

Between Short-term Headwinds and Strong Long-term Tailwinds:

Infrastructure 2024 - Focus on Germany

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Executive Summary

Substantial capital is required for the digital and ecological restructuring of the economy and the modernization of the existing infrastructure. The state sector will not be able to address these challenges alone, and capital from institutional investors is necessary to fill this gap. Therefore, Infrastructure Equity and Infrastructure Debt **have emerged as crucial asset classes for institutional investors** around the globe.

Therefore, we analyze opportunities and obstacles in the Infrastructure asset class, **particularly focusing on the German market while also considering its implications in an international context**. Our comprehensive data, drawn from 109 limited partners (LPs), underscores the growing significance of Infrastructure in the portfolios of German institutional investors. Notably, Infrastructure Equity has risen to become the second most important alternative asset class. This trend is further reinforced by the expressed desire of German LPs to expand their allocations to Infrastructure. This not only reflects their confidence in this asset class but also aligns with international trends, which indicate a steady increase in Infrastructure allocations among institutional investors' portfolios.

The BAI Alternative Investments Sentiment Barometer confirms that both Infrastructure Equity and Debt have outperformed other alternative asset classes in fulfilling expectations during past difficult market phases. Moreover, the current sentiment towards Infrastructure investments is perceived as significantly more positive than that of other alternative investments (AI).

We conducted 13 expert interviews with institutional investors, consultants, and asset managers, predominantly, but not exclusively, players with a focus on Germany to gain deeper insights into the current opportunities and challenges of Infrastructure investments. The interviews, along with market data, uncover obstacles like macroeconomic risks and high interest rates, which have led to liquidity constraints and a dramatic downturn in Infrastructure transactions. However, forecasts indicate that the liquidity situation will improve with expected interest rate cuts and revitalizing Infrastructure deals. This optimism suggests that infrastructure as an asset class will remain attractive and contribute to broader economic transformation. Despite short-term challenges, our interviews emphasize that megatrends such as **digitalization** and the **energy transition** are anticipated to drive the long-term development of the asset class. Furthermore, the role of Infrastructure as an

inflation hedge and *portfolio stabilizer* means a significant short-term advantage in the current market environment.

The inflation hedge and outlook of Infrastructure rely on asset characteristics and sectors. Various macroeconomic and market factors impact different Infrastructure sectors' performance and relative weight. In discussions, two main considerations emerged regarding the attractiveness of the various infrastructure sectors. One group favors to **overweight energy Infrastructure investments** due to current favorable conditions, while another emphasizes historical performance variations across sectors, advocating for **broad diversification within the Infrastructure portfolio**.

Integrating **ESG criteria** (Environmental, Social, and Governance) has emerged as another pivotal factor driving infrastructure investments. We will delve into two sectors renowned for their potential to generate significant environmental and social impact in more detail.

Renewable energy production stands out as a cornerstone in achieving sustainability goals. The sector has surpassed conventional energy production as the most significant Infrastructure sector globally, driven by the megatrend of energy transition. This surge positively impacts the entire Infrastructure asset class. Interviews suggest a **largely positive sentiment in the renewable energy sector**, however, tempered by **cautionary voices advising against excessive optimism**. The high attractiveness of the renewable energy market leads to an influx of new players, necessitating careful fund and manager selection by LPs.

While often overshadowed in deal value and perception, social Infrastructure also benefits from the increasing emphasis on ESG considerations. Therefore, interviews also shed some light on the social Infrastructure sector.

Our survey data indicate that **the majority of surveyed** LPs primarily invest in infrastructure projects outside of Germany.

Expert interviews with LPs and GPs partially confirm this finding but partly cite attractive investment opportunities in Germany amid improving conditions. We discuss **location factors** for Infrastructure and identify several obstacles. Therefore, the structure of the German energy market was cited as affecting the risk-return structure compared to other markets. **Skepticism regarding** private capital's role in financing the energy transition, along with unclear ESG regulations and the need for some regulatory improvements, were also named.

Policymakers must address shortcomings and recognize private capital's vital role in driving digital and ecological transformation, which requires a clear regulatory framework.

Despite short-term challenges, infrastructure's longterm outlook is positive due to the underlying megatrends.



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1. Introduction – Why Infrastructure as an asset class plays a crucial role for the future economic viability

Germany has undertaken a significant legal commitment to achieve climate neutrality by 2045, necessitating a profound restructuring of its energy landscape. According to a recent analysis conducted by the Handelsblatt Research Institute, the projected costs stand at a staggering 1.1 trillion Euros. To put this into perspective, it is roughly 65 times the budget gap faced by the "Ampel" government that held sway over German politics at the close of 2023¹, or around 27% of the German GDP. The pivotal focus lies on the expansion of renewable energies, along with the imperative development of storage capacities and grids. KfW estimated the investment needed to achieve climate neutrality in Germany to be even around 5 trillion Euros. Additionally, they outlined only 40% of this amount can be covered by the public sector².

The existing infrastructure in Germany is also increasingly dilapidated. For example, according to a study by the German Institute of Urban Affairs (Difu), a third of all roads have significant defects³. This discrepancy can be attributed to Germany's position at the bottom of the list in Europe regarding Infrastructure investment. Since 2000, public investment in infrastructure, such as roads and social Infrastructure like schools, has only amounted to around 2.1% of GDP, notably lower than the EU average of 3.7% of GDP⁴.

This monumental investment backlog cannot rely solely on state intervention. It is imperative to harness institutional investors' capital, such as insurance companies, foundations, pension funds, and pension schemes, in transitioning to a zero-carbon economy with modern and digital infrastructure.

Also, private pension provision institutions are increasingly becoming significant players in supplementary old-age provisions alongside statutory pensions. Notably, the current German federal budget allocates over 100 billion euros annually to stabilize the statutory pension system.

Integrating Infrastructure as a yield component into institutional investors' portfolios presents a dual opportunity: addressing the pressing need for adequate pension provisions, while also financing the energy transition. Infrastructure can thus play a pivotal role in tackling two of Germany's most pressing challenges head-on.

In this paper, we want to shed light on the current opportunities and challenges for this asset class. Therefore, we discuss the general environment for Infrastructure and deep-dive into the German market, discussing location factors and investment obstacles.

1.1 Infrastructure as an Asset class

Given institutional investors' pivotal role in driving ecological and digital transformation within the economy, it is imperative to outline and delineate the definition and characteristics of Infrastructure as an asset class.

Depending on the type of capital, we distinguish between Infrastructure Equity and Infrastructure Debt⁵.

Infrastructure Equity refers to equity investments in infrastructure projects. These investments can take various forms and strategies with different risk-return profiles, including direct investments or fund investments, which offer greater diversification opportunities.

3 https://www.bayika.de/de/aktuelles/meldungen/2023-08-30_372-Milliarden-Euro-Investitionsbedarf-Studie-zur-kommunalen-Infrastruktur-zeigt-alarmierendes-Bild.php.

5 We write infrastructure as an asset class, with a capital "I".

¹ https://www.handelsblatt.com/unternehmen/energie/energiewende-so-viel-kostet-die-infrastruktur-der-zukunft/100002597.html.

² https://www.kfw.de/%C3%9Cber-die-KfW/Newsroom/Aktuelles/Pressemitteilungen-Details_673344.html.

 $^{4 \ \}underline{https://www.wirtschaftsdienst.eu/inhalt/jahr/2022/heft/7/beitrag/chronischer-investitionsmangel-eine-deutsche-krankheit.html.pdf$

Infrastructure Debt, on the other hand, involves non-banks providing funds for infrastructure projects without utilizing the capital markets.

The characteristic that distinguishes Infrastructure Equity and Debt from Corporate Private Equity and Corporate Private Debt is their project character. Infrastructure investments primarily focus on direct investments in infrastructure projects or funds that invest indirectly in such projects. These investments typically have long-term horizons and generate stable and predictable cash flows, contrasting with Corporate Private Equity investments, which prioritize potential capital gains. Infrastructure Debt, on the other hand, is financing for infrastructure projects⁶.

The figures for global unlisted infrastructure assets under management show that Infrastructure has been experiencing a strong overall upward trend for a long time (*Figure 1*). In Europe, the increase in assets under management in recent years has been even greater than in the USA.



Assets under Management in unlisted Infrastructure

Figure 1: Unlisted Infrastructure, AuM by geographical focus. Source: Preqin Global Report 2023 Infrastructure.

⁶ For a detailed information brochure on the subject of infrastructure investments, see https://www.bvai.de/fileadmin/Veroeffentlichungen/BAI_Publikationen/BAI_Informationsbroschuere_Infrastruktur_0122.pdf.

2. General environment for Infrastructure

Infrastructure has firmly entrenched itself within the portfolios of institutional investors in Germany. BAI Investor Survey data reveals that a substantial 74.8% of German LPs have committed investments to Infrastructure Equity, positioning it as the second most favored alternative asset class, trailing only behind Real Estate Equity (*Figure 2*). This trend underscores a notable surge in its significance, rapidly closing the gap with Corporate Private Equity.

Infrastructure Debt is also an integral part of the portfolios of German institutional investors. However, with 42.1% of the surveyed investors already engaged, among the Private Debt asset classes, Infrastructure Debt still has the potential to catch up compared to Real Estate Debt and Corporate Private Debt.



Participation rates in Al-asset classes

Figure 2: Share of institutional investors invested in a particular asset class. Source: BAI Investor Survey 2023.

The macroeconomic environment with sharply rising interest rates, elevated inflation, supply chain disruptions, and the ongoing war in Ukraine set markets globally under pressure and posed significant challenges to institutional investors.

From our Investor Survey, we derived indicators to assess how the participating LPs perceive the environment in a specific asset class. Our data reveals that Infrastructure Equity and Infrastructure Debt were significantly better able to fulfill investors' expectations during the challenging market environment in the last 12 months than other alternative asset classes (*Figure 3*). We asked LPs to what extent a particular asset class fulfilled their expectations on a scale from "the expectations not fulfilled – 0" -to "the expectations exceeded – 100". While 41% of the investors surveyed have a satisfaction score of 75 or above, the value for the mean of other illiquid alternative asset classes is only 23.7%.

Satisfaction with Infrastructure and alternative asset classes



Figure 3: To what extent (from 0 to 100) have investments met institutional investors' expectations in the changed market environment over the past 12 months? Source: BAI Investor Survey 2023.

The BAI Alternative Investments Sentiment Barometer 2023 does not only retrospectively evaluate the LPs'satisfaction with asset classes but also examines the present investment environment (*Figure 4*).

It also shows that the sentiment and outlook of the Infrastructure Equity and Infrastructure Debt asset classes are significantly more positive than those of other alternative asset classes. On a scale of 1, meaning "very positive," and 7, meaning "very negative," 43.0% of the investors in our survey evaluated Infrastructure Equity with 1 or 2. For Infrastructure Debt, this figure is 28.2% value. Only 18.3% of the investors show this positive outlook regarding the other alternative asset classes surveyed.



Only 1.2% of the LPs have a "negative" or "very negative" sentiment regarding Infrastructure Equity, and 2.6% of the LPs regarding Infrastructure Debt. In the context of other Alternative Investments, this is the case for 15.1%.

Figure 4: Alternative Investments Sentiment Barometer - How do you assess the investment environment in the following asset classes? Source: BAI Investor Survey 2023.

2.1. The role of Infrastructure in LPs' asset allocation

In the following, we analyze whether this generally positive evaluation of Infrastructure Equity and Debt is also reflected in its role in institutional investors' asset allocation. Based on our representative sample of 109 LPs in the BAI Investor Survey 2023, we find that the clear majority, 55.6%, aim to increase their allocation in Infrastructure Equity and 52.6% in Infrastructure Debt (*Figure 5*). This is significantly more than for the other alternative asset classes, where 46.1% of the LPs surveyed plan to increase their allocation. A similar picture emerges for a scheduled reduction. Here, 8.8% of the investors surveyed plan to reduce their asset allocation for AI and less than half as many (4.2%) for Infrastructure Equity and 5.3% for Infrastructure Debt.

Accordingly, the strategic importance of Infrastructure in institutional investors' portfolios continues to grow - both in relation to other alternative asset classes and in absolute terms.

In the following discussion, we aim to explore the factors contributing to the significance of Infrastructure within investment portfolios. To do so, we will initially identify key elements shaping institutional portfolios based on macroeconomic trends observed over the past two years. Subsequently, we let LPs have their say directly.



Planned adjustments in Infrastructure and AI asset allocations

Figure 5: Planned adjustments in allocations. Source: BAI Investor Survey 2023.

The macroeconomic landscape has been marked by a pronounced surge in inflation following the COVID-19 pandemic and the repercussions of the war in Ukraine, alongside a notable escalation in interest rates since the onset of 2022 (*Figure 7*). Consequently, liquid markets have witnessed a substantial downturn in the aftermath of the interest rate hike. However, it has been suggested that the European Central Bank's key interest rates reached a plateau around mid-2023. The stock markets have recovered since then, and stock indices worldwide are close to reaching their highs or have reached them already.

Those developments significantly impacted institutional investors' strategic asset allocation. The "denominator effect" played a pivotal role in this context. Therefore, the importance of illiquid assets in investors' portfolios increased as liquid assets declined in value. This was the case since liquid assets must be valued immediately, leading to an automatic rise in the allocation to illiquid assets without any active adjustments. Meanwhile, illiquid assets typically react slower to market changes. As liquid assets decrease rapidly, illiquid assets become relatively more significant, potentially causing investors to surpass their intended allocation to illiquid investments. This over-allocation can be challenging for investors with investment quotas or capital requirement regulations, limiting their ability to commit new capital to Alternative Investments. However, as the liquid markets recovered, the denominator effect lost influence.

Furthermore, higher interest rates and inflation can impact the attractiveness and strategic importance of Infrastructure for institutional investors' portfolios. Higher interest rates mean that traditional fixed-income investments such as bonds are becoming more attractive again, and Alternative Investments are partly no longer needed as a substitute for bonds to meet liability obligations. However, it should not be forgotten that illiquid assets also play a central role in the diversification of portfolios and that this importance increases, especially in times of increased volatility and a positive stock-bond correlation. In addition, illiquidity premiums are sometimes necessary in phases of increased inflation to achieve attractive returns in real terms.

Also, Infrastructure investments are frequently seen as a hedge against inflation as they often have inflation-linked sources of income, such as long-term contracts with inflation-linked rates. In times of rising inflation, institutional investors may increasingly invest in Infrastructure to hedge their portfolio against the effects of inflation and generate stable, inflation-linked income. This can increase the strategic importance of Infrastructure investments in their portfolios⁷.

The increasing importance is also reflected in the global asset allocations of institutional investors. According to data from CEM, the allocation to Infrastructure rose from 3.5% to 6.4% between 2014 and 2023. The weight of traditional assets (stocks and fixed income/liquid bonds) in the asset allocation of an average LP has decreased by about 9.1%-points during the same period (*Figure 6*).



Institutional investors' asset allocations 2014–23

Figure 6: Institutional investors' asset allocations 2014–23. Source: CEM Benchmarking – McKinsey Global Private Markets Review 2024.

7 Cf. Interest rate turnaround and inflation - Implications for Alternative Investments in asset allocation,

https://www.bvai.de/fileadmin/Veroeffentlichungen/BAI_Publikationen/Interest_rate_turnaround_and_inflation_2022.pdf; Interest rate turnaround and inflation - Alternative Investments remain robust - despite competition from rising bond yields, https://www.bvai.de/fileadmin/Veroeffentlichungen/BAI_Publikationen/Interest_rate_turnaround_and_inflation_2022_Teil_2.pdf.

In expert interviews, institutional investors gave us their assessment of the role of Infrastructure in their portfolios:



Sabine Mahnert, Head Of Asset Management at Evangelische Zusatzversorgungskasse

From an investor's perspective, **Sabine Mahnert, Head of Asset Management at Evan**gelische Zusatzversorgungskasse, (EZVK) evaluates Infrastructure positively. Consequently, EZVK intends to continue investing at a steady pace. This should result in a measured expansion of the allocation over time. The historically important drivers for Infrastructure investments remain valid, including its role as a hedge against inflation, which is particularly crucial given the current inflationary environment. Additionally, she notes that there is still a need for Infrastructure investments, as there has been insufficient government investment in recent years, leading to opportunities for the private sector to fill the gap. Despite the headwinds from higher interest rates, lower leverage compared to other asset classes, such as Private Equity, makes Infrastructure investments an important stabilizer in the portfolio from a risk perspective. Overall, Mahnert believes

that the macroeconomic environment still supports Infrastructure investment, and demand for private sector investment will be essential to address the major infrastructure challenges of our times.



Armin Beerwart, Head of Private Markets, W&W Asset Management GmbH

Regarding the strategic asset allocation (SAA) in Infrastructure, **Armin Beerwart, Head of Private Markets, W&W Asset Management GmbH**, expresses uncertainty about further expansions. He notes that the substantial growth in Alternative Investments or private market investments experienced in recent years is likely coming to an end – at least temporarily. Despite having doubled the volume in the Al sector within five years, he says that such growth can no longer be expected. He expressed hope in maintaining the allocation ratio to reinvest capital received through distributions. However, he anticipates a mostly sideways trend in the foreseeable future, with perhaps some slight adjustment in the allocation ratio.

Beerwart expresses a desire to continue expanding the portfolio, as the Infrastructure portfolio is performing well and meeting expectations. However, he identifies overarching factors impeding further growth.

One major factor is the denominator effect, a concept previously discussed extensively. He explains that due to the decrease in the market value of the large fixed-income portfolio, driven by rising interest rates, the Infrastructure allocation has risen considerably as a proportion of the total portfolio. This phenomenon limits their ability to expand Infrastructure investments further.

The second factor is the liquidity structure of the overall portfolio that limits the expansion of illiquid private market investments. These constraints restrict their opportunities for further growth in Infrastructure investments.

Despite these challenges, Beerwart reiterates that the arguments favoring Infrastructure investments remain valid and well-understood. He clarifies that the limitations on further Infrastructure allocation expansion are not due to regulatory quotas but rather internal strategic asset allocation (SAA) constraints. Furthermore, he explains that the denominator effect has caused the Infrastructure allocation to reach a level sooner than anticipated within the strategic asset allocation plan, potentially two to three years earlier than planned. This situation is a constraint unless there is a willingness to significantly increase the proportion of illiquid investments, which he indicates is not the preferred approach.



Andreas Binder, Head of Alternative Investments at WAVE Management AG

Andreas Binder, Head of Alternative Investments at WAVE Management AG, recognizes the vital role of Infrastructure within investment portfolios.

Especially in recent years, the asset class has proven its resilience and robustness in times with increased interest rates, higher inflation, and various conflicts. In addition, there are the well-known megatrends such as energy transition and decarbonization, and a great deal of capital will have to be invested in these sectors in the coming years.

Nonetheless, Infrastructure Equity investments face several challenges. For example, fixed-income investments have become significantly more attractive again, since they offer higher returns than a few years ago. Also, regulatory hurdles, particularly for insu-

rance companies, represent serious obstacles, complicating investment decisions.

In order to deal with the challenges described, a reassessment must be carried out by the investors. For example, investors could switch from traditional super core infra investments towards core-plus strategies within the Infrastructure sphere. With this approach, Binder stresses the importance of carefully weighing potential returns against the complexities and risks inherent in these Infrastructure investments.

Furthermore, akin to other alternative sectors, deal flow is currently experiencing its lowest levels in decades, posing challenges in aligning buyer and seller expectations on pricing. Persistent market uncertainty adds to the complexity, making it challenging to ascertain the appropriate pricing for assets across various categories like Real Estate, Infrastructure or company buyouts. Consequently, investors are exercising caution in their approach. While some are still committing to investments, albeit at a potentially reduced pace, others may exhibit more hesitancy due to the need to reconcile their quotas or the heightened uncertainty surrounding market conditions.



Kian Sander, Senior Investment Manager at Bayerische Versorgungskammer



Ingo Wichelhaus, Senior Director, Mount Street Portfolio Adviser

Kian Sander, Senior Investment Manager at Bayerische Versorgungskammer, suggests that the rising yields will likely lead to an increase in their fixed-income allocation over the next few years, reversing the past decade's trend. He suggests that the importance of Infrastructure in their portfolio has shifted, not as a replacement for bonds but to achieve higher returns through illiquidity premiums, partly offsetting inflation. He indicates that their Infrastructure allocation will still increase, due to their predominant focus on core plus investments. He notes that their strategy primarily revolves around core plus and value-add assets, with core investments playing a minimal role. Furthermore, Sander emphasizes that their Infrastructure strategy has always been geared towards mid-teen regarding returns, with core plus and value-add investments constituting most of their portfolio.

From an adviser's perspective, regarding potential competition for Infrastructure in the asset allocation due to higher bond yields, Ingo Wichelhaus, **Senior Director, Mount Street Portfolio Adviser**, argues that bonds carry their own set of risks. Infrastructure is a highly resilient asset class that may typically outperform risk-free assets but offers stability and less volatility over extended periods. Despite the shift in market dynamics and the perception of Infrastructure as a substitute for bonds, its attractiveness remains intact due to various drivers, such as ESG criteria and long-term stability. Infrastructure indices demonstrated stability during volatile market conditions like the COVID-19 pandemic, highlighting their enduring value. Although certain sectors, like airports, faced challenges, overall, Infrastructure investments provide stability and resilience amidst changing market conditions.

In the following, we discuss the relevant factors mentioned regarding the importance of Infrastructure in asset allocation, add the opinions of surveyed consultants and asset managers, and discuss current opportunities and challenges in the Infrastructure asset class.

2.2 Fundraising and Liquidity

Some of the main challenges for the Infrastructure sector that emerged from the discussions were the low liquidity in the market, the difficult fundraising environment, and the low transaction flow. These issues affect all illiquid asset classes to varying degrees. Apart from the denominator effect, several factors contribute to these challenges.

As interest rates rise, the attractiveness of potential returns from liquid bonds increases, potentially dissuading investors from opting for illiquid assets and raising opportunity costs. Additionally, growing macroeconomic risks and volatility may LPs to lean towards de-risking, potentially discouraging Infrastructure Equity investment.

Moreover, higher interest rates escalate the cost of leverage, dampening demand. Furthermore, rising interest rates elevate discount rates, possibly depressing the valuation of illiquid assets. Those factors, coupled with increased investor caution and hesitation, could have led to the decline in fundraising for this asset class.

This is also reflected in Preqin data (*Figure 7*): Parallel to the falling ECB and Fed key interest rates, capital raised in Infrastructure rose continuously in all geographical regions, interrupted only by a small slump during the coronavirus pandemic. However, this trend ended abruptly after the abrupt turnaround in interest rates. While 2022 was a record year for Infrastructure fundraising, in 2023, a dramatic decline occurred - in the first three quarters, the raised fund was just 12% of the previous year and 15% of the annual average in the preceding five years - an unprecedented draught in fundraising. However, this data should only be understood as a snapshot and may have changed in the meantime. Also, while according to the Preqin prognosis, Infrastructure fundraising levels set to return to their former heights by 2028. This forecast is based on the expectation that key interest rates will fall again. The OECD Economic Outlook⁸ assumes that interest rates have peaked and will be lowered by the end of the year. However, the further development of interest rates, which will also have a significant impact on the financing and liquidity environment for Infrastructure, remains speculative.



Figure 7: Aggregated capital raised in infrastructure. Source: Preqin Global Report 2023 Infrastructure) and ECB and FED interest rates.

⁸ https://data.oecd.org/interest/long-term-interest-rates-forecast.htm#indicator-chart

One potential repercussion of decreased fundraising is a decline in dry powder within the Infrastructure sector. While dry powder consistently increased during periods of low interest rates, rising interest rates have disrupted this trend, resulting in dry powder now being below its peak (*Figure 8*).

Additionally, there have been notable shifts in Infrastructure funds' strategies. Data indicates that a larger portion of dry powder is being utilized by core and core-plus funds. This shift could be attributed to investors' reduced risk appetite, as previously mentioned⁹.



Dry powder by primary Infrastructure strategy/ fund type

Figure 8: Dry powder by primary strategy/fund type in bn \$. Source: Preqin Global Report 2023 Infrastructure) and the EZB and FED key interest rates.



Marco van Daele, CEO of SUSI Partners

Marco van Daele, CEO of SUSI Partners, describes that over the past two years, particularly between 2022 and 2023, there has been a significant shift in macroeconomic factors. This shift had direct and indirect effects on both portfolio allocations across various asset classes and within the Infrastructure sector. The rapid increase in inflation expectations in 2021 and 2022 led to a response from central banks and a consequent shift in the interest rate environment. This, in turn, had two sequential effects: firstly, the well-documented denominator effect, resulting in a perceived over-allocation to illiquid asset classes, whose valuation adjustments were delayed compared to liquid asset classes. This phenomenon occurred primarily in the latter half of 2022 and extended into 2023. Another consequence was the shift in expected returns, particularly in fixed-in-

come investments, prompting many institutional investors to rekindle their interest in this asset class. This, in turn, influenced allocation towards Infrastructure, as it occupies a lower risk-return profile compared to other illiquid asset classes like Private Equity or Venture Capital. Simultaneously, due to the uncertain market environment, there were fewer realizations, especially in the Private Equity and Infrastructure sectors, resulting in reduced distributions and returns to investors. Consequently, this diminished investors' capacity for reinvest-

ment in these asset classes. Overall, these developments led to a decrease of approximately 50-80% in new commitments to this asset class in 2023 compared to the previous year. However, for 2024, he observes a tendency towards normalization in terms of valuations and expects a more stable market environment compared to 2022 and 2023.

Ingo Wichelhaus argues that reflecting on 2023, it was not an ideal year for Infrastructure. However, it's essential to differentiate between Infrastructure Equity and Debt. Infrastructure Debt has historically demonstrated resilience, even amidst market fluctuations. Institutional investors have capitalized on this resilience, yielding overperformance, particularly in the debt market during times of capital market downturns. However, last year witnessed a shift as investors tended towards liquid assets, leading to capital scarcity on the project side. The high inflation environment, in addition, caused an increase in project costs leading to many projects to be cancelled or postponed. Despite this, the Infrastructure market has weathered the crisis comparatively well, contrasting with the downturn seen in the commercial real estate sector. Many investors are transitioning from Real Estate to long-term Infrastructure investments, aligning with the liability side of institutional portfolios, especially those of insurers and pension funds. However, the investable funds in the life insurance market are smaller, as in further years, as high interest rates led to comparable lower sales of endowment policies.



Roopa Murthy, Partner, Head of Infrastructure Debt Europe at Ares Management

Roopa Murthy, Partner, Head of Infrastructure Debt Europe at Ares Management,

also acknowledges a significant gap between the demand for capital in Infrastructure and the available supply. Despite the massive investment required in infrastructure projects, the supply of capital has not caught up yet. However, she sees this situation as presenting exciting opportunities. Private lenders can step in to fill the gaps left by traditional sources of capital like banks and public markets. This allows them to provide solutions to infrastructure owners seeking to build their asset base but possibly facing challenges accessing the necessary capital. One obstacle mentioned by Murthy is the difficulty for infrastructure owners in securing capital quickly, particularly in sectors where speed is crucial for staying ahead of the competition. Banks are becoming more conservative in their lending practices, and public markets are less predictable, making it challenging for

owners to raise capital efficiently. As a result, infrastructure owners are seeking stable financing partners who can provide capital at scale and speed while maintaining a long-term outlook. This situation creates both opportunities for private lenders and obstacles for infrastructure owners in need of capital.



Pieter Welman, Head of Global Infrastructure at Barings

Pieter Welman, Head of Global Infrastructure at Barings, also refers to the liquidity issue in the Infrastructure sector, noting that while it's more expensive than before, it hasn't led to defaults or an inability to refinance projects. He emphasizes the sector's continued benefit from tailwinds, particularly in areas like renewables, transportation, and social Infrastructure, which distinguishes it from sectors like commercial real estate facing headwinds. Despite the overall effect on liquidity, he believes it hasn't contracted as severely as in other sectors, attributing this to Infrastructure's enduring tailwinds. Welman contrasts the current situation with the shock experienced during the financial crisis, highlighting that while liquidity is more expensive now, it hasn't reached crisis levels.

To summarize, the current fundraising and liquidity environment in the Infrastructure sector represents a challenge for managers, at least in the short term. In the medium to long term, however, based on the statements made by those surveyed and the forecasts, the environment will ease.

2.3. Inflation hedge of Infrastructure

We delineated the impact of the denominator effect and rising bond yields, which present short-term challenges for Infrastructure's position within LPs' portfolios. Additionally, the fundraising and liquidity situation signify substantial headwinds in the short run. Nevertheless, the role of Infrastructure as an inflation hedge and portfolio stabilizer was highlighted as a significant short-term advantage for the asset class in the current market environment. DWS analyzed the inflation protection characteristics of Infrastructure assets (*Figure 9*). According to their analysis, 84.2% of Infrastructure assets have explicit or implicit inflation pass-through. Explicit inflation passthrough embeds an inherent inflation hedge within infrastructure contracts and leases, allowing companies to adjust prices directly in response to increased costs.

Conversely, implicit inflation passthrough lacks this built-in hedge, with company earnings adjusting to inflation only with a delay.



Infrastructure investments with inflation protection

Figure 9: Infrastructure investments with inflation protection. Source: DWS, FactSet, Bloomberg; Data as of September 30, 2023, in Deutsche Bank Annual Outlook 2024: Finding growth.

Fixed price bumps in contracts, on the other hand, lead to escalating usage rates over time but without linkage to inflation metrics (11.8%). 1% of the assets have market-based pricing, which enables companies to generate revenues based on prevailing market rates. However, this does not necessarily imply a link to inflation rates. Conversely, the 3% assets with no inflation passthrough do not offer any hedge against inflation¹⁰.

Marco van Daele emphasizes that it is essential to differentiate between different sectors when considering the inflation protection of Infrastructure. The Infrastructure sector itself is not automatically inflation-indexed, but the individual sectors and business models must be considered. It is very important to take a close look at the funds and their portfolios, as they can be structured very differently. An example of this is an Infrastructure fund that is heavily focused on transport and logistics and is, therefore, very sensitive to GDP growth, forecasts, and economic development. These areas may not have performed as well. At the same time, funds that are more focused on energy have benefited from high energy prices, which are not a direct inflation offset but rather an indirect correlation. In Europe, in particular, energy prices in 2022 were driven by the start of the Ukraine war and were, therefore, a direct driver of inflation, leading to a high correlation between generalized inflation and energy prices.



Yann Masset, Head of Research at Energy Infrastructure Partners

Yann Masset, Head of Research at Energy Infrastructure Partners, summarizes his research on the implications of inflation for Infrastructure assets, also highlighting the disparities among different Infrastructure subsectors. He notes that while there is a generally accepted belief that Infrastructure offers the best inflation hedge, this does not stand true for all assets. Digital Infrastructure shows a rather negative correlation, whereas transportation exhibits high disparities among its sub-sectors for an overall low positive correlation. Mechanically adjusted assets, such as regulated electricity transmission and distribution assets, water utilities, and social Infrastructure projects, are meant to perform well as they are directly (contractually) linked to CPI (or interest rates), but correlation patterns were hard to evidence as some asset owners intentionally reduce their inflation exposure (by issuing inflation-linked debt or selling inflation swaps). This is most pronoun-

ced for water utilities, which showed very poor correlation. Logically, however, energy Infrastructure segments with an indirect relationship to commodities (in particular storage & pipelines assets, as well as renewables) demonstrated a strong natural correlation to inflation. He emphasizes the "inflation stickiness" of Infrastructure investments, noting that the cash flow yield tends to increase for up to two years following the inflationary moment, in stark contrast with listed equities. Overall, Masset's research underscores the importance of considering the specific characteristics of Infrastructure subsectors when assessing their inflation protection.¹¹



Torsten Heidemann, Head of Infrastructure & Energy at Berenberg

Torsten Heidemann, Head of Infrastructure & Energy at Berenberg, argues that high inflation has been a double-edged sword for Infrastructure investments. On the one hand, it has led to higher construction costs as wind turbines have become more expensive. At the same time, supply-chain issues remained, such as long waiting times for transformers. These challenges are expected to continue, potentially prolonging project timelines. On the other hand, high inflation expectations have led to higher forecasted electricity prices. This resulted in both higher costs and higher revenues for project operators and represented a kind of natural hedge. Similarly, interest rates have played a role; for example, solar park operators have benefitted from selling electricity at high prices during periods of high interest rates. However, we are now seeing a decline in inflation rates, as well as electricity prices and long-term interest rates, and project operators.

tors have to adapt their business strategy accordingly.

2.4. Short-term disruptions versus long-term megatrends

Our interviews indicate that while in the short run, ongoing uncertainties and obstacles lead to potential disruptions in the Infrastructure market, the outlook is bright in the long run. Several megatrends are determining the relative attractiveness of the Infrastructure asset class perceived in our data.



Viktor Kozel, Head of Infrastructure Debt at UBS

Viktor Kozel, Head of Infrastructure Debt at UBS, suggests that the current market remains challenging due to factors such as increasing rates, denominator effect, and redemption. "Investors are a little bit sitting on the fence." However, "on the broad picture," there is optimism for 2024 as underlying problems like interest rates and inflation are getting less severe. He argues that Infrastructure is particularly attractive in an environment where inflation is high and GDP growth is low, when there is a very interesting entry point.



Florian Martin, the Co-CEO of KGAL

Florian Martin, the Co-CEO of KGAL, argues that we are currently experiencing a period of monumental change in our macroeconomic environment. We have just experienced a period of unexpectedly high inflation, and inflation is likely to remain high for the foreseeable future. The rapid turnaround in interest rates has forced investors to rethink their strategies, both in terms of allocation and their approach to financing. In addition to the financial challenges, we are in a phase of energy transition that will have a lasting impact on all sectors of the economy. Achieving carbon neutrality and energy independence in Europe means decarbonizing production, electrifying our transport, retrofitting the entire real estate sector, and converting the entire value chain of our economy to renewable energy.

"The changes we will see in the energy supply are huge, but nothing to be afraid of. Times of economic upheaval are also times of great opportunity. We believe that investing in the energy transition is one of the most attractive investment opportunities of our time."

Florian Martin, Co-CEO of KGAL

Yann Masset discusses the current environment for Infrastructure Equity, noting that returns are expanding as interest rates rise, but not to the same extent as risk-free rates. Despite reductions in dry powder and fund-raising challenges, transaction volumes are decreasing, with some processes on hold. Valuations remain overall solid, indicating a flight to quality across the spectrum of Infrastructure assets. He suggests that this market behavior may reflect the resilience of Infrastructure assets, especially in energy Infrastructure post-COVID, and their ability to hedge against inflation, which may have explained the asset-class risk premium compression against the risk-free rate expansion. Additionally, he notes that megatrends are still supportive (e.g. decarbonization, electrification) of energy Infrastructure valuations, whereas new ones emerged (e.g. sovereignty of supply) on the back of despite geopolitical tensions impacting Europe.

Roopa Murthy sees a great time to invest in Infrastructure Debt. She argues this is due to several tailwinds in the sector. Firstly, decarbonization efforts drive significant investment in renewable energy projects, creating ample deal flow for Infrastructure Debt providers. Additionally, decarbonization extends beyond energy and affects various Infrastructure asset classes, such as transportation, where there is a push for electric vehicles and the necessary charging infrastructure. Digitalization is another major tailwind, with increased data consumption driving demand for data centers, fiber networks, and towers. Lastly, the rise of e-commerce is boosting investments in logistics and transportation infrastructure to support the growing demand for mobility and delivery services.

Regarding Infrastructure Debt investments specifically, Roopa Murthy points out several factors contributing to their attractiveness. Firstly, high interest rates, the highest seen in a decade, may enhance returns for debt investments. Additionally, Infrastructure assets often have inflation protection, allowing them to increase prices or tariffs in line with inflation, thereby mitigating its impact. Consequently, Infrastructure Debt investments may offer enhanced returns in a booming sector generally insulated from the adverse effects of inflation, making them an attractive asset class.

3. Infrastructure sectors

Infrastructure consists of a multitude of sectors, such as utilities, transport infrastructure, and telecoms. According to Preqin data, the biggest share of Infrastructure investments by deal value is in the energy sector, with renewable energy and conventional energy accounting currently accounting for about 60% of the industry. The renewable energy sector shows strong positive momentum and has increased significantly in weight during the last years. With 31.3% of the Infrastructure deal value, renewable energy has overtaken conventional energy production during the first three quarters of 2023 (*Figure 10*). Social Infrastructure has only a minor share, with 0.8% of the global deal value.

Different Infrastructure sectors' relative weight and performance underlie volatility, driven by various macroeconomic and market factors such as interest rates, inflation, economic growth, and energy prices. Demand for essential services such as water (utilities) or medical care (social Infrastructure) is relatively independent of macroeconomic factors and economic development and can, therefore, gain strategic importance in a challenging economic environment. On the other hand, demand for energy is subject to strong cyclical fluctuations in demand. In addition, the prices of fossil fuels correlate very strongly with inflation. The ability of various Infrastructure assets to act as a hedge against inflation also plays a role (cf. 2.3).



Share on Infrastructure deal value by sector

Figure 10: Share on Infrastructure deal value by sector. Source: Preqin Global Report 2023 Infrastructure.

Indeed, several global megatrends are significantly impacting individual Infrastructure sectors. One such trend is the global effort to mitigate the consequences of climate change and transition energy production and economies from fossil fuels to renewable sources. This shift underscores the increasing importance of ESG indicators, which aim to align business practices with sustainable objectives. Sectors such as renewable energy, sustainable transportation, and green infrastructure benefit from these megatrends as they align with the goals outlined in initiatives like the UN Development Goals.

Further, digitalization, including the integration of artificial intelligence, represents another significant megatrend reshaping Infrastructure sectors worldwide. This trend necessitates a substantial expansion of digital Infrastructure to support the increasing demand for connectivity, data processing, and artificial intelligence applications. Sectors such as telecommunications, data centers, smart cities, and digital transportation Infrastructure stand to benefit greatly from this digitalization wave as they play pivotal roles in enabling and facilitating the adoption of artificial intelligence and other digital technologies across various industries and sectors. To understand the different approaches and perspectives for the various Infrastructure sectors, we let asset managers and investors have their say.

Our discussions with LPs and GPs revealed two overarching considerations and approaches regarding different Infrastructure sectors. One group highlighted the current favorable conditions for energy Infrastructure investments, advocating for overweighting in this sector. Conversely, another viewpoint emerged, emphasizing historical performance variations across different Infrastructure sectors. This perspective suggests that cyclical advantages have existed for various sub-segments over time, including energy, transport, and telecommunications. As a result, maintaining broad diversification within the Infrastructure segment is deemed sensible to capture these potential benefits.

Kian Sander suggests that, as a rule of thumb, sectors that align with megatrends or have tailwinds are attractive in the medium to long term. He highlights areas such as electrification in transportation, decarbonization efforts, and the digital revolution as examples of such trends. However, he also cautions that high entry multiples in certain sectors, particularly in the digital space, pose a potential friction and require careful consideration. Sander emphasizes the importance of scrutinizing investment opportunities to ensure that desired returns can still be achieved, possibly by focusing on specific regions or adopting value-adding strategies rather than pursuing assets with excessively high valuations.

In discussing the outlook for different sectors of Infrastructure investments, **Viktor Kozel** emphasizes the importance of diversification within their portfolio. He notes that while investors actively pursue favorable trends and dedicate resources to sectors showing promise, they ultimately benefit from a diversified portfolio's resilience, especially during market stress.

In the telecom or digital space, for example, Kozel sees opportunities and risks, citing substantial investment needs but also a lack of discipline and potentially unrealistic business plans. He highlights challenges in sectors such as data centers, where there may be difficulties with client acquisition. Conversely, he expresses a more positive outlook for transportation. He notes good recovery post-COVID in transportation, with opportunities in decarbonization initiatives and less greenfield risk compared to the energy sector.

The adoption of ESG criteria was also frequently named as a key driver for Infrastructure investments. As such, we will delve into two sectors renowned for their potential to generate significant environmental and social impact in more detail.



3.1. Renewable energy

Investments in renewable energy production can align with ESG targets since they foster a green transformation and mitigate environmental emissions, especially CO₂.

Indeed, renewable energy is experiencing a significant upsurge, driven by the megatrend described above. This growth trajectory is propelling the renewable energy sector and exerting a positive influence on the entire Infrastructure asset class. The heightened importance of renewable energy is evident in the substantial increase in fundraising for Infrastructure funds, particularly within the renewables segment, up until 2022. However, it's worth noting that the liquidity constraints affecting the broader Infrastructure sector (cf. 2.2) have also impacted the renewables segment (*Figure 11*).



Fundraising by types of energy strategy

Figure 11: Fundraising by funds targeting conventional, renewables, and mixed energy strategies. Source: Preqin Global Report 2023 Infrastructure.

To do justice to the importance of the renewable energy sector, we present various perspectives below. The overall very positive sentiment in favor of renewables is also reflected in the opinions of the GPs and LPs surveyed.

Florian Martin considers the energy Infrastructure sector to be extremely attractive, and they are therefore focusing on renewable energies and green hydrogen. Renewable energy is on a long-term growth path, supported by the favorable political environment and increasing production at market prices. Investors benefit from a certain anchor of stability in the portfolio compared to asset classes that are subject to cycles (such as Real Estate). The increase in demand is generally taking place in all technologies, led by wind energy (onshore and offshore). They are also actively monitoring the development of technologies (battery storage, green hydrogen, etc.), as they see enormous potential here. In terms of risk/return profile, they prefer Core and Core+ and, to a lesser extent, Value Add. Existing investments (brownfield) offer stable cash flows, while project developments (greenfield) can also be attractive as an addition to a well-diversified portfolio.

He also states that investments in the energy transition have proven to be highly resilient to the macroeconomic changes of the last two years, including the rise in inflation and higher interest rates. This makes them a relatively safe haven and an effective risk diversification tool for institutional investors.

Furthermore, he outlines, that with Russia's invasion of Ukraine and the resulting consequences, particularly on the global energy markets, the call for energy independence in Europe has become ever louder. In combination

with the EU's Green Deal, which aims to counteract global warming by reducing CO_2 emissions, the further expansion of electricity generation from renewable energies was and is an important response to the situation.

Electrification of the end-use economy is the key driver for decarbonizing the energy sector to achieve netzero emissions. In the electricity sector, the use of renewable energy, particularly solar and wind energy, will supply around 58% of electricity in 2030, up from 23% in 2022. 112 GW of solar and wind energy capacity is expected to be added annually between 2026 and 2030.

"The energy transition continues to open up investment opportunities for Europe. Decarbonizing the economy will require rapid growth in investment on both the supply and demand side, leading to \$32.7 trillion in spending between 2022 and 2050."

Florian Martin, Co-CEO of KGAL

Torsten Heidemann highlights renewable energy as an excellent asset class, noting the emergence of numerous business models due to surplus electricity production during sunny periods. These models include Power-to-X solutions and battery storage options, ranging from large-scale installations to home and gridlevel systems. He believes that surplus energy will create new business opportunities, such as demand-side management, similar to practices observed in Scandinavian countries where consumers adjust their electricity usage based on price fluctuations. However, Heidemann acknowledges the challenges associated with categorizing battery storage as Infrastructure, as revenue generation depends on the volatility of electricity prices rather than direct electricity sales. Despite uncertainties surrounding funding and investment returns, he emphasizes the necessity of developing renewable energy infrastructure but remains optimistic about the positive trajectory of renewable energy and foresees the emergence of new investment opportunities for institutional investors.

Roopa Murthy underscores the importance of innovation in finding financing solutions for infrastructure, emphasizing the need to be innovative regarding solutions as well. She highlights that while capital markets offer standardized products, private lenders can provide more flexible and tailored solutions to meet the specific business requirements of infrastructure projects. This flexibility allows for innovation in structuring loans, catering to the needs of the clients.

Torsten Heidemann has observed a positive turnaround for renewable energy in Germany since around the end of 2022. He notes a significant increase in inquiries from project developers seeking their kind of bridge financing. Despite a lack of activity in Germany in 2021, he sees a notable improvement, especially in the battery storage market, although regulatory issues remain a concern, particularly in Germany. Heidemann highlights a surge in financing requests, especially for photovoltaic (PV) systems, indicating promising financial prospects. However, he notes that a key obstacle is the shortage of personnel available to implement projects at all levels, which hinders progress. Despite challenges, his outlook for Germany's renewable energy sector is positive.

Indeed, the intermittent nature of renewable energy sources like solar and wind underscores the importance of energy storage solutions. Storing surplus energy generated during periods of high production is essential for ensuring a reliable energy supply during periods of low production. The development of effective energy storage capacity is, therefore, crucial for the successful transition to renewable energy production. These storage solutions will play a pivotal role in balancing supply and demand, optimizing grid stability, and facilitating the widespread adoption of renewable energy sources.

Global data on capital invested in funds with exposure to this sector further underscores the significance of the energy storage sector. There has been a rapid increase in capital allocation, particularly since 2021, which has remained largely unaffected by the liquidity issues observed in 2023 (*Figure 12*). This trend highlights the growing recognition of energy storage solutions as essential components of the transition to renewable energy and signifies investor confidence in the sector's potential for growth and innovation.



Figure 12: Capital targeted by funds with exposure to energy storage. Source: Preqin Global Report 2023 Infrastructure.

While the mood in the renewable energy sector is very positive despite some obstacles, there were also cautionary voices warning against too much euphoria.

Viktor Kozel currently sees both opportunities and risks regarding the energy sector. He highlights the significant need for investment, particularly in energy transition and power infrastructure. However, he cautions that finding favourable risk-reward propositions, especially in traditional renewables, has become more challenging due to increased competition and capital chasing deals. He also notes concerns about cost pressures and the balancing between costs, security of supply, and environmental impact.

Regarding energy Infrastructure investments, **Armin Beerwart** warns against a "gold-digger mentality" and says that a lot can go wrong in this area because a lot of capital is invested in more and more large and complex projects, and therefore recommends relying only on working with experienced partners and fund managers. "So, you are not automatically only on the winning side because there is a megatrend behind an investment. You have also seen some bad investments."

3.2. Social Infrastructure

While the renewable energy sector currently holds a dominant position within Infrastructure, social Infrastructure plays a relatively minor role in terms of numbers. However, despite its lower visibility, not only the "E" but also the "S" in ESG (Environmental, Social, and Governance) is gaining importance amid the current megatrend.

Our discussions revealed that Social Infrastructure possesses distinct characteristics as an asset class, as it can also be seen as a subtype of Real Estate. Social Infrastructure is divided into housing, such as affordable housing, social housing, student residences, education, e.g., with universities, and health, e.g., with hospitals. Therefore, in terms of asset characteristics, it lies somewhere between Infrastructure and Real Estate.

As outlined in the introduction, Germany faces a substantial backlog in government investment, resulting in the deteriorating condition of public schools and universities, as well as deficiencies in the healthcare system. Additionally, the housing market, particularly in major cities, is severely constrained, with insufficient social housing being constructed. In this context, leveraging private capital presents a theoretical opportunity to address these societal needs while aligning with ESG criteria.



Gaston Brandes, Managing Director, Franklin Real Asset Advisors

In the realm of social Infrastructure, **Gaston Brandes, Managing Director, Franklin Real Asset Advisors**, observes a persistent imbalance between demand and supply. Despite a recent decline in transaction volumes, there remains an excessive demand for social Infrastructure, particularly in areas like education and healthcare. Brandes highlights a study by the European Commission indicating an annual shortfall of approximately €150 billion in necessary investments in social Infrastructure¹², a gap that has likely widened post-COVID-19. While recent increases in interest rates have led to some devaluations, social Infrastructure assets have not experienced as significant devaluation as commercial real estate sectors like offices, retail, or logistics. This resilience is attributed to the essential nature of social services provided within these properties, ensuring a relatively stable demand regardless of economic conditions. Consequently, Brandes suggests

that social Infrastructure benefits from relatively inelastic demand, a typical characteristic of the Infrastructure. However, it may still face some susceptibility to devaluation due to the current interest rate environment, in line with other real estate sectors.

He argues that social Infrastructure and energy Infrastructure aren't necessarily seen as competition; they serve different needs and perspectives, both from their viewpoint and that of their investors. Additionally, he high-lights that they approach social Infrastructure investments with an impact mindset, aiming for dual returns: financial and societal/environmental contributions.

Viktor Kozel also expresses a positive outlook for social Infrastructure. He sees stability and core Infrastructure characteristics, driven by factors like population growth and healthcare needs.



12 https://www.age-platform.eu/four-steps-to-unlock-eu-funds-into-local-social-investment-highlighted-at-age-joint-conference/- Boosting Investment in Social Infrastructure in Europe - Boosting Investment in Social Infrastructure in Europe, European Economy Discussion Paper 074, January 2018, efaidnbmnnnibpcajpcglclefindmkaj/<u>https://economy-finance.ec.europa.eu/document/download/82a1420f-5475-4466-a3de-860a3a8553d3_en?filename=dp074_en.pdf.</u>

4. Location factors and obstacles for Infrastructure investments in Germany

While a strong, dynamic growth trend in Infrastructure investment can be observed overall, there has so far been little impact on the repair and modernization of German infrastructure.

We emphasized the vital role of institutional investors in driving the success of Germany's energy transition. Nonetheless, Germany finds itself in fierce global competition for capital from these investors. Our BAI Investor Survey 2023 delved into the preferences of German institutional investors regarding Infrastructure investments. The findings revealed that over 80% of the surveyed Limited Partners (LPs) primarily direct their investments in infrastructure projects outside of Germany (*Figure 13*).





The investment behavior exhibited by German institutional investors in our sample poses a significant hurdle to both the energy transition and the ecological transformation of the German economy. As discussed in the introduction, it directly conflicts with the outlined objective of achieving climate neutrality by 2045.

To bolster infrastructure development in Germany, it's imperative to thoroughly understand the reasoning behind geographic asset allocation. Consequently, we conducted an analysis delving into the motivators influencing Infrastructure investments, scrutinizing both location-specific factors (*Figure 14*) and the barriers hindering such investments (*Figure 15*) as perceived by the LPs.

Figure 13: Geographical allocation for investments in Infrastructure¹³. Source: BAI Investor Survey 2023.



Crucial Location factors for Infrastructure investments

Figure 14: Crucial Location factors for Infrastructure investments. Source: BAI Investor Survey 2023.

The most important location factor for Infrastructure investments is an attractive risk/return profile, which was mentioned by 92.9% of the LPs surveyed. Therefore, a risk-return structure that corresponds to an institutional investor's respective return targets stands as a fundamental prerequisite for investing in a particular asset.

All other location factors can be regarded as complementary. Favorable institutional, regulatory, and bureaucratic conditions positively impact the risk-return dynamic of Infrastructure investments. Conversely, unfavorable conditions can pose impediments, introducing friction that complicates investment endeavors. Hence, 65.9% of the LPs surveyed cited favourable regulatory and legal structures as an important factor in their investment decision. Additionally, 57.6% of investors outline the importance of straightforward and stable governance, while 28.2% explicitly highlight the importance of low regulatory barriers and simplified authorization procedures in their decision-making processes.

These three factors hold particular significance from a political standpoint, as state actors can influence them to enhance investment conditions. On the other hand, the risk-return structure of Infrastructure investments remains beyond direct state impact and is subject to market forces. However, government support and promotion of Infrastructure investments are seen as less relevant (10.6%). Investors favor stable and simple state framework conditions over direct state intervention. Furthermore, regional disparities in operational influence on infrastructure projects, stemming from varying business mentalities or ownership structures across different countries, are considered rather negligible location factors (14.1%).

The previous question related to location factors for investment in infrastructure projects in general. While private funds are urgently needed, infrastructure in Germany has not yet benefited sufficiently from the growth trend in Infrastructure investment. We have, therefore, also explicitly analyzed the frictions for Infrastructure investment in Germany *(Figure 15).*

Our data shows that LPs (45.9%) consider the biggest challenge for Infrastructure investments in Germany to be the lack of projects that can be financed with private capital.

This is followed by several problems on the regulatory side, also depending on the type of investor surveyed, such as the structure of the regulation of Infrastructure funds in the KAGB (41.0%), the Infrastructure quota in the AnIV (small insurers and pension funds - 39.3%) and the structure of the regulation of Infrastructure fund investments in the Investment Tax Act (InvStG).

In contrast, the regulation surrounding public-private partnerships (PPPs) in the Infrastructure sector holds lesser importance for German LPs. This is primarily because PPPs play a marginalized role within Germany's Infrastructure landscape¹⁴, leading LPs to be potentially less acquainted with the potential of PPPs as an investment avenue.



The biggest challenges for investments in infrastructure in Germany

Figure 15: The biggest challenges for investments in infrastructure in Germany. Source: BAI Investor Survey 2023.

We also spoke to LPs and GPs about the topic to better understand the obstacles to infrastructure investment in Germany and the most important location factors.

4.1. Support for Infrastructure investments from the state and society

In our survey, the LPs questioned only mentioned state support for Infrastructure investment as a subordinate location factor. The interviews further elucidate this observation, suggesting that state support alone fails to incentivize LPs if the underlying framework conditions, such as risk/return dynamics and regulatory and bureaucratic structures, are not conducive to investment.

In general, however, the mood and the political will to switch to renewable energies in Germany are perceived as a tailwind.

Torsten Heidemann reflected on the evolution of the energy infrastructure sector in Germany over the past two decades, highlighting a shift from reliance on fossil fuels to a strong political support for renewable energy. He appreciates the current political backing for renewable energy projects, noting improvements in project approval times compared to a decade ago. However, he anticipates a blend of strategies for electricity production in Germany, including renewable energy expansion and potential electricity imports.

Despite numerous ongoing hurdles concerning energy transformation in Germany, there is a generally perceived supportive environment for energy infrastructure. However, it is apparent that these initiatives are predominantly seen as state-driven endeavors. Furthermore, there persists a prevalent skepticism regarding the utilization of private capital to finance the energy transition.

In this context, **Marco van Daele** argues that the attitude towards privatization and infrastructure privatization is also important. While some countries, such as the United Kingdom, can look back on a long history of infrastructure privatization, there is still a certain reluctance to privatization in Germany. This can be seen, for example, in the proceedings around the re-nationalization of gas and district heating networks in cities such as Hamburg and Berlin. These decisions are often politically motivated, reflect the opinion of the electorate, and are not driven by economic considerations alone. Although there has been progress in simplifying appro-

¹⁴ BAI Informationsbroschüre Infrastruktur (p.45-52), https://www.bvai.de/fileadmin/Veroeffentlichungen/BAI_Publikationen/BAI_Informationsbroschueren/Informationsbroschuere_Infrastruktur_0122.pdf.

val procedures for private infrastructure projects, particularly in energy infrastructure, political obstacles and changing attitudes towards private ownership of infrastructure projects remain among the biggest challenges for private investment in Germany.

Also, regarding Public-Private Partnerships (PPPs), the government is currently emphasizing that the execution and financing of essential government tasks are primarily the responsibility of the state. For PPPs to be considered, there must be a high level of transparency and demonstrable superior economic efficiency compared to traditional approaches in the specific context. The hurdles for implementing PPPs are presently perceived to be substantially greater than in previous years.¹⁵

4.2. Risk-return

Our data highlighting the paramount importance of the risk-return structure as a determinant in Infrastructure investments, coupled with the predominant reluctance of LPs to invest in German infrastructure projects, suggests that the return on investment in Germany may not adequately compensate for the associated risks. Our interviews partially corroborate this notion, although some interviewees underscore the existence of appealing investment opportunities in Germany. Some Scandinavian countries were cited as examples of attractive conditions for Infrastructure investments. In general, however, there is a broad spectrum of opinions on this topic.

Viktor Kozel argues the problem in the German Market was that it was difficult to find, good risk reward in Infrastructure Debt because there was a lot of aggressive lending from Landesbanken. However, over the last four years, this changed, and they see more opportunities to deploy capital in Germany. He states Germany is the leading country in the EU, with a vast infrastructure need. It is well known that Germany under-invested in infrastructure in the past, which creates more opportunities in the present. In terms of the market landscape, as they see it as an Infrastructure Debt investor, it has improved over the last years.

Yann Masset suggests that several factors may make the Scandinavian Infrastructure market more attractive for investors than the German market. In Scandinavia, energy Infrastructure is driven by do-it-yourself fixed-term contracts with corporates rather than ready-made government regulations (so called "feed-in-tariffs"), historically rewarding this structuring effort with higher returns. Additionally, the market structure in Scandinavia requires more structuring efforts, offering higher returns as a reward. Masset points out that in Germany, the energy demand is primarily channeled through the state, leading to safer but less complex investments. However, the complexity and higher risk associated with the Scandinavian market result in higher returns. Furthermore, he highlights real options in Scandinavia, such as opportunities for arbitraging political environments and subsidy-free price zone dynamics, with potential industrial relocation to decrease energy bills, making the market more appealing to investors in the long run.

One thesis that could be brought up is that due to the greater bureaucracy and stricter regulations in Germany, the market may be less efficient compared to other markets with fewer external interventions. This inefficiency could negatively impact the risk-return structure, affecting returns unfavorably.

Nevertheless, it's crucial to acknowledge that despite these factors and existing challenges, the outlook for Infrastructure investment in Germany, as gleaned from the interviews, remains notably positive.

4.3. Robust rule of law and stable governance

Particularly significant are factors such as a robust rule of law and stable governance, as highlighted by the LPs surveyed regarding Infrastructure investments. Despite some fluctuations, Germany's political landscape retains a degree of stability by international standards. Moreover, Germany boasts a strong rule of law, further bolstering its appeal as an investment destination.

Marco van Daele emphasizes the aspect of the rule of law, which is generally decisive for the investment attractiveness of a location, and especially for Infrastructure investments. This also includes legal certainty, which should ensure that contracts are enforceable and can be upheld in court within a reasonable timeframe.

Pieter Welman highlights Germany as still a favorable country for investment despite undergoing challenges in recent years, citing its stable government relative to other places. However, he expresses concern about the lack of clarity in the German infrastructure pipeline, which makes it difficult for investors to commit. He contrasts this with the US, where there's a clearer direction due to policy implementations like the Inflation Reduction Act. Furthermore, Welman advocates for greater transparency and higher standards in Infrastructure investments, particularly in ensuring projects are genuinely green and beneficial to society. He believes that establishing clear standards for investments is crucial and suggests that governments, including Germany's, should take steps to implement them.

4.4 Regulatory obstacles

Although favorable regulation was mentioned in our Investor Survey as an important location factor for Infrastructure and regulatory factors as an obstacle to investment in Germany, regulation was less emphasized as a problem in our interviews with GPs and LPs.

From an allocation perspective, **Marco van Daele** does not currently see any increasing regulatory obstacles to Infrastructure investments in general. He argues that Infrastructure has established itself as an asset class on its own over recent years. It always takes a few years for such developments to be reflected in allocation policy and regulation. However, this is now slowly becoming the case. He cites Switzerland as an example, where there is now an explicit asset class in the regulations for pension funds and pension schemes in Switzerland that did not exist until recently, which, of course, paves the way for additional demand for allocation in this sector.

Viktor Kozel states he thinks overall, regulation remains less of a challenge, though there are differences around geographies. In the UK, for example, there is probably more need for regulated intervention to ensure more allocation to Infrastructure as an asset class.

The extent to which there are regulatory barriers to Infrastructure investments by institutional investors in Germany depends on the type of investor and the corresponding regulation. There is still a particular need for action about regulatory improvements, especially in the case of pension schemes (German: Versorgungswerke).

The regulation of pension schemes is generally governed by state law. In some cases, these are rigidly orientated toward the federal legal requirements; in others, they deviate from them.

In general, pension schemes are subject to regulations that govern the mix and spread of the various assets they are invested in to ensure sufficient diversification. In practice, however, Infrastructure investments are not reported separately but must be recognized as part of the risk-capital investment ratio. However, this risk capital investment ratio is limited to 35% of the protection assets and can only be increased by a further 5% as part of a quota (e.g. a Real Estate quota). As a result of this regulation, pension schemes can only invest in Infrastructure to a limited extent in practice, although more investments could be attractive from a risk/return perspective. This also means that the theoretical potential for the conversion of energy generation and the modernization of infrastructure in Germany is not utilized, as some of pension schemes' capital cannot be used for this purpose.

For this reason, Infrastructure quotas have been increasingly discussed in recent years as an instrument to motivate pension schemes to invest in Infrastructure. The idea here is analogous to the existing European regulation of Qualified Infrastructure investments for insurance companies in the Solvency II regime.

As a nationwide pioneer, North Rhine-Westphalia has had such a quota since March 2021. Pension schemes under state supervision can now apply for their own Infrastructure quota of 5%, which enables investments in

Infrastructure that do not fall under the risk capital investment quota. However, certain criteria must be met, such as an increased reporting obligation, the integration of a sustainability strategy, the restriction of free funds, and stricter risk management. As there is no offsetting, other quotas in the Investment Ordinance are exempted.¹⁶ Although the quota can be considered a success and has been met with great interest in other federal states, there have been no imitators to date.¹⁷

Accordingly, investors see the infrastructure quota as a practical instrument that would give pension schemes more flexibility when investing in Infrastructure. This would also mitigate the potential impact of the denominator effect.

"If we had an Infrastructure quota of 5%, as in North Rhine-Westphalia, and this was not counted towards risk capital, then we would most likely invest even more in infrastructure in the future."

Sabine Mahnert, Head Of Asset Management at Evangelische Zusatzversorgungskasse

Another potential hurdle for investing in Infrastructure, as mentioned in our interviews, was ESG regulation. **Andreas Binder** highlights the challenges posed by regulatory hurdles, particularly in navigating environmental, social, and governance (ESG) standards. He underscores the lack of standardized definitions and implementation of ESG criteria, which complicates decision-making processes. Additionally, he criticizes the divergent regulatory approaches among countries, which can lead to regulatory arbitrage and hinder standardization efforts. He notes the contrasting mentalities and regulatory strategies across nations, with some prioritizing strict regulations while others opt for a more lenient approach.

Drawing from the real estate sector, Binder illustrates the difficulties in achieving uniform standards, citing the failure of a recent European project to establish consistent energy efficiency classifications for buildings. This lack of uniformity results in disparities across countries, undermining sustainability efforts and complicating investment decisions for insurance companies and other investors.

He concludes by asserting that similar challenges exist in Infrastructure Equity investments, underscoring the need for standardized frameworks to address regulatory inconsistencies in the industry.

¹⁶ Tokarevich, Jegor; Düsterlho, Jens-Eric von (2017): Qualifizierte Infrastrukturinvestitionen für VAG Investoren. In: Absolut Report (01); p. 32–35, Informationsbroschüre Infrastruktur (p.45-52), https://www.bvai.de/fileadmin/Veroeffentlichungen/BAI_Publikationen/BAI_Informationsbroschueren/Informationsbroschuere_Infrastruktur_0122.pdf, https://www.portfolio-institutionell.de/infrastrukturquote-wird-bundesweit-debattiert.

¹⁷ https://www.dpn-online.com/versorgungswerke/versorgungswerke-auf-regulatorischen-sonderwegen-111607/.

5. Conclusion

The utilization of private capital holds significant importance in driving the ecological and digital transformation of the economy. Infrastructure stands poised to play a pivotal role in this transition. Data indicates a substantial rise in the strategic importance of Infrastructure in the allocations of institutional investors in recent years.

However, in the short term, various obstacles, such as macroeconomic risks and elevated interest rates, have resulted in liquidity constraints and a downturn in Infrastructure transactions. Nonetheless, forecasts anticipate that the liquidity situation and the flow of Infrastructure deals will rebound as expected interest rate cuts take effect. This optimistic outlook suggests that Infrastructure will continue to attract investment and contribute to the broader economic transformation. Our interviews focus on the situation in Germany. They reveal that despite some frictions in the short run, several megatrends, including digitalization and the energy transition, are expected to provide positive momentum for Infrastructure in the long term. These trends are expected to drive growth and opportunities within the asset class, offering the potential for sustained investment and development.

According to our findings, Infrastructure investments in Germany have thus far been insufficiently leveraged by institutional investors, as LPs predominantly allocate their investments abroad. However, the trend from the data is only partially confirmed in our expert interviews with LPs and GPs. While some voices highlight attractive investment opportunities emerging within Germany, with improving conditions, we identify several factors that still can be seen as obstacles to Infrastructure investment in Germany.

The weak efficiency and structure of the German energy market contributes to a less appealing risk-return structure compared to other markets. Also, partly, a prevalent skepticism regarding the utilization of private capital to finance the energy transition in Germany remains prevalent. Furthermore, unclear ESG regulations were mentioned as frictions. The establishment of an Infrastructure quota for pension schemes named as a measure with the potential for concrete improvements.

It is imperative for policymakers to acknowledge the critical role of private capital in driving digital and ecological transformation. This necessitates a clear and streamlined regulatory framework that offers institutional investors the flexibility to invest in German infrastructure while ensuring attractiveness. Despite short-term challenges, a positive overarching trend emerges in the long term. Driven by megatrends, the Infrastructure asset class is expected to gain fundamental importance in the long term.



6. Methodology and acknowledgments

109 institutional investors across Germany with over €2.4 trillion Assets under Management participated in the 2023 BAI Investor Survey. This year, the survey included LPs that invest in balance sheet assets, which represent around 2/3 of the balance sheet assets for institutional investors in Germany.



Breakdown Investor Survey Participants

Figure 16: Investor survey participants by investor type. Source: BAI Investor Survey 2023.



Breakdown of AuM of the Investor Survey Participants

Figure 17: Assets under management of the participating LPs. Source: BAI investor Survey 2023.

We would like to thank the following industry experts for their support of this study:

- Armin Beerwart, Head of Alternative Investments, W&W Asset Management GmbH
- Andreas Binder, Head of Alternative Investments, WAVE Management AG
- Gaston Brandes, Managing Director, Franklin Real Asset Advisors
- Torsten Heidemann, Head of Infrastructure & Energy, Berenberg
- Viktor Kozel, Head of Infrastructure Debt, UBS
- **Sabine Mahnert**, Head of Asset Management, Evangelische Zusatzversorgungskasse
- **Florian Martin**, Co-CEO, KGAL
- Yann Masset, Head of Research, Energy Infrastructure Partners
- **Roopa Murthy**, Partner, Head of Infrastructure Debt Europe, Ares Management
- **Kian Sander**, Senior Investment Manager, Bayerische Versorgungskammer
- Marco van Daele, CEO, Susi Partners
- Pieter Welman, Head of Global Infrastructure, Barings
- Ingo Wichelhaus, Senior Director, Mount Street Portfolio Advisers

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