KKR

Market Review

Infrastructure
Q3 2023

Looking to 2024

How a Sweet Spot for Infrastructure Could Benefit Investors

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EXECUTIVE SUMMARY

Like most other asset classes, private infrastructure weathered a slow transaction year in 2023. Inflation and rising interest rates exacerbated a valuation gap between buyers and sellers and froze many traditional credit markets. However, the uncertainty was also a time for a risk-based approach to infrastructure to shine. The value of an asset class that can serve as a potential hedge against both inflation and macroeconomic stress was on full display.

In 2024, we expect an increase in transaction activity as capital markets thaw and the valuation gap continues to narrow. We think infrastructure assets with entrenched customer bases, strong market positions, and contractual and regulatory protections provide both a downside cushion in the face of uncertain economic growth and higher-for-longer interest rates and a risk-mitigated, collateral-based way to buy exposure to secular trends with high growth potential. Value creation in the current environment has never been more important.

In this note, we discuss our expectations for the year ahead, including where we see thematic opportunities in our three key areas of focus: decarbonization, digitalization, and deconsolidation.

INTRODUCTION

As we reflect on the year almost past and consider the one ahead of us, we find ourselves excited about the opportunities in private infrastructure and the coming vintage of investments.

The private infrastructure asset class is coming out of a slow transaction year, during which buyers and sellers struggled to interpret and adjust to the rising-rate environment and high inflation. But it is exactly these kinds of uncertain market environments that can present interesting opportunities for investors, particularly in infrastructure. Investing in assets and companies that perform essential services has the potential to protect against inflation and can serve as a calm harbor in times of economic uncertainty. Historically, it has been after the most difficult years that the most interesting opportunities occur. Remember that we founded our strategy in the wake of the Global Financial Crisis. There's a reason for that.

As private market valuations have started to adjust downward and close the gap with public markets, we are starting to see more opportunities across our key investment themes of decarbonization, digitalization, and deconsolidation. In addition, we think the exit environment and financing environment will improve as capital markets start to thaw. We remain laser-focused on minimizing risk, creating value, and sourcing opportunities complementary to our existing portfolios. Let's take a look back now at the year gone by, what we see ahead next, and try to put it all in perspective.

Key Themes

As we look across today's market, we will cover the following themes:

01 2023: A Proving Ground for Private Infrastructure

02 Looking Ahead to 2024

03 Thematic Opportunities in Private Infrastructure

01 2023: A Proving Ground for Private Infrastructure

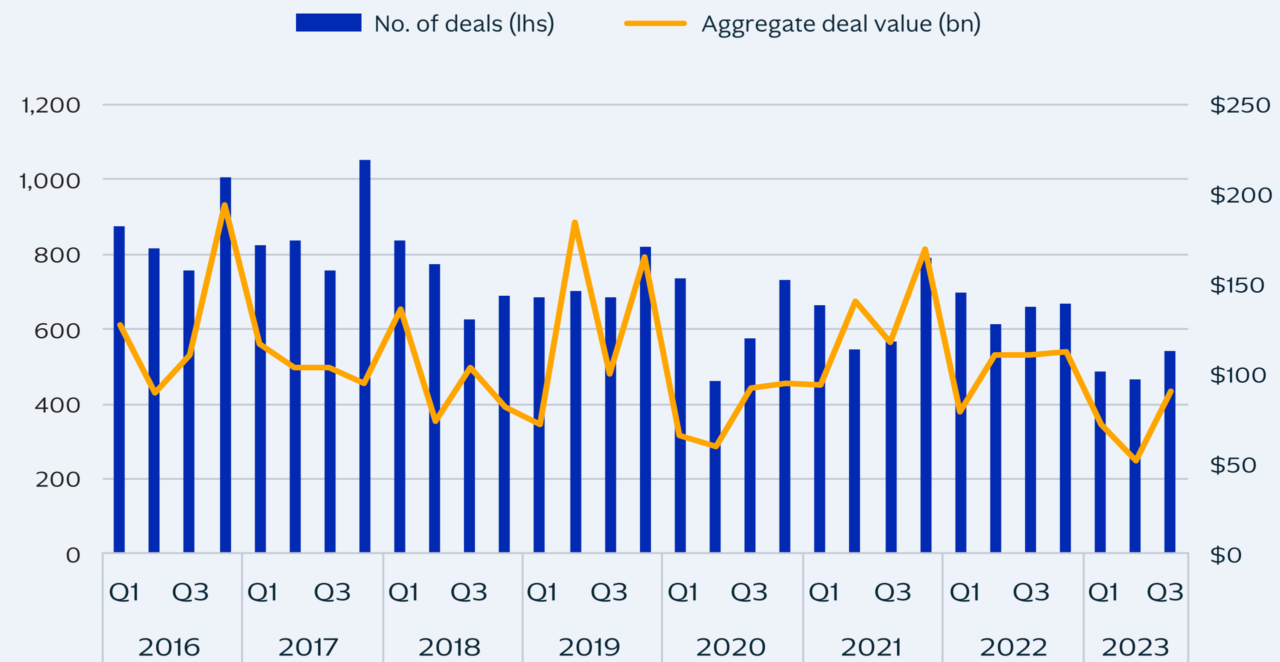
2023 was an interesting year for private infrastructure. As in other private markets strategies, transactions became more difficult to complete as rising interest rates caused traditional credit markets to freeze and exacerbated a valuation gap between buyers and sellers. On the other hand, the volatile market environment reinforced the value of infrastructure as a potential hedge against both inflation and macroeconomic stress.

First, the challenges. Infrastructure, like all asset classes, felt the effects of a capital crunch in 2023. Higher interest rates have created tighter credit conditions around the world, but particularly in Europe and the United States. Syndicated markets and IPO markets were largely shut during the year, and banks in many countries were forced to curtail lending as rising interest rates put pressure on risk-weighted capital levels. This was a marked contrast to 2021 and 2022, when a frenzy of dealmaking reflected the pent-up demand of the pandemic era, as well as the easy money that had come with it.

Transaction activity in infrastructure has been slower and more difficult in this environment, with only $124 billion in global infrastructure activity in the first half of 2023 compared to $190 billion in 2022 and $235 billion in 2021 (Exhibit 1). In our conversations, many owners of privately owned, high-quality assets said they were reluctant to sell in the current environment given the new transaction math in the market. Buyers often value assets differently in a high-inflation, high-interest rate environment and need lower prices to make a transaction work in the face of lower quantums of debt and higher interest rates. Many infrastructure asset owners, including strategics, who did not need to sell, didn't.

However, the challenges in capital markets also created opportunities to be a capital solutions provider to large corporations. The current market conditions made it difficult for companies to raise additional capital, while raising debt would have put pressure on some corporate borrowers' ratings.

EXHIBIT 1: Infrastructure Deal Volume and Value



Source: Preqin Pro as of October 6, 2023.

In most transactions, we saw that flexibility, access to different pools of capital, deep relationships with companies and management teams, and creativity were essential ingredients in getting new investments across the finish line. In one particular joint venture transaction, we mitigated the risk of a volatile funding environment by taking a relatively small ownership stake (less than 50%) in a take-private transaction, with full control rights and an option to increase to 50% at a later point. The KKR Capital Markets team was essential in helping us deliver the remaining capital in a risk-averse market with scant liquidity. In this and in many other transactions, we try to think and act creatively not as a way to take more risk, but as a tool to protect every dollar that we invest.

In our own portfolio, we have continued to see the value of our risk-based approach to investing, including the potential to outpace inflation, in the face of continued volatility in financial markets. Many of the businesses we seek have strong market positions, high barriers to entry, long-term contracted revenues, and other shock absorbers that make them resilient in tough economic times. Inflation protection may be explicitly written into contracts or government rate-setting formulas for certain assets, or it may result from a company's market position and its provision of necessary, downturn-proof services, both of which tend to imply the ability to pass through rising input costs.

02 Looking Ahead to 2024

As we prepare to begin a new year, the KKR Global Macro, Balance Sheet and Risk team expects the world to continue to adjust to a higher-for-longer interest rate environment, with the U.S. Federal Reserve likely on pause in the coming months and rates continuing to rise in Europe. Higher base rates and underlying inflation should make for subdued corporate profits and slower growth than in 2023, particularly in Europe, where tightening financial conditions and higher energy prices are likely to act as a drag on growth. Despite persistently tight economic data in the United States and a tight labor market in Europe, however, inflation has subsided and we expect it to continue to do so, while also expecting it to settle out at a "higher resting heart rate," to borrow a term from our colleague, Henry McVey, Head of Global Macro, Balance Sheet and Risk and Head of the KKR Balance Sheet.

We have welcomed the early signs of a thaw in capital markets, which should help facilitate an increase in private infrastructure transaction activity. We also believe that the gap between buyers and sellers of infrastructure assets has been closing, particularly as sellers have had more time to adjust their expectations on pricing and as the path of inflation and future interest rates seems to be at least somewhat more certain.

As we head into 2024 we are also laser-focused on value creation, which we think is even more critical when interest rates are high and valuations are challenged.

Key Categories

We view the opportunity in three key categories:

— **Optimize the portfolio:** Choosing the right assets is paramount. When we look at assets, we look for direct inflation linkages, relative independence from the economic cycle, and either strong market position or protection from competition by a huge network of users, regulatory protections, or contractual protections. In general, we prefer investment scenarios in which success depends on things we can control to some degree—an optimization plan, a change in structure, strategic acquisitions, etc.—rather than the twists and turns of the economy and market.

From a portfolio perspective, we pay attention to the need to avoid concentration in any one industry, geography, or type of asset. This market environment does not lend itself to big bets, but we think focusing on diversification is important at all stages of the cycle. We also consider valuations against growth potential and the opportunity to invest in good businesses that we can turn into great businesses.

— **Optimize the market opportunity for our portfolio companies:** In an uncertain economic environment, we have reimagined the go-to-market strategy for some of our companies. Our investment in Atlantic Aviation, which was completed in 2021, is a good example. Atlantic Aviation is essentially a network of airports for private aircraft, an industry that has grown faster than commercial aviation and seems likely to keep doing so. The company is the second-largest operator of its kind in the United States. We have focused on strengthening Atlantic's market strategy, making it a leader through industry consolidation, and we are beginning to transform its commercial strategy, including customer-centric initiatives that also leverage the company's network of airports.

— **Optimize operations:** At the end of the day, we run a private equity business that focuses on infrastructure assets, and improving operations is one of the most important tools we have for value creation. At Viridor, a waste-to-energy business, we focused immediately on selling off non-core, non-infrastructure businesses in waste collection and landfill operations to focus on energy recovery facilities that capture useful energy from decaying waste. At the same time, we invested in new opportunities, including building a plastics recycling business; put an incentive compensation structure in place to give all employees a direct stake in business outcomes; and have committed to a five-step plan to get to net-zero emissions by 2040. This is a window into what we try to do when we buy a company and try to improve it: zero in on a company's main strength and opportunity (the circular economy) and create structures so that it can operate more efficiently and successfully.

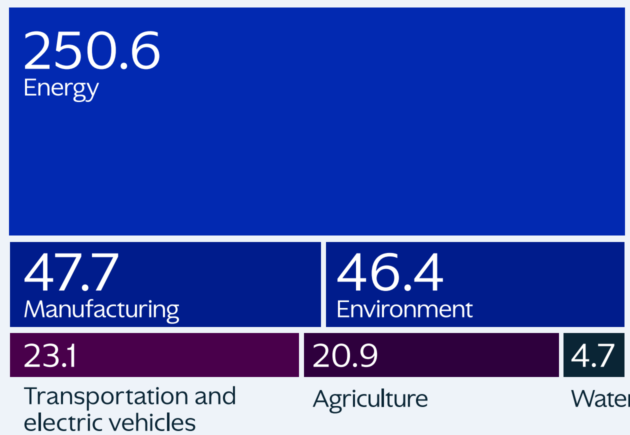
03 Thematic Opportunities in Private Infrastructure

The most important long-term driver for private infrastructure investment is the vast, unmet global need for it. The most commonly cited figure, from Global Infrastructure Hub, says that the gap between what governments spend on infrastructure and the amount needed will reach $15 trillion by 2040 (Exhibit 2).

The estimate, though several years old, is the most comprehensive and reliable one we have. It doesn't include new legislation such as the Inflation Reduction Act in the United States or the Green Deal and REPowerEU plans in Europe, both of which provide billions of dollars in infrastructure spending (Exhibit 3). Some emerging markets have also shown tremendous policy support for infrastructure development. The Indian government included $120 billion for infrastructure spending in its current budget, for example. However, all of these initiatives put together do not nearly add up to a cumulative $40 trillion over the next 17 years. We, along with many other infrastructure market participants, think private capital is likely to fill the gap.

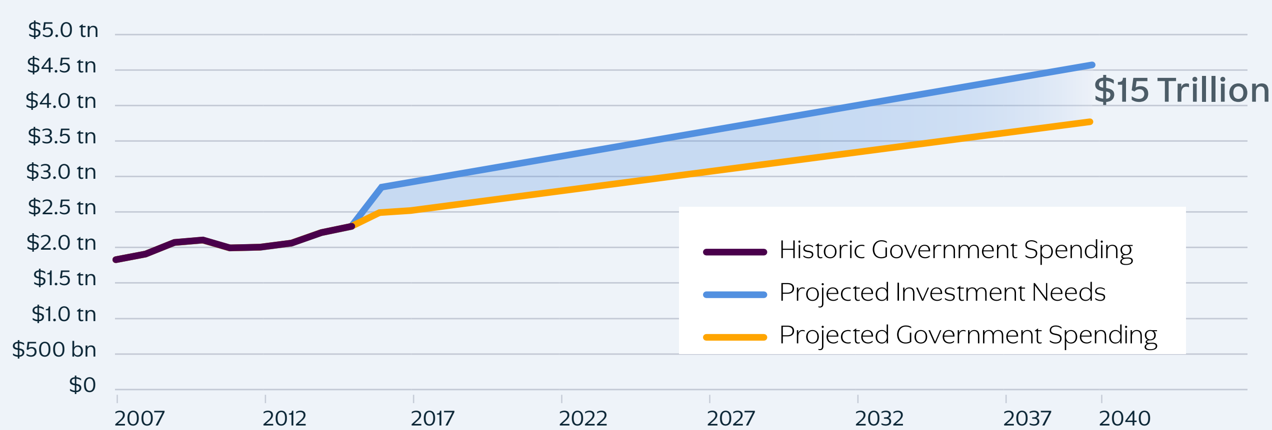
EXHIBIT 3: Inflation Reduction Act Climate Initiative Funding Breakdown

Inflation Reduction Act investments by sector, $ billion



Note: The exhibit reflects analysis of the appropriation figures contained in the Inflation Reduction Act, as well as those reported by the Congressional Budget Office and the Joint Committee on Taxation. This analysis may differ from other analyses due to differences in methodology. Source: McKinsey & Co. as of October 24, 2022.[1]

EXHIBIT 2: A Growing Gap Between Government Infrastructure Spending and Society's Needs



Source: G20 Global Infrastructure Outlook. As of March 2018.
Note: "Infrastructure investment" is defined here as gross fixed capital formation by the public and private sectors on fixed, immovable assets that support long-term economic growth, and also includes maintenance and replacement costs. The estimate of investment need is based on an analysis of how much countries would have to spend if they wanted to match the performance of their best-performing peers by income group, controlling for economic and demographic differences and the quality of current infrastructures.

1 Badlam, Justin, Jared Cox, Adi Kumar, Nehal Mehta, Sara O'Rourke, Julia Silvis. "The Inflation Reduction Act: Here's What's in It." Mckensey & Co. October 24, 2023. https://www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it

We see three major growth opportunities for private infrastructure investment: decarbonization, digitalization, and corporate carveouts.

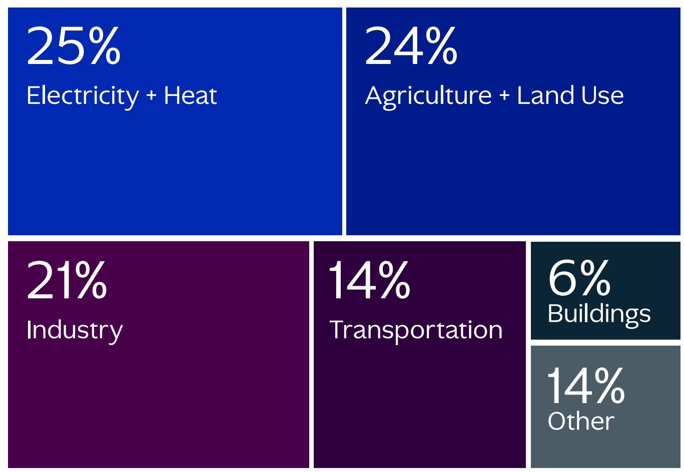
Decarbonization

The chorus of voices calling for limiting global warming to 1.5 degrees Celsius above pre-industrial levels by 2050 is getting louder and more urgent. More than 151 countries, 261 cities, and 1,017 companies have set a net-zero target,[2] but the extreme heat, fires, and floods that occurred in 2023 alone have intensified the calls for action. The need for diverse supplies of energy became clear during the war with Russia and Ukraine. Yet, even so, there is a so-called ambition gap between current policies and the action needed to limit warming to 1.5°Celsius (Exhibit 4). The size of that gap amounts to nearly $7 trillion a year until 2050, according to Bloomberg New Energy Finance, a sum that we feel is impossible for governments to match.

Reducing, removing, and avoiding carbon emissions is an asset-heavy task that spans most of the economy and presents opportunities for infrastructure investors up and down the risk spectrum (Exhibit 5). Five years ago, solar and wind installations were the only way to invest in this theme at scale. Indeed, many people still think only about renewable energy when they think of decarbonization.

Valuations on traditional, utility-scale renewables assets increased dramatically over the past several years, thanks to the increased attention on and funding for the energy transition. We have seen valuations come down but retain a cautious stance on investing in renewable assets. We

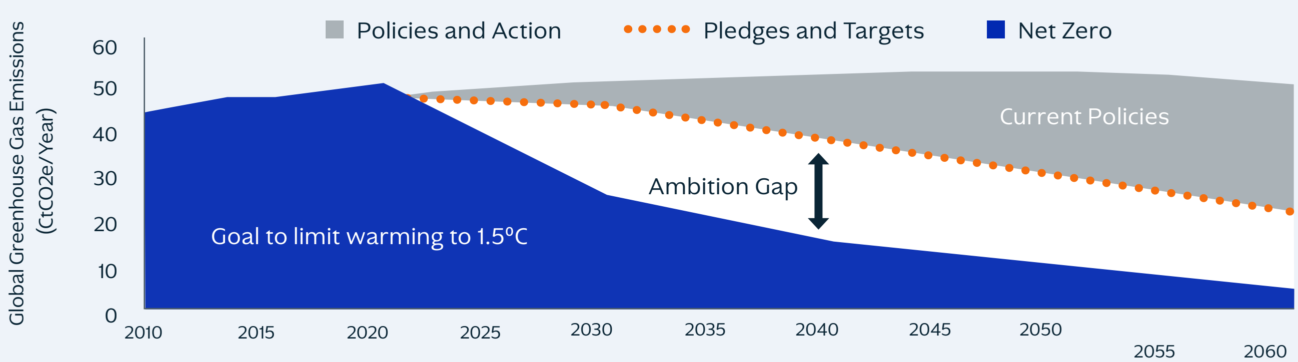
EXHIBIT 5: Sources of Global Carbon Emissions



Source: Net0 "Top 5 Carbon Emitters by Country"as of May 2022.

EXHIBIT 4: Current Policy Trajectory vs. Global Warming Ambitions

Warming Projections Based on Current Policies and Pledges



Source: Climate Action Tracker Emissions Gap as of November 2022.

2 John Lang, Camilla Hyslop, Natasha Lutz, Natalie Short, Richard Black, Peter Chalkley, Thomas Hale, Frederic Hans, Nick Hay, Niklas Höhne, Angel Hsu, Takeshi Kuramochi, Silke Mooldijk, Steve Smith. Net Zero Tracker. Energy and Climate Intelligence Unit, Data-Driven EnviroLab, NewClimate Institute, Oxford Net Zero. Data retrieved on November 27, 2023.

tend to see there is a relatively low barrier to investing in this space, and the result has been a dramatic compression in returns. In this space, we have more interest in acquiring platforms that can develop, finance, and contract new assets using differentiated product offerings.

Transportation is also a key sector that needs to decarbonize across road, marine, air, and rail transport. We see opportunities to invest in road transportation fleets and their associated infrastructure, including batteries and charging stations. Most industrial companies must also find ways to decarbonize if they are going to stay ahead of future regulation and net-zero goals. Companies with business models that result in high levels of carbon emissions or that own high-emitting assets are prime targets for brown-to-green transitions. These transitions are the kind of complex work for which private capital is perfectly suited, assuming that the capital comes with operational expertise.

We see opportunities to invest in decarbonization up and down the risk spectrum. Mature renewables and clean energy businesses might fit into a core solution, for example. Higher up on the growth curve, experienced infrastructure operators can help younger companies with proven technologies scale their deployment. Given our approach to risk and capital preservation, we are focused on these areas and exclude funding of companies with more speculative technologies.

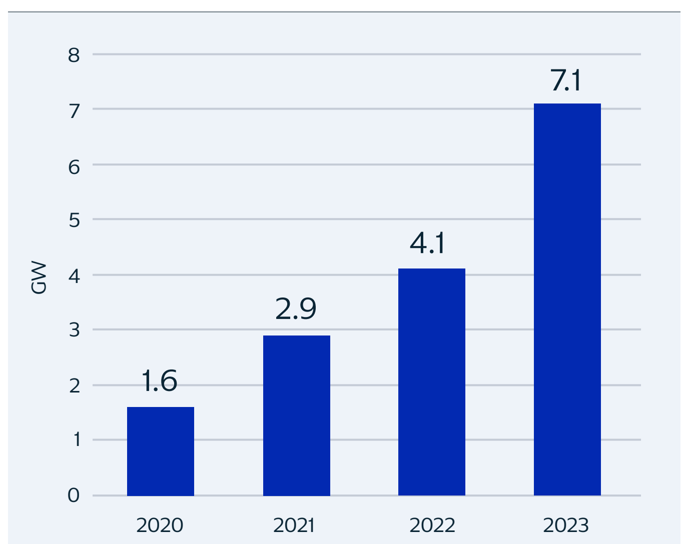
Digitalization

The ubiquity of smartphones and devices, machine learning, and the rapid advances in artificial intelligence make data the world's fastest growing commodity. Software may be an infrastructure-light industry, but the digital tools that are increasingly necessary to fully participate in the global economy require tremendous physical infrastructure. Telecom towers to carry signals, fiber connections that enable high-speed internet access, and data centers to store and process the vast amounts of data created each day.

Here again, we see a variety of opportunities across the risk spectrum. Mature and contracted telecom businesses can appeal to a core investor, while more complex deals can appeal to more opportunistic investors. Our work to expand fiber optic internet service to more homes in Latin America is a perfect illustration of how complex some of these deals can be. We combined the fiber optic networks of three different existing companies into one independent company in which we had a controlling stake. Our goal is to provide an open access network, meaning that any internet provider can access it, to more than double the number of homes in Peru with super-fast fiber optic internet. This is a model we pioneered in Chile and Colombia in 2021, leaning into the complexity of a regulated industry with existing players.

Data centers are at the top of every private market investor's shopping list this year, with a very public explosion of interest and investor money in artificial intelligence on top of relentless growth in existing demand from cloud customers. Whenever we have estimated the future demand for data, even optimistically, we have been surprised on the upside. Exhibit 6 shows the rapid growth in the data center development pipeline over the past few years but vacancy rates also are at record lows (less than 5% in some key markets) and construction deliveries are at least two years away.[3] Demand is high, as key cloud and artificial intelligence players are securing capacity much further into the future than before, often under take-or-pay terms. The challenge of these investments, unlike renewables, is not necessarily their high valuations. It's executing construction and development, negotiating a contract that properly manages those risks in a hot market with lots of competition, and finding the vast amounts of

EXHIBIT 6: An Estimate of the Global Development Pipeline for Data Centers



Source: Cushman & Wakefield as of January 2023.

3 Source: Green Street as of November 20, 2023.

power needed to run the centers. The last concern is a critical issue in assessing any data center deal, in our view. One of our investments in a data center platform in Japan is a joint venture with a utility to ensure the provision of this critical resource.

In the digital space, we look for assets that have the potential to retain their value even in difficult environments and the potential for upside just as we do in any infrastructure investment. These might be established through minimum take-ups (fiber optic networks) or usage (data center), as well as established long-term contracts, inflation pass-throughs, and a strong market position.

Deconsolidation

Extracting the asset-heavy, non-core parts of large conglomerates has always been a part of our infrastructure investment toolkit, but we see a growing demand for these sorts of transactions in the current macroeconomic environment. Companies are facing more pressure on earnings due to sustained inflation and rising interest rates. Henry McVey, our Head of Global Macro, Balance Sheet and Risk and Chief Investment Officer for the KKR Balance Sheet, is calling for a corporate earnings recession in the remaining months of 2023 and expecting that slower growth will lead to a muted earnings recovery in 2024.

It might stand to reason that a company would offload its heavy-duty physical assets during times when interest rates are relatively low and valuations of assets are relatively high, but in our experience, this is not what happens. As they see valuation of the *whole company* decline as the cost of capital and inputs rise, freeing up cash becomes an attractive option. It is during these periods that integrated telecom companies sold off their towers, integrated energy companies separated their long-haul pipelines, and large industrials tend to divest their industrial infrastructure and logistics assets.

One way to do this is by a leaseback arrangement, as opposed to a spinoff. Companies can unload assets such as say, a group of manufacturing facilities, that may be a cost center and would not fetch a fair price if sold as a unit. A private operator can own the asset, install a team that is highly skilled in improving operations and processes, and contract with the original owner to be a customer of the facilities over the duration of the investment. This may be a particularly helpful solution for companies that need to decarbonize heavy-emitting assets in the face of their net-zero goals, a difficult, costly, and time-consuming task.

The challenges of pulling an asset-heavy entity out of a large corporation are real. Our experience has shown that aligning people and culture is often the No. 1 concern in a carveout. Culture takes a long time to change, and assessing and optimizing a workforce is also the work of experts. Operational expertise, industry expertise, and a healthy dose of humility are key to succeeding in this realm.

Key Risks

There are things that we cannot control about the world, no matter how careful we are. These are the potential risks that we are watching most closely as we head into 2024.

The world's geopolitical temperature has been rising for several years, starting with increased tensions between the United States and China over trade policy and other issues. The outbreak of war in Ukraine and Israel/Gaza has exacerbated the sense of uncertainty in the market. All of these conflicts have implications for infrastructure investing, implications for inflation, interest rates, the energy supply chain, and other areas.

Governments are increasingly aware of the need both to provide infrastructure, particularly to achieve the energy transition, and to enhance security of supply of critical infrastructure, while also balancing these objectives against the cost to the end consumer. Clearly, this is a challenging undertaking. As such, enhancing our level if engagement with key stakeholders across all of our investments has been more important than ever.

While we cannot forecast the macro or geopolitical environment, we can try to build a portfolio that is as resilient as possible. We do this by focusing on the merits of every single investment and building in a layer of protection no matter what the macro environment is like. By screening potential investments for contracted, regulated, or market-protected businesses; the ability to pass on higher costs to their customers, and the relative independence of core revenues from global GDP growth; we think we can avoid the worst of any future crisis.

Conclusion

The market for infrastructure deployment was challenged in 2023 due to a lack of capital and a mismatch between buyers and sellers on valuations, a theme that was common across private market asset classes. However, we see some early signs that the capital markets are beginning to thaw and that valuations are starting to settle in the middle. We also note that a high-inflation, rising-rate environment is the textbook use case for private infrastructure investments.

In 2024, we are laser-focused on value creation as the most important tool to combat the effects of higher inflation and interest rates. We also continue to look for opportunities with an emphasis on our three key areas: decarbonization, digitalization, and deconsolidation, where we see overwhelming opportunity.

Overall, we observe that the vintages that come after difficult market environments tend to perform well. That's why our mood heading into 2024 is one of enthusiasm. We are confident in our process, our team, and the opportunities that we think we will find this year.

We welcome your thoughts and look forward to speaking with you soon.

DISCLOSURES:

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