so those assets which do see a decline in value may actually allow for investors to retain more illiquid investments than over 2022, when the repricing was yet to take place. That said, for the portion of the market that were using discount rates that already accounted for a higher rate environment, valuations will hold up – especially given the strong multiples seen in transactions over 2022.

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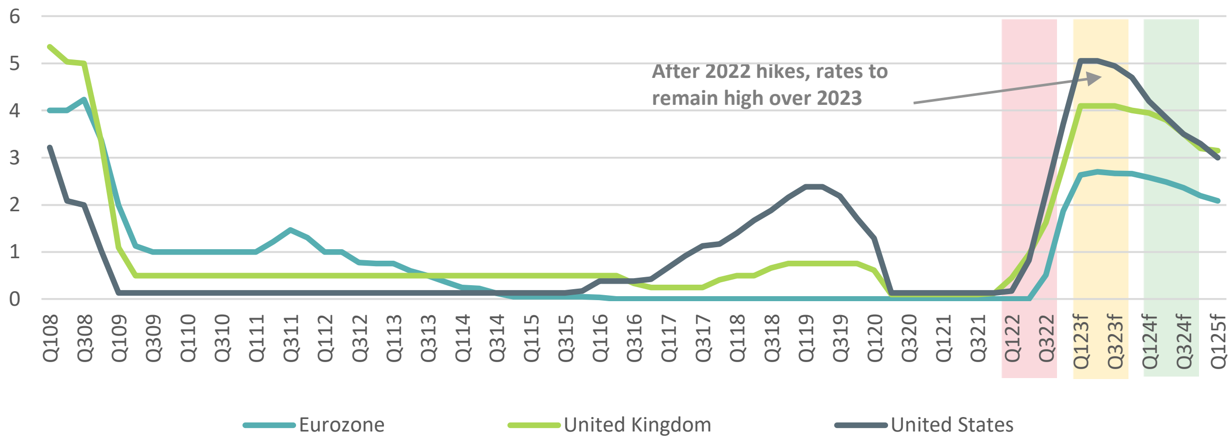
Chart 3: Central Bank Policy Rate (%)



Source: Bloomberg Weighted Average Consensus Foreccasts as of January 2023. Note: e/f=estimate/forecast.

1.3 Political Support For Investment But Not Excess Profit

Broadly speaking, politics looks set to be supportive for infrastructure investors over 2023. The main risk will come from high levels of discontent and industrial action as a result of the combination of high inflation and a backlog of economic and political issues stemming from the Covid-19 pandemic. Mindful of this backdrop, governments, and the regulators they empower may look to review fair compensation for investors in critical infrastructure such as water, energy, and social infrastructure.

The cost-of-living pressures that have built over 2022 are so potent politically that governments may look to limit price increases that exacerbate costs for constituents. While this is unlikely to result in aggressive retroactive framework changes given the long-term damage that would cause to investor perceptions, there may be several short-term measures introduced to either limit profits or delay the price increases available to asset owners. This is a particular risk in the energy sector, given that it is critical that the costs associated with investments into energy infrastructure are accounted for in the earnings allowed by regulators, given the vital importance these investments have in the energy transition's success.

Conversely, government intervention could be positive for investors, with subsidies available for consumers to cushion costs, rather than punitive measures on service providers. Further, certainly in Europe and the US, policy support for the energy transition and related investments into a whole spectrum of infrastructure sectors has made significant progress over 2022 and 2023 will likely be the year where related opportunities really begin to crystallise.

Government Intervention In Energy Markets

	UK	Italy	Germany	France	Spain	Poland	Romania	Greece
Windfall profits tax	✓	✓			✓	✓	✓	✓
Retail price caps (suppliers)				✓	✓[a]	✓	✓	✓
Wholesale price caps (generators)		✓		✓	✓	✓	✓	✓
Reduced energy or fuel taxes		✓	✓	✓	✓	✓		✓
Transfers to vulnerable customer groups	✓	✓	✓	✓	✓	✓	✓	✓

[a] – Temporary cap for the regulated tariff of natural gas
Source: Fitch Ratings EMEA Utiliites Outlook 2023.

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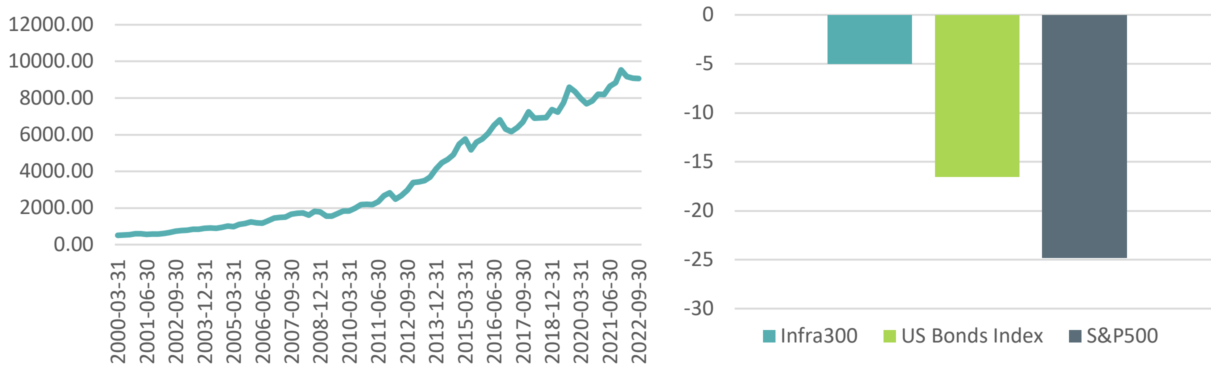
2 / Market Update

The unlisted infrastructure market has faced significant pressure but data continues to support a positive outlook from a performance, fundraising and transaction perspective.

2.1 Index Performance Supports Unlisted Strength

Unlisted infrastructure equity enjoyed a robust performance over 2022 when compared to other major asset classes. As of September 2022, the EDHEC Infra300 Equity Index, looking at private infrastructure performance in the context of wider macroeconomic and market factors, showed a decline in total returns of 5% year-on-year. This is a favourable performance relative to other major asset classes, including non-inflation linked bonds of similar duration and listed infrastructure. Additionally, it has highlighted the true illiquidity premium of unlisted infrastructure: low volatility. With initial estimates for the index's performance over the remainder of 2022 pointing towards the restoration of positive returns, the key attributes of the infrastructure asset class have largely shone through the economic pressures thus far.

Chart 4: Unlisted Infrastructure Index Performance



EDHEC Infra300 Equity Index Performance & Volatility – Total Return	
Jan-Sep '22 Total Return	**-5.01%**
Annualised Return 3Y	1.78%
Annualised Return 5Y	6.21%
Annualised Return 10Y	11.77%
Volatility 3Y	8.00%
Volatility 5YR	9.48%
Volatility 10Y	11.01%
Sharpe Ratio 3Y	0.18
Sharpe Ratio 5Y	0.64
Sharpe Ratio 10Y	1.12

Source: Bloomberg, EDHEC Inframetrics. Data available at the time of writing up to Q3 2022. The EDHEC Infra300 Index used in this present document are the intellectual property (including registered trademarks) of Scientific Infra, which is used under licesnce within the framework of the Scientific Infra activity. Scientific Infra is not responsible for the moral or material consequences of their use. Past performance is not indicative of future returns. It is not possible to invest directly in an index. US Bonds represents an index of 7–10-year maturity bonds. Past performance is not a reliable indicator of future returns.

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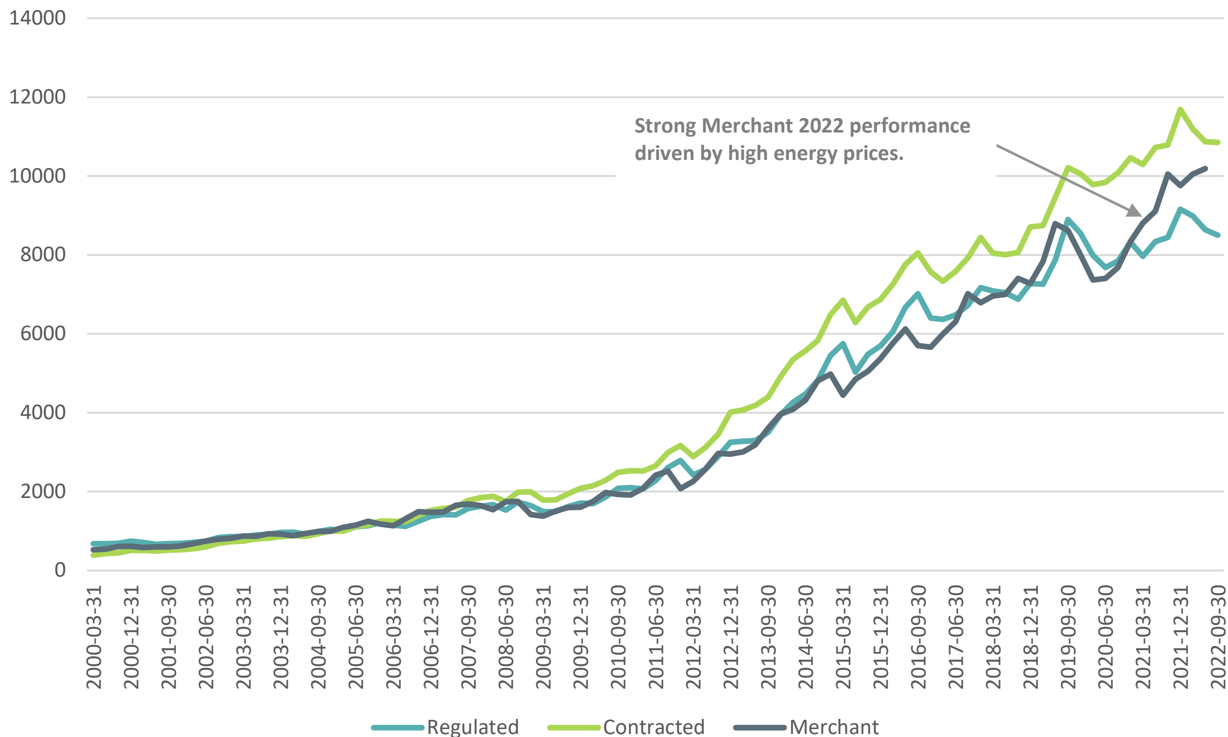
Looking to 2023, the importance of asset selection will be crucial in navigating the economic slowdown, with the lower middle-market offering stronger returns, but also higher volatility. Investors need to seek a balance between assets which give pricing power of merchant business models to deal with inflation, while also demonstrating a robust demand profile commonly associated with regulated assets. As such, contracted businesses that have inflation-passthrough and the ability to adjust terms - more than a regulated utility, for example - will likely outperform in the current environment. While merchant assets have outperformed over the last year, this has been driven almost exclusively by unprecedented power prices benefitting generators, which as already noted, will not be such a feature in 2023 and an economic downturn could conversely hit these assets the hardest.

Chart 5: Unlisted Infrastructure Index Performance By Asset Type



Source: EDHEC Inframetrics. Note: Index frozen at end of 2021. 2022 figures are estimates. Data available at the time of writing up to Q3 2022. Past performance is not a reliable indicator of future returns.

2.2 Fundraising Outlook Faces Pressure But Fundamentals Unquestionable

Having remained resilient during the pandemic, 2022 turned into a record-breaking year for infrastructure fundraising in terms of total capital raised. At the time of writing in December 2022, USD160bn has been raised according to data from Preqin, up over 20% on 2021 which itself was a record-breaking year[5]. What is noticeable is that while aggregate capital raised is up, the number of funds that capital has been allocated to has declined compared to 2021, suggesting that the average fund size continues to tick upward and with that the competition for large-cap opportunities will remain robust.

[5] Source: Preqin

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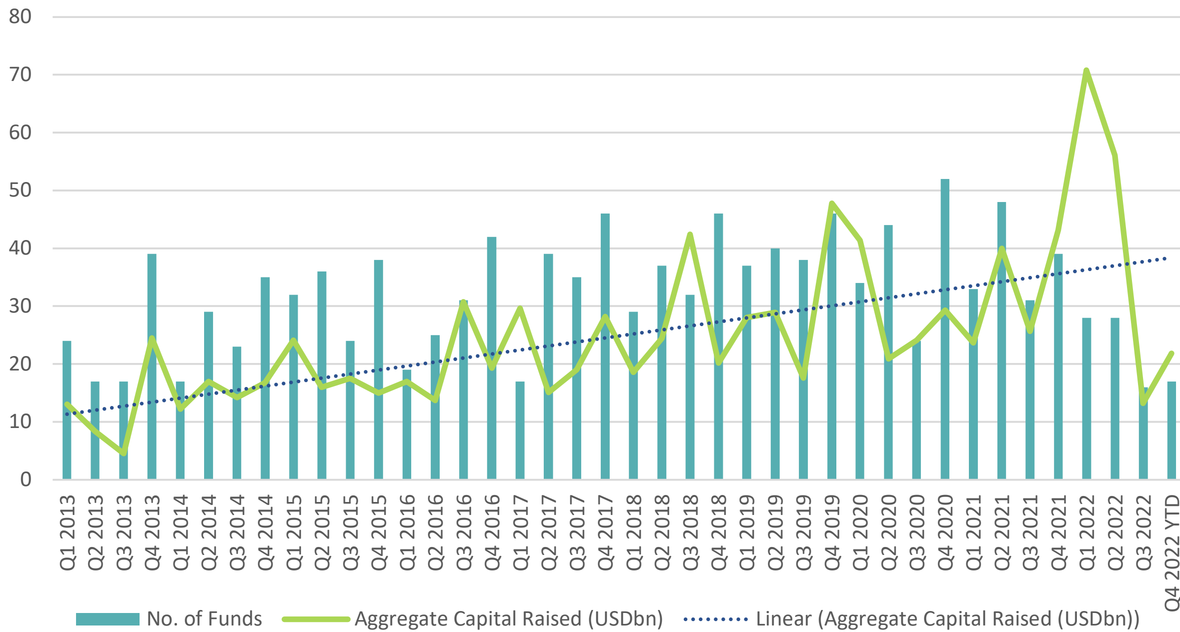
Chart 6: Infrastructure Fundraising



Source: Preqin, as of January 2023.

However, 2022 was a year of two halves, with the second half of the year seeing a dramatic fall-off in capital raised. This was driven by the broad market volatility seen over the year and exacerbated by the Ukraine conflict causing investors to take a wait and see approach. Additionally, given the decline of liquid markets over this period, there is also recalibration impact on fundraising as those investors that reached their target infrastructure allocations take pause to assess their overall portfolios.

In terms of the fundraising outlook, capital commitments for infrastructure will tick upwards as more investors look to tap the positive returns while benefitting from the potential diversification and defensive characteristics of infrastructure, as well as the dissipation of caution around macroeconomic volatility and concerns over the denominator effect. While risk-free rates have become more appealing, the other characteristics of infrastructure and the ability to directly invest in the energy transition story, will see capital continue to be raised. Furthermore, we continue to note the broadening of the investor base to include retail and wholesale investors through more innovative products – the so-called democratisation of infrastructure. Although savings accounts are broadly now more attractive, we believe the ability to directly tap into the energy transition story in particular will see strong demand for such products.

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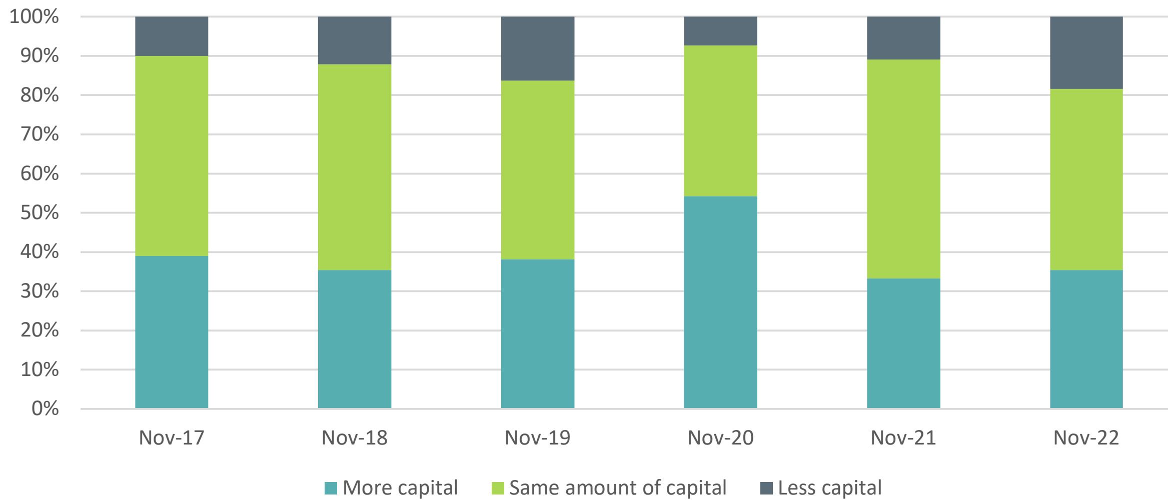
Chart 7: Survey - Allocation Towards Infrastructure Over 2023, % of Respondents



Source: Preqin Investor Survey, November 2022.

Fundamentally, the capital requirements for the sector remain substantial and the pipeline of capital deployment opportunities will grow in tandem. This is the case for both existing assets and new projects. Many governments – particularly following significant budgetary expenditure during the pandemic – will struggle with maintenance costs and service provision. Similarly on the private assets side, there is a substantial capital requirement for assets which need transition capital to allow them to adapt to the low-carbon economy. New assets will also need to be developed, and crucially integrated into energy networks to decarbonise electricity production.

Furthermore, the outlook for Real Estate is less sanguine given the greater impact that rising rates and economic uncertainty is having – particularly outside industrial and residential segments which have a brighter outlook[6]. When considering allocation towards real assets, infrastructure's more robust outlook should support fundraising, with note given towards the small- and mid-cap opportunities given the competition that exists at the large-cap end of the spectrum.

2.3 Transaction Trends

Deal appetite was strong over the first half of 2022 in the face of market turmoil, although we saw a drop off in activity over Q3. Even with a strong finish to the year it is unlikely that 2022 will surpass the record-breaking year that was 2021, where over 3,400 transactions worth USD1.14 trillion were closed. At the time of writing, 2022 had seen USD1.07 trillion worth of transactions involving 3,345 closed deals. Given the tumultuous year that was 2022, this still represents one of the strongest years of deal activity in the sector and is in line with our view that the asset class will continue to grow, capital will need to be deployed and we believe that the growing variety of strategies, sectors, and geographies available to investors is a positive for an increasingly sophisticated group of LPs that wish to differentiate themselves.

[6] https://www.dws.com/AssetDownload/Index?assetGuid=4370ce02-db8d-404c-8ffb-d372c148da7f&consumer=E-Library

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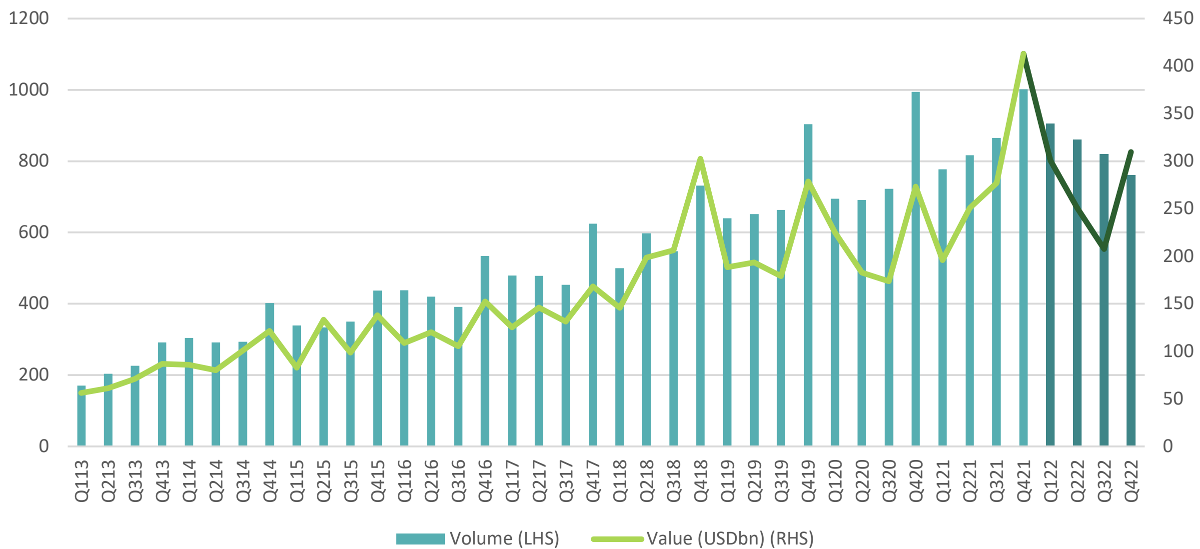
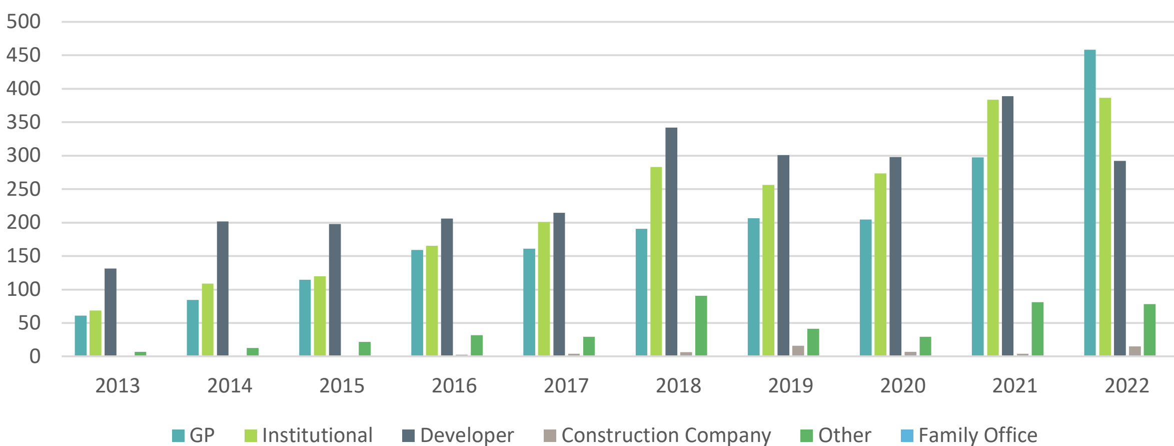
Chart 8: Closed Infrastructure Transactions



Source: Infralogic, as of January 2023.

There are several transaction trends which have accelerated over 2022 that we expect to continue to gather pace in 2023 and beyond. For the first time, GPs accounted for the highest value of closed transactions in 2022 at USD438.6 billion, higher than both developers and institutional investors. As the growth of infrastructure AUM and need to invest dry powder encourages the deployment of private capital, alongside strategic investment drivers which will create more infrastructure investment opportunities, this trend will continue. Reflective of this, M&A within infrastructure was the major outperformer in terms of transaction type, with both greenfield and refinancing deals closed falling away over 2022. With particular reference to the small and mid-cap market which is set to grow as well as the need to provide capital to assets in order to transition them towards the low-carbon economy, M&A will continue to be robust within the infrastructure sector.

Chart 9: Closed Infrastructure Transactions By Investor Type, Value (USDbn)



Source: Infralogic, as of January 2023.

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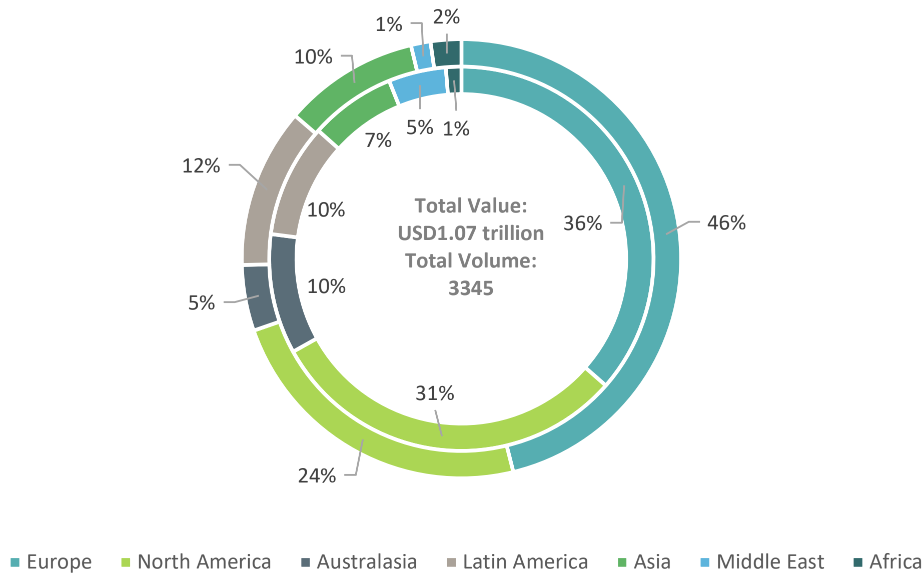
From a geographic perspective, Europe remains the dominant region by number of transactions and transaction value. With Europe at the centre of multiple systemic trends as detailed below, this outperformance will be maintained, although we note the upside potential of the US market to continue to grow on the back of a renewed investment drive under the Inflation Reduction Act (IRA). Renewables – in particular solar PV – along with gas and LNG infrastructure were highly active in 2022 with energy markets in flux, while the demand for fibre and data centre capacity have driven these less traditional areas to some of the most active infrastructure segments. Both of these trends will continue in 2023.

Chart 10: Infrastructure Transaction Volume (Outer) & Value (Inner), By Region, 2022



Source: Infralogic, as of January 2023.

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3 / Investment Outlook

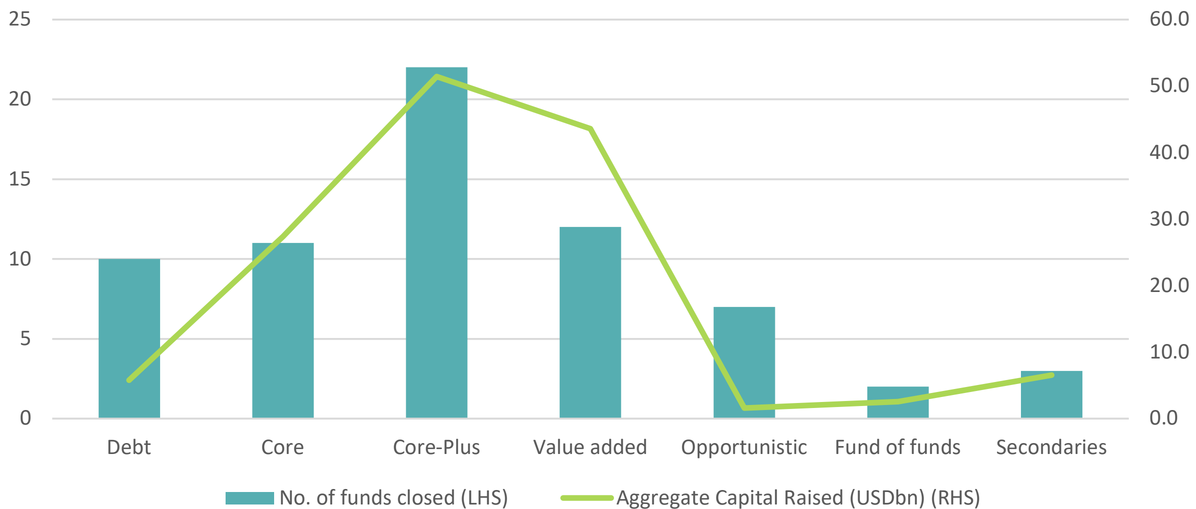
There will be a continued focus on strong infrastructure characteristics as investors look to tap into the energy transition's growing opportunity and Europe will not only transform its energy sector, but also its wider economy through infrastructure investment.

3.1 Funds Continue To Evolve

The ability of infrastructure assets to outperform in a recessionary macroeconomic environment will be at the centre of all infrastructure investments over 2023. If 2022 was a year dominated by the impact of rising rates and inflation on infrastructure valuations, in 2023 the fundamental business models of assets will be put to the test. This will highlight the continued evolution of what constitutes an infrastructure investment and the attractive characteristics investors will want within their portfolios.

On the one hand, we believe the defensive revenue stream characteristics exhibited most strongly in core infrastructure assets will be in demand given they are often essential services, relative to assets exposed to a greater degree of discretionary spending. On the other, we believe that core+ assets, which have a greater number of levers to pull to navigate a slower growth, higher inflationary environment, can be more quickly adjusted to boost revenues and maintain market demand. In this context, it is important to remember that the performance of the infrastructure asset class is ultimately driven by the performance of the infrastructure asset, and this depends on how actively they are managed and how much flexibility the contractual or regulatory structure allows. To maximise returns, a diversified strategy across sector, geography and business model is crucial.

Chart 11: 2022 Fundraising By Infrastructure Strategy



Source: Preqin 2023 Global Infrastructure Report

To better serve this growing desire to give investors the ability to diversify strategies within infrastructure and cater to an increasingly sophisticated investor base that is comfortable taking on more flexibility in their allocations to the sector, growth in fundraising for non-core funds and the secondaries market is likely to continue to expand. Given this trend allows for greater differentiation, diversification and in the case of the secondaries market, a greater degree of liquidity, the overall unlisted market will strengthen.

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3.2 Energy Transition 2.0

The energy transition will remain a stalwart of the infrastructure opportunities in 2023. While not a new trend, we note that the combination of a growing realisation of the full requirements of the energy ecosystem that needs to be developed to enable the decarbonisation of economies, alongside the 2022 energy crisis, means that the pace and scale of the transition have been amplified significantly. We believe this second phase of the energy transition (the first phase being the de-risking and scaling up of core renewables technologies like solar and wind), will likely see investors start to expand the scope of their interest into a much wider array of sectors and investment ticket sizes. While a global trend, the policy developments seen over 2022 make the European Union and United States two key markets for investors.

In Europe, the existing large-scale policy support of funding from the Next Generation EU post-Covid recovery package and the Fit for 55 legislative package was given a significant boost by the REPowerEU Plan. Drawn up as a direct response to the invasion of Ukraine and the subsequent requirement to transition away from Russian gas, Europe's decarbonisation ambitions have been scaled up and accelerated. Key legislative support in Europe includes:

- New European renewables target for 2030 from 40% to 45% penetration.
- Boosting industrial decarbonisation with €3 billion of frontloaded projects under the Innovation Fund
- New legislation and recommendations for faster permitting of renewables especially in dedicated 'go–to areas' with low environmental risk
- Increased ambition on energy savings by raising the EU-wide target on efficiency for 2030 from 9% to 13%

For the US, the Inflation Reduction Act (IRA) will lead to higher levels of investment across several infrastructure sectors that lead to energy security and decarbonisation. In addition to higher investment into new and transitioning assets, we believe that businesses will also see boosted revenues given that both investment and clean energy production are being rewarded by tax credits. The IRA brings an unprecedented level of visibility to the US infrastructure market in terms of the tax credits it offers being available for a ten-year period, compared with the previous system of rolling over much shorter credit schemes. In addition to the visibility, IRA has also given developers and investors a much more streamlined process to monetize their tax credits by allowing their trade and enabling a range of market participants to claim tax refunds directly from the government.

Core IRA Spending Items

	2022-2031 (USD billions)
Tax credits for clean electricity (wind, solar, standalone energy storage etc.)	127
Tax credits and rebates for energy efficiency for buildings (commercial and residential)	47
Energy manufacturing and energy security	37
Tax credits for nuclear	30
Tax credits for hydrogen	13
Clean vehicles (new, previously owned, commercial etc.)	12
Clean fuels (biodiesel, renewable diesel, sustainable aviation etc.)	9

Source: Congressional Research Service, Congressional Budget Office, August 2022.

Crucially, in both Europe and the US, a broad range of energy technologies across power generation, transportation and energy storage are enjoying levels of support similar to those offered to solar and wind at the beginning of the renewables growth story. This is precisely the type of governmental support investors need to assist in de-risking crucial, but less proven technologies and business models that would prevent traditional core infrastructure investors in taking stakes in such businesses. A key example of this is green hydrogen, which has moved from the energy fringe to one of the focus energy topics of the last two years; this has at least in part

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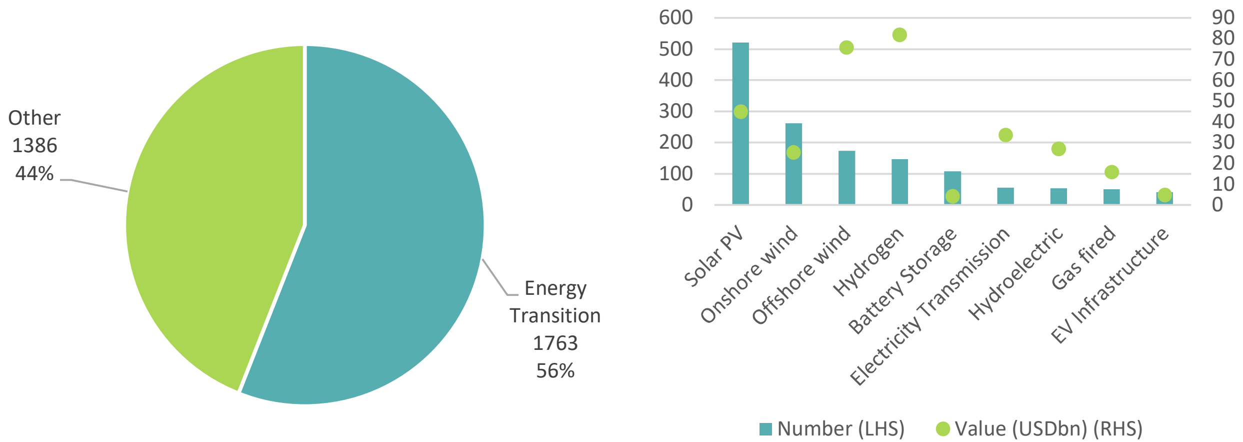
been driven by government grants and the development of detailed frameworks such as the European Hydrogen Strategy and is now on most infrastructure investor's agenda in some form[7].

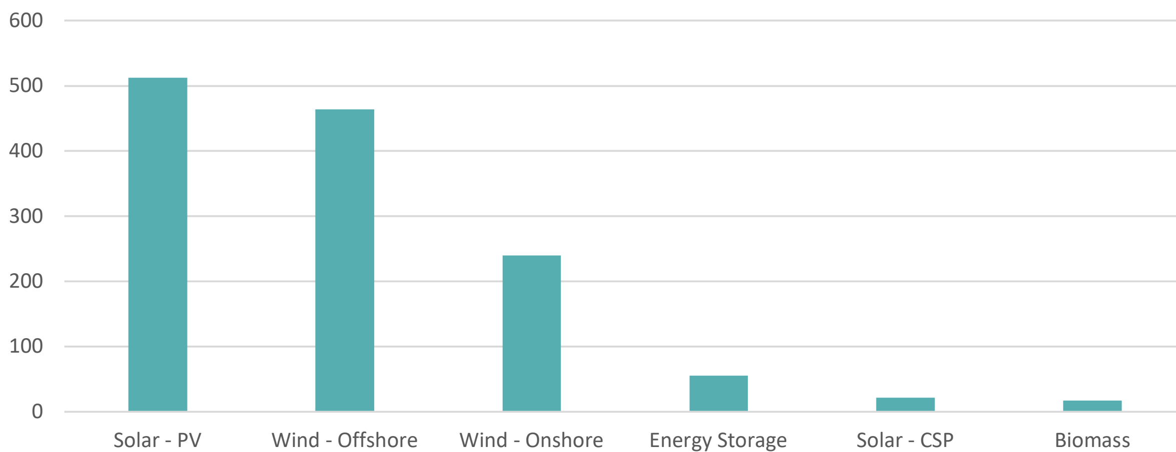
Chart 12: Number of Live Transactions, 2022 & Top 10 Energy Transition Sectors By Number Of Live Transactions



Source: Infralogic. Note: Chart shows Transactions which became live over 2022 and remained so as of January 2023.

In terms of sectors, there is still a substantial capital requirement for those large-scale generation projects both to decarbonise existing electricity consumption and cope with an increasingly electrified economy. In particular, the growth within the offshore wind segment, given its ability to provide scale, should continue to see both European and US markets expand renewables as a share of total electricity generation at pace.

Chart 13: Global Renewanles Project Pipeline Generation Capacity, GW



Source: Fitch Solutions Infrastructure Key Projects Database.

Alongside this more traditional area of renewables investment, there will likely be a growing focus on what have traditionally been seen as periphery energy investments but now are a crucial component of the energy transition strategies. Businesses which can help

[7] https://energy.ec.europa.eu/topics/energy-systems-integration/hydrogen/key-actions-eu-hydrogen-strategy_en

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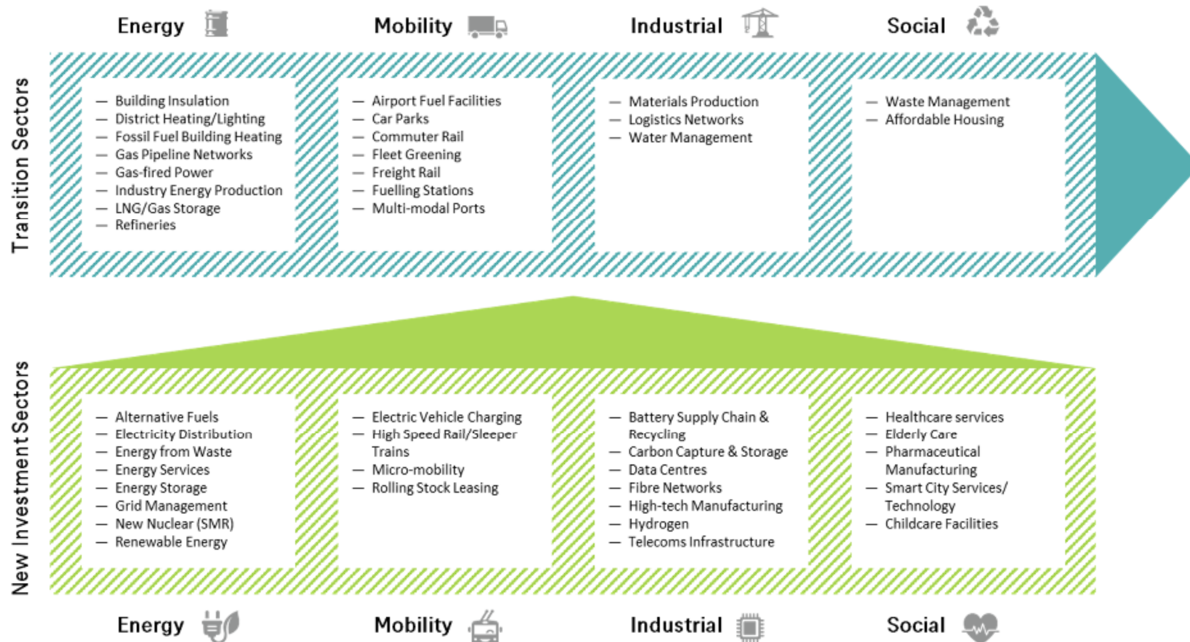
enable a broader energy transition will come to the front and centre of investor attention. In particular, energy efficiency, grid management, alternative fuels and electric vehicle charging, small scale and localised renewables deployment and energy storage will be some of the key sectors for transactions over 2023, just as data centres and fibre have been in the wake of the pandemic. While investors will need to be willing to buy and build these businesses – which are often classified as value-add or merchant – into core plus infrastructure investments, this is exactly the capital these companies need to bring their technologies and services to scale to have a significant impact. This will also give the benefit to investors of potentially greater diversification within the energy transition story, particularly for those investors with limited geographic focus which may be too heavily concentrated in one sector such as solar.

3.3 European Transformation Through Infrastructure

While the energy transition is the most obvious area of investment necessary in Europe given the energy crisis, the region is also going to be the focus of a much broader investment theme centred around the strategic transformation of the whole economy. This will yield numerous opportunities for infrastructure investors given that infrastructure will be at the very core of the future sustainable, self-sufficient, and technology-focussed Europe. This strategic transformation of Europe is being driven by a multitude of factors: underperforming productivity, shifting demographics, a lack of innovation plus an overreliance on a globalised economic system that is shifting. Supply chains were tested during the pandemic, but as geopolitics and relations between China and the international community continue to evolve, a more systemic shift in logistics and production capacity is set to be undertaken.

The transformation of Europe cannot occur without the foundational infrastructure that the economy and wider society relies upon being at the heart of that change. Capital requirements span across energy as already noted, but also industry, mobility, and social infrastructure where old assets need transitioning and new assets need building. Below are the indicative infrastructure asset types that will be central to European transformation.



Note: New Investment Sectors are those which require capital to boost capacity, increase networks or bring new technologies to scale. Transition Sectors show those which are vital parts of existing European infrastructure but have assets with a high capital requirement to ensure that networks remain efficient and begin the transition for the low-carbon, circular economy.

One of the major hurdles that needs to be overcome to mobilise more capital into the transition story is a more common approach to definitions. Part of this work has been done through the adoption of Sustainable Finance Disclosure Regulation (SFDR) for asset managers and other financial markets participants, but we note even within this there are likely to be issues in the market regarding the effectiveness of capital in addressing the broad spectrum of investment needs. For example, Article 9 funds that equally weight financial returns and impact may attract the ever growing ESG-focussed capital given its explicit link to sustainability but given the

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smaller pool of investment opportunities that can deliver both, may end up having a smaller overall impact. Conversely, Article 8 funds can be central in the transformation of existing European infrastructure and industry but given the need to transition what may be currently carbon intensive sectors, may be seen to be less attractive to purely green capital. Working to align the differences between divestment/non-investment and transition will be an important theme in the year ahead in order to maximise returns and successfully move the European economy forward.

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