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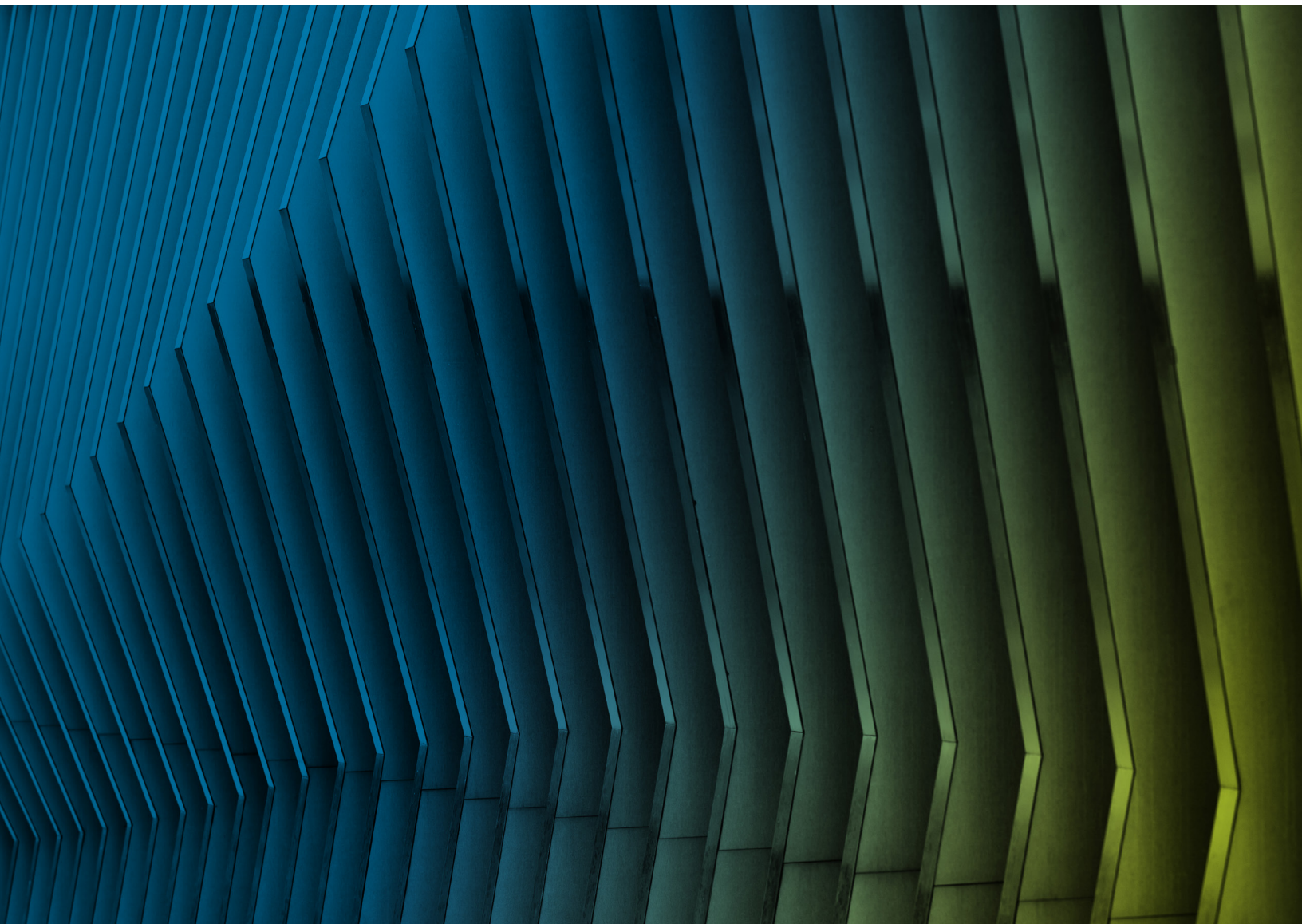
Infrastructure:
More Than Just an Inflation Hedge



KEY TAKEAWAYS

- Private infrastructure funds generate returns from a mix of cash income and capital appreciation, depending upon the specific strategy, and may provide useful diversification as part of a fixed income and/or real assets allocation.
- The outlook for infrastructure is compelling relative to other asset classes in inflationary environments and periods of market volatility, given inflation hedging attributes and historically limited correlation to stocks and bonds.
- Long-term, unmet demand for infrastructure persists, due to significant planned investment from the public sector centered around rectifying historical underfunding, and efforts to mitigate climate change.

Private infrastructure funds aim to provide investors with stable, consistent income with the potential for capital appreciation, and may play a constructive role for investors looking to enhance their fixed income or real asset allocation. This is particularly true in market environments with high inflation, rising interest rates, and tightening monetary policy.

Infrastructure is one of the few asset classes with characteristics that allow it to not only mitigate the effects of inflation, but also to potentially benefit from increases in prices and interest rates.[1] Investors may want to consider infrastructure as a diversified source of return for their portfolio, with attractive inflation protection and structural downside protection characteristics.

In this primer we will discuss:

- The definition of infrastructure and its characteristics as an investment
- The different types of private infrastructure investments and their risk and return characteristics
- The demand drivers for infrastructure in the United States and globally
- Infrastructure's positive environmental, social, and governance (ESG) impact
- Infrastructure's role in an investor's portfolio

What is infrastructure?

Infrastructure is broadly defined as the basic physical and organizational structures and facilities (buildings, roads, and power supplies) needed for the operation of a society or enterprise. Infrastructure supports nearly every aspect of daily life, and major subsectors include social infrastructure (schools and hospitals); utilities (gas and water systems); transportation (toll roads and airports); and energy infrastructure (power generation).

These assets are essential facilities on which economic productivity depends, which helps give infrastructure as an asset class some attractive characteristics, including:

- **Stable long-term cash flows:** Infrastructure assets generally provide consistent and reliable income streams that are governed by long-term contracts, typically with reputable counterparties or counterparties regulated by the government.[2] These cash flows also generally include either explicit inflation protection (e.g., contracts with inflation-linked payments) or an implicit inflation hedge (i.e., prices that can be adjusted during the life of the investment to reflect inflation).[3]
- **Limited downside:** Infrastructure assets may be less exposed to economic slowdowns than traditional asset classes, due to reliable long-term contracted cash flows. In addition, because they provide basic sustainable services essential to the functioning of the economy, demand is generally relatively inelastic, creating high barriers for new entrants as there are limited needs for new providers. A further barrier is strong regulation of many infrastructure assets, which can make it difficult to penetrate mature markets. Finally, due to the typical size of these assets and the high level of regulation, replacement costs are often prohibitively high, offering monopolistic benefits and further reducing risk for investors.

Classifying infrastructure investments

Infrastructure investments are typically categorized across several dimensions, including sector and risk/return profile. These broadly used categories can help investors tailor their infrastructure exposure. Another primary classifier for infrastructure investments is the phase of an investment, which strongly impacts the risk/return profile. The two standard phases are referred to as greenfield (new construction) and brownfield (already operating on a standalone basis or undergoing expansion). The risk and return of a project are also affected by geography. For example, whether the investment is in a developed or an emerging market.

Exhibit 1: Categories of infrastructure investments

Increasing Risk

Category	Description	Sector	Phase	Revenue Drivers
Core	• Most stable form of infrastructure • Returns primarily driven by income • Generally viewed as the least risky, with lower targeted annualized returns to investors	• Utilities such as gas, electricity, and waste/ water • Contracted and renewable power generation • Mature toll roads, bridges, and hospitals	• Primarily brownfield assets	• Rate regulation • Long-term contracts with government entities
	Example: A fully regulated electric utility platform that serves residential, commercial, industrial, public, and wholesale customers in a region in the United States. The utility's revenue is set by the local regulator with an authorized rate of return on equity, resulting in stable income and minimal volume or commodity risk.			
Core plus	• Similar to core, but with more variable cash flows • More market competition than core assets, and may have growth- or GDP-linked components • Returns driven by income with potential for capital appreciation • Cash flow may be less predictable, but generally target a higher rate of return than core investments	• Contracted oil and gas midstream assets • Transportation assets (such as toll roads and airports) with some GDP sensitivity • Contracted renewable power with chance for development • Digital infrastructure	• Primarily brownfield assets	• Long-term contracts with creditworthy private counterparties • Concession arrangements with revenue tied to volume
	Example: A toll road in the U.S. Midwest of the United States linking a major city to the rest of the region. As a critical part of the country's freight distribution network, with inelastic demand, the toll road generates a vast majority of its revenue from heavy vehicles and operates under a 60-year government contract, with the ability to annually increase tolls by the greater of CPI, GDP per capita growth, or a set percentage.			
Value add	• Includes assets with more market competition and assets with potential for growth and repositioning • Returns primarily driven by capital appreciation • Target higher potential returns to compensate investors for the increased amount of risk	• Transportation assets with revenues tied to volume • Early-stage midstream energy assets • Assets undertaking growth strategies or repositioning across sectors	• Typically greenfield assets that are under construction with contracts already in place	• Long-term contracts on greenfield assets • Short-term contracts or contracts with lower credit-quality counterparties • Revenue reliant on greenfield or GDP growth
	Example: A container terminal on the west coast of the United States with revenues tied to the volume moved through the port. Presents opportunities for capital appreciation via increasing capacity and driving operational efficiencies.			
Opportunistic	• Typically offers highest degree of risk and return potential • Assets may be in development, located in emerging markets, dependent on commodities, or in distress • Returns almost exclusively from capital appreciation	• Infrastructure in developing markets • Distressed assets across sectors • New technology in renewable energy	• Primarily greenfield assets	• Could include long-term contracts in non-OECD* countries or unsecured future contracts • Less certain revenue profile with volume and pricing risk • Likelihood of revenue volatility
	Example: A water sewage service holding company in Brazil looking to grow by increasing access to clean water in the country. Large potential upside from plans to win 20-to-30-year government concessions coming due in the next few years.			

** Organisation for Economic Co-operation and Development.*

The longer-term private infrastructure opportunity set

In the developed markets, infrastructure has been chronically underfunded for decades.[4] Solving this issue will require significant investment, which presents a huge opportunity for private infrastructure funds.

According to the American Society of Civil Engineers, the total investment needs for U.S. infrastructure for the years 2020 through 2029 total $5.94 trillion, with a current funding gap of $2.5 trillion.[5] Exhibit 2 breaks down these infrastructure funding needs. There are particularly notable gaps in funding for surface transportation, water services, electricity, and airports.

Exhibit 2: Infrastructure funding needs and actual planned funding in the United States, 2020–2029

Estimates from American Society of Civil Engineers, $M

Infrastructure System	Total Needs	Funded	Funding Gap
Surface Transportation	$2,834	$1,619	$1,215
Drinking Water/Wastewater/Stormwater	$1,045	$611	$434
Electricity	$637	$440	$197
Airports	$237	$126	$111
Inland Waterways & Marine Ports	$42	$17	$25
Dams	$93.6	$12.5	$81
Hazardous & Solid Waste	$21	$14.4	$7
Levees	$80	$10.1	$70
Public Parks & Recreation	$77.5	$9.5	$68
Schools	$870	$490	$380
Totals	**$5,937**	**$3,350**	**$2,588**

Source: American Society of Civil Engineers, 2021 Report Card for America's Infrastructure, as of March 3, 2021. For illustrative purposes only. Past performance is not indicative of future results. Future results are not guaranteed.

Thankfully, there seems to be wide recognition of the scale of the problem, spurring action from federal, state, and local governments. The Infrastructure Investment and Jobs Act (IIJA, or more commonly just "the Infrastructure Bill") included $1.2 trillion in infrastructure spending, $550 billion of which is new federal spending to be allocated over the next five years. The IIJA investments, ranging from clean energy to broadband, can have a significant impact on the future of infrastructure in the United States. On the local front, 37 states have raised their gasoline tax since 2010 to fund critical transportation investments, and 98% of local infrastructure ballot initiatives passed in November 2020.[6] These improvements were made by elected officials from both sides of the aisle and with strong voter support.[7]

Further, the effort to address climate change globally is resulting in an outsized market opportunity in renewable energy. As consensus grows that carbon emissions must decrease across all sectors of the world economy, governments continue to commit to decarbonization targets. More than 130 of the countries that signed the landmark Paris Agreement – as well as numerous cities and companies – have set or are considering a target of reducing emissions to net zero by mid-century.[8]

These commitments, along with more favorable economics (the cost of renewable energy has dropped to a level where it has become profitable without subsidies) create a sizeable opportunity for infrastructure investors.[9] Goldman Sachs has estimated that as much as $16 trillion of total investment will be required by 2030 to limit global warming to 2°C.[10] As the renewables sector continues to mature and attract private capital, there should be ample opportunities for private investors to acquire and/or develop cash flow-generating, operational renewable assets.

Infrastructure's positive ESG impact

Infrastructure as an asset class involves investments representing critical elements that support people's lives and communities, and consideration of environmental, social, and governance (ESG) factors directly impact the operation of infrastructure assets. While each infrastructure project will differ, some common ESG considerations include: the environmental impacts on ecosystems and biodiversity; community engagement and inclusive decision making; and climate change mitigation and adaptation.[11]

Further, infrastructure is at the core of the transition to a low-carbon economy through the development of renewable energy, such as wind and solar power. Driven by a supportive regulatory backdrop and declining cost curves for wind and solar power, the U.S. Energy Information administration expects that the share of renewables in the U.S. electricity generation mix will double from 21% in 2020 to 42% in 2050.[12] Private infrastructure investments will be a critical component in achieving further decarbonization in the economy.

Infrastructure's role in a portfolio

Infrastructure assets can offer much to an investor's portfolio, including yield, diversification, the potential for capital appreciation, and the ability to mitigate, and even benefit from, inflation.

Yield: Infrastructure assets can provide consistent and reliable income streams, which are often governed by long-term contracts with reputable counterparties or counterparties regulated by the government.[13] Income varies with the risk profile of the investment, but infrastructure investments can generate yields in the high single digits for core infrastructure, with core-plus and value-add investments producing less yield but greater capital appreciation.[14]

Diversification: Infrastructure's drivers of returns are broadly diversified from the broader economy and other asset classes.[15] Infrastructure asset performance is relatively insulated from broader market movements, with returns largely determined by contractual cash flows and backed by government bodies. Since 2008, global core infrastructure returns have a -0.1 correlation to global bonds and equities, and only a 0.3 correlation to U.S. real estate.[16]

Capital appreciation: Throughout the life of an infrastructure asset, the managers that own and operate it can add value. Owners can optimize operations, cut costs, and/or look to increase revenue by expanding into different regions or adding product lines. Capital appreciation is most typical in value-add and opportunistic infrastructure strategies.

Inflation protection: Infrastructure investments offer protection in an inflationary environment in several ways and can even benefit from inflation.[17] Due to inelastic demand and limited competition, even in an inflationary environment, an increase in consumer prices does not

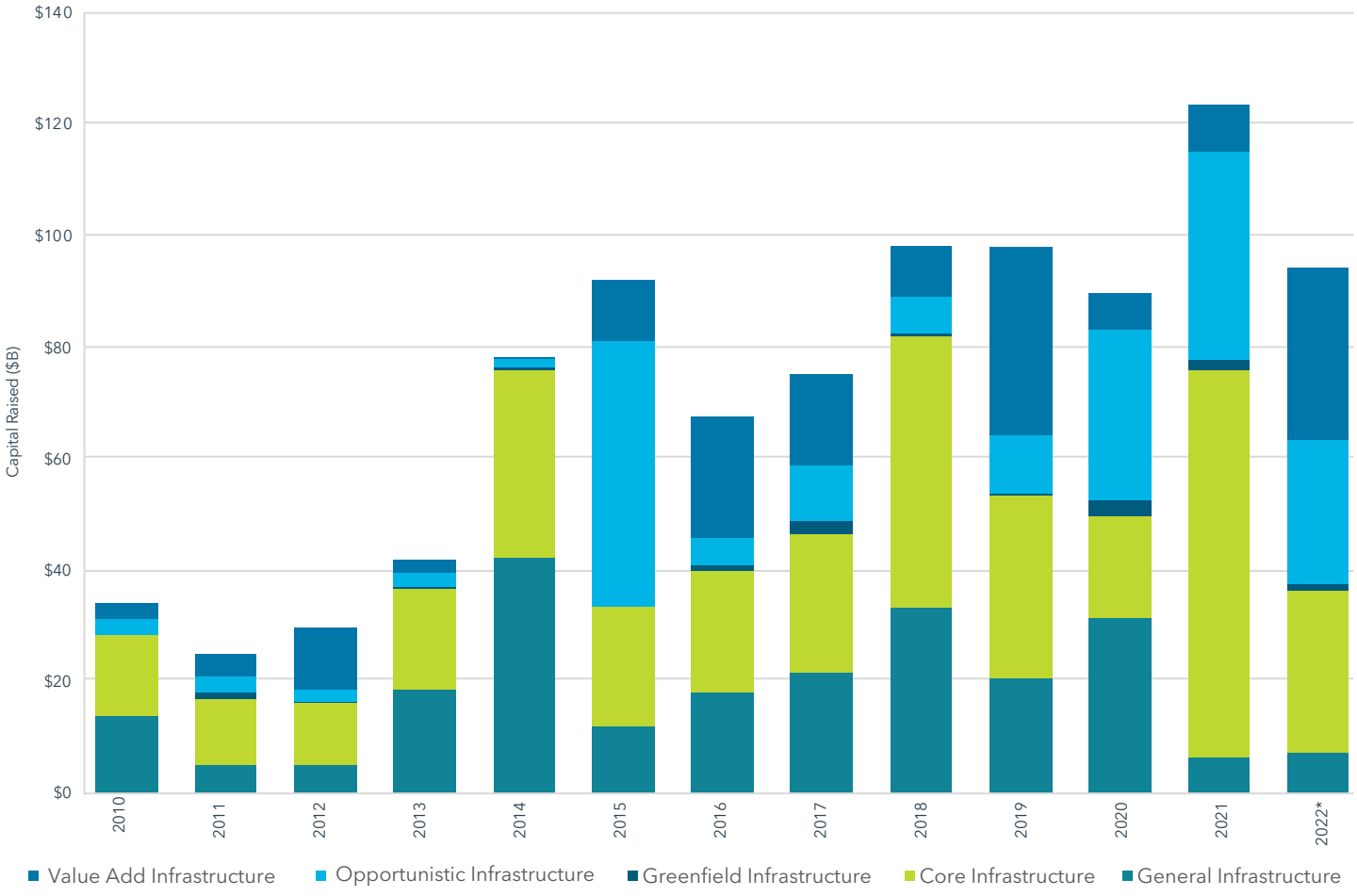
generally impact the use of infrastructure assets.[18] In addition, as mentioned earlier, many infrastructure assets are contractually linked to inflation through regulations, contracts, or government concessions.[19] An inflationary environment may also limit competition, as infrastructure assets are typically large projects with costly new-construction expenses that increase in lockstep with supplies and labor, increasing replacement cost.

Asset allocation

A growing number of investors have turned to private infrastructure as a solution to enhance the risk/return profile of their portfolio (See Exhibit 3). At its current pace, 2022 fundraising is set to exceed a record-breaking 2021.[20] According to Preqin, institutional investors have a median target allocation for infrastructure of 5 percent in North America, although they remain below their targets and plan to grow commitments going forward.[21]

Exhibit 3: Investor allocations to infrastructure funds continue to rise

Capital raised by infrastructure funds and by type



*Source: PitchBook, as of November 3, 2022. *2022 includes data from Jan. 1, 2022 – Nov. 3, 2022. For illustrative purposes only. Past performance is not indicative of future results. Future results are not guaranteed.*

The opportunity in infrastructure looks compelling on a long-term basis, given the scale of planned public infrastructure investment, and in the shorter term, given high levels of inflation and rising interest rates. The current income generation, downside protection characteristics, and inflation protection features associated with infrastructure investments make them a natural fit to include in an investor's fixed income and/or real asset allocation. Infrastructure investments can produce meaningful portfolio diversification benefits, due to their low correlation to fixed income and equity markets,[22] with the potential for longer-term capital appreciation.

END NOTES

1. Source: "Infrastructure as an inflation hedge – look no further?", CBRE, March 2022.
2. Ibid.
3. Source: "Infrastructure Investing in an Inflationary Environment," Pathway Capital Management, February 2022.
4. Source: American Society of Civil Engineers, 2021 Report Card for America's Infrastructure, March 3, 2021.
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10. Source: "Carbonomics: The Green Engine of Economic Recovery," Goldman Sachs Equity Research, June 2020.
11. Source: "ESG in Infrastructure," Global Infrastructure Hub, August 16, 2022.
12. "EIA Projects Renewables Share of U.S. Electricity Generation Mix Will Double By 2050," U.S. Energy Information Administration, February 8, 2021.
13. Source: "Infrastructure: Opportunity for yield and diversification," Nuveen, Summer 2018.
14. Ibid.
15. Ibid.
16. Source: "Guide to Alternatives 1Q 2022," JP Morgan, Data based on quarterly returns from June 30, 2008 to February 28, 2022.
17. Source: "Infrastructure Investing in an Inflationary Environment," Pathway Capital Management, February 2022.
18. Ibid.
19. Ibid.
20. Source: PitchBook, as of May 20, 2022.
21. Source: "Here's Another Reason Why Infrastructure Funds Are Raising Record Amounts of Money," Preqin, Institutional Investor, August 23, 2022.
22. Source: "Guide to Alternatives 1Q 2022," JP Morgan. Data based on quarterly returns from June 30, 2008 to August 31, 2022.

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