Alternatives Research
Infrastructure

July 2021

DWS

Marketing Material

PRIVATE INFRASTRUCTURE EQUITY STRATEGIC OUTLOOK UPDATE H2 2021

IN A NUTSHELL

_ Vaccinations and fiscal policy support the economic recovery, underpinning transport and power demand, while digital infrastructure continues its expansion, accelerated by the pandemic.
_ Increasingly ambitious net zero policies and rapidly rising CO_2 prices in Europe have accelerated energy transition, supporting renewables, the essential role of gas to balance the grid, and incentivising technological innovation for transport and energy decarbonisation.
_ Economic recovery and megatrends support earnings' growth expectations for Core Plus and Value add infrastructure, while valuations for Core infrastructure may be capped by gradually rising bond yields.
_ We observe an expansion of infrastructure strategies, driven by a broadening of the opportunity set, investors seeking exposure to a wider risk/return spectrum, and regulation supporting ESG strategies.

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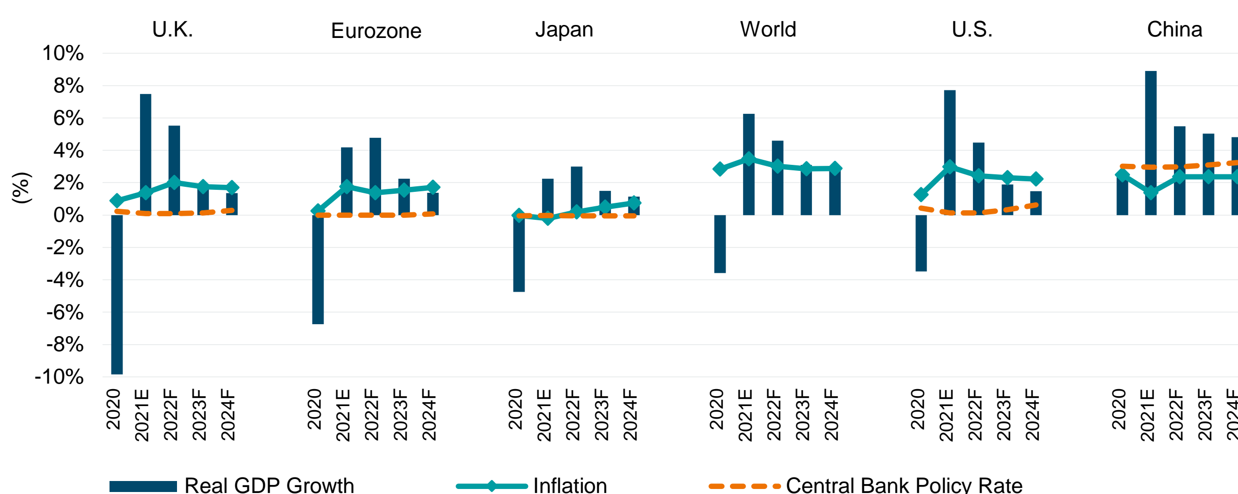
1 / Economic Update

1.1 Macroeconomic Outlook

Covid-19 remains a major challenge for the global economy, particularly for emerging markets. However, vaccination campaigns are progressing across North America and Europe supporting the economic recovery in the second half of 2021, with growth anticipated to remain vigorous throughout 2022. We continue to witness buoyant global trade conditions. Strong fiscal stimulus and loose monetary policy provide support to growth, but may also drive inflation expectations higher in the short term, alongside demand supply imbalances, leading to a further widening in government bond yields. With monetary policy anticipated to remain loose, and a meaningful uptrend to inflation unlikely, we anticipate government bond yields to increase, but to remain below the long-term historical average in the medium term.

REAL GDP GROWTH, INFLATION AND INTEREST RATES (%, 2020 – 2024F)



Source: Oxford Economics, as at May 2021. Notes: F = forecast, E = expected. There is no guarantee the forecast shown will materialise. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

1.2 Economy and Infrastructure

Covid-19 pushed the global economy into a deep recession in 2020. Infrastructure demand proved relatively resilient, particularly if compared with the severity of the downturn. However, the impact of the pandemic varied substantially across sectors with some, such as passenger transportation, affected materially by lockdown measures, freight proving resilient and digital infrastructure and renewables accelerating. In the second half of 2021, we anticipate a gradual recovery in sectors still impacted by the pandemic, supported by a return to economic growth.

1.3 Mobility & Freight

Passenger transport demand, including airports, rail and public transport, was still materially affected by lockdowns in the first half of 2021. We expect the recovery to accelerate in conjunction with the lifting of lockdown measures in the second half of 2021, but anticipate international mobility to remain exposed to some travel restrictions throughout 2021, and a full demand recovery to protract into the medium term, particularly for international air travel.

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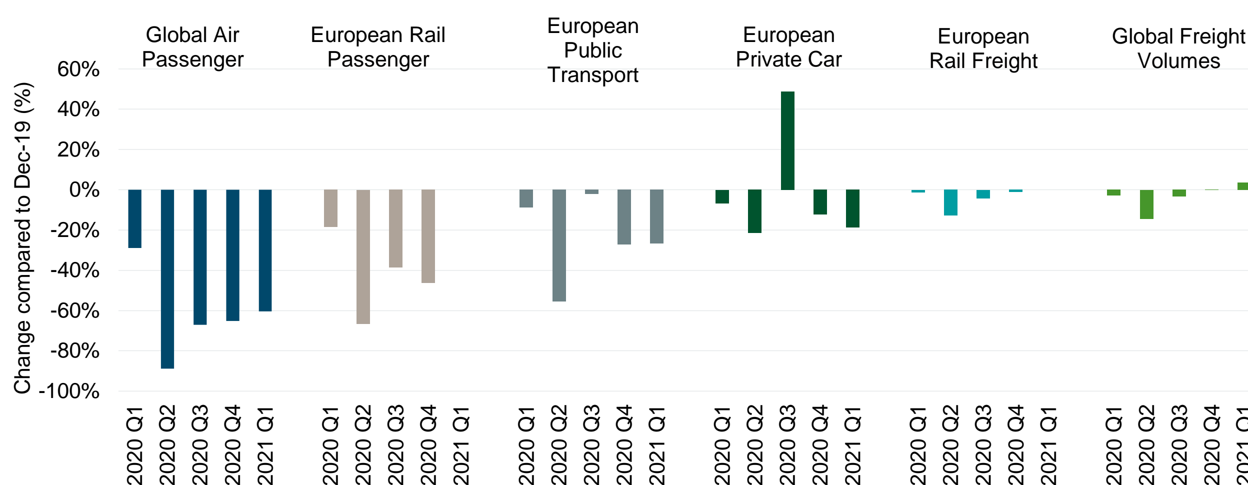
Due to Covid-19, transportation may be exposed to structural changes in demand fundamentals, possibly also leading to a revision of cost of equity assumptions for infrastructure investors. Despite the expected long-term growth of global tourism, the recovery of business travel may be capped by more stringent sustainability policies, for example supporting rail over short-haul domestic flights.[1] Local transport demand growth in urban centers may be capped by an acceleration of working from home policies, and faster growth in the urban micro mobility sector.

Trade has continued to support ports and rail freight operations throughout the pandemic, with global supply chains and industry operating at near peak capacity in the first half of 2021. As indicated by the Baltic Dry Index, we anticipate a further strengthening of logistics demand fundamentals in the second half of 2021, with supply demand imbalances contributing to an expected increase in freight rates in the short term.

The logistics sector appears favourably positioned for further capacity expansion, due to changing consumer behaviour and e-commerce volumes rising more rapidly compared to pre-Covid expectations. Decarbonisation policies may likely contribute to a shift from road to rail freight in the medium term, underpinning the need for increased freight rolling stock capacity. We acknowledge a shortage of intermodal logistics capacity across Europe and North America. In Europe,[2] we anticipate that regional port operations may be potentially supported by a nearshoring of industrial production capacity,[3] a factor that may prove supportive for regional port demand fundamentals and local economic development in the long term.

PASSENGER MOBILITY AND FREIGHT VOLUMES (% CHANGE COMPARED TO DEC 2019, ESTIMATES)



Source: DWS estimates, as at May 2021. Past performance is not indicative of future results. Due to various risks, uncertainties and assumptions made in our analysis, actual events or results or the actual performance of the markets covered may differ materially from those described. For illustrative purposes only.

1.4 Power & Energy

Data indicates that energy and power demand have largely recovered from the impact of the pandemic in 2020, and are positioned for a further expansion in 2021, supported by economic recovery, but varying by region and energy source. In Europe and North America, we observe a further acceleration of renewable energy, compared with our previous expectations, supported by a noticeable acceleration to net zero policies and energy transition objectives.

[1] Reuters, “French lawmakers approve a ban on short domestic flights”, 11 April 2021.

[2] European Parliament, Directorare General for External Policies, “Post Covid-19 value chains: options for reshoring production back to Europe in a globalised economy”, March 2021.

[3] Thomson Reuters, “International Trade Committee publishes report on UK freeports”, 20 April 2021.

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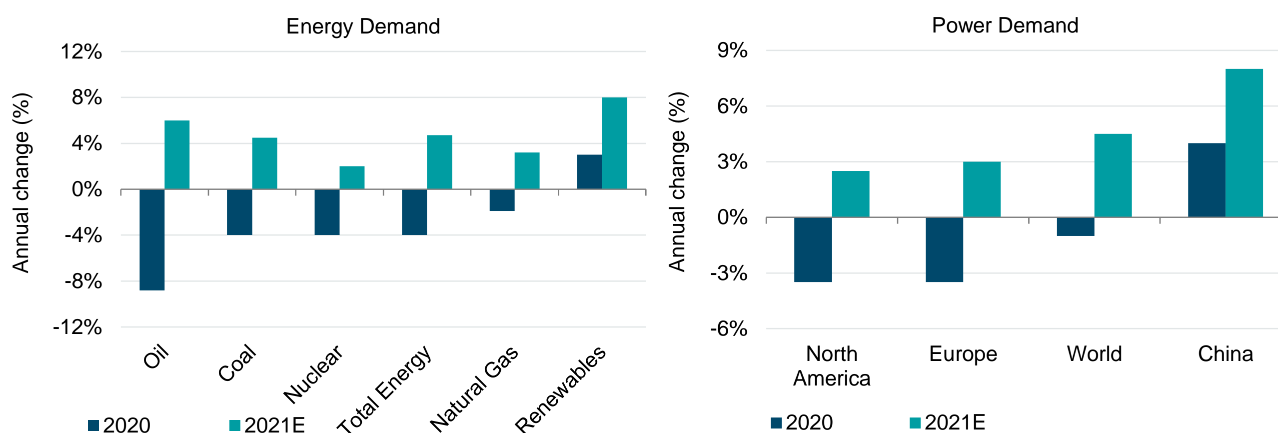
We see rising medium-term deflationary pressure on fossil fuel demand for passenger transportation across mature markets, driven by an acceleration in EV penetration expectations in North America and Europe. However, regulation supporting biofuel blends to reduce carbon emissions, and the lack of viable economic alternatives to traditional fuels for aviation, bunkering and heavy commercial transport may contribute to stabilising the medium-term outlook for fossil fuel demand.

In the first half of 2021, CO_2 emission prices in Europe reached EUR 50/tonne, an unprecedented peak. Higher CO_2 emission prices contributed to an increase in wholesale power prices across Europe. Notwithstanding rising wholesale power prices, higher gas prices pushed European baseload spark spreads into negative territory, capping the profitability of baseload gas generators in the first half of 2021. Despite some anticipated volatility, we expect CO_2 emission prices in Europe to continue to increase in the medium term. Compared with our previous expectations, CO_2 emission prices rising more rapidly than anticipated may contribute to accelerating the energy transition process by several years, leading to expectations of rising baseload wholesale power prices over the coming years. In the first half of 2021, the anticipated increase in power prices has contributed to accelerating the volume of 10-year renewables power purchase agreements (PPAs) across Europe, with average prices reaching EUR 46/MWh in May 2021, from EUR 38/MWh in December 2020.[4]

ENERGY AND POWER DEMAND (GLOBAL, % ANNUAL CHANGE, 2020 – 2021E)



Source: IEA, as at May 2021. Notes: E = Expected. Past performance is not indicative of future results. There is no guarantee the forecast shown will materialise. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

The expected phase-out of baseload coal and nuclear power in some countries, such as Germany, may widen the power capacity gap in Europe over the coming decade. Power demand is anticipated to grow, driven by an acceleration in transport electrification, despite the anticipated rise in energy efficiency measures. Amid rising intermittent renewables' power, natural gas may strengthen its role as a key power source to balance the grid. We expect a combination of higher capacity markets' prices and wholesale baseload power prices to support gas generators in the 2020s, proving supportive for renewables capture prices. At the same time, higher wholesale baseload power prices may also accelerate the cost competitiveness of battery storage in the medium term, and hydrogen electrolyser applications in the long term, thereby capping further, substantial wholesale baseload power price increases by the 2030s.

[4] Pexa Euro Composite, as at 25 May 2021.

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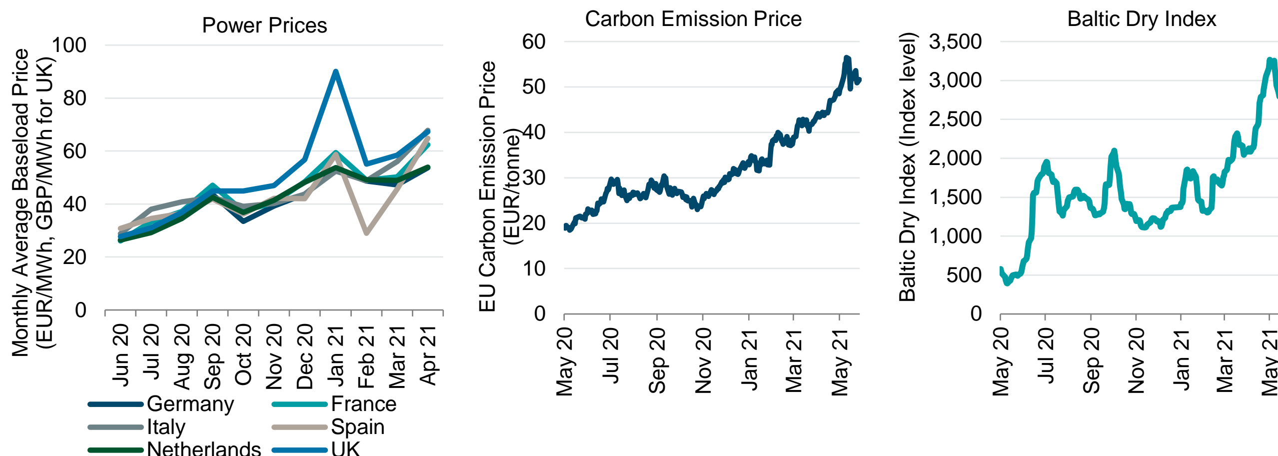
POWER PRICES, EU CARBON EMISSION PRICE AND BALTIC DRY INDEX (2020 - 2021)



Source: DWS, Bloomberg, as at May 2021. Past performance is not indicative of future results.

1.5 Financial Performance

In 2020, Covid-19 has led to private infrastructure recording the first annual revenue decrease in its recent history, with revenues contracting by 1.5% year-on-year on a global basis. The contraction was concentrated in assets exposed to volume risk and affected by lockdown measures, such as airports or toll roads, or assets also exposed to price risk, such as merchant power plants. Assets supported by volume neutral regulation, such as RAB-regulated networks, or take-or-pay and availability-based contracts such as midstream infrastructure and some public transportation assets, proved resilient despite lower demand. Assets with revenues impacted by the pandemic could in most cases partially offset this negative impact on financial performance by reducing opex and reprofiling medium-term capex commitments.

Despite the revenue contraction observed in 2020, the dividend profile of diversified private infrastructure equity strategies proved relatively resilient, with Core[5] strategies recording an income return at 3.2% and Core Plus[6] strategies at 5.3%,[7] as at December 2020. This is below the annual income return recorded in 2019 at 7.5% for Core infrastructure and 5.8% for Core Plus infrastructure.[8]

In 2021, the revenue profile of global private infrastructure is expected to return to growth, with the average annual growth rate expected to be at 2% in 2021 and 2022, below the long-term historical average at 3.1%. We expect some sectors to return to normalised revenue growth rates only in the medium term. Despite anticipating somewhat stronger dividends for 2021, we expect income return to recover to pre-pandemic levels only in the medium term.

[5] Core Infrastructure includes brownfield assets in geographically mature markets, with a significant component of income yield, predictable and regulated revenues, a long-term investment horizon, and an investment grade rating profile.

[6] Core Plus infrastructure includes brownfield assets in mature markets with some development risk, a long-term investment horizon, relatively predictable revenues supporting income return and potential for capital appreciation.

[7] MSCI Global Private Infrastructure Asset Index as at December 2020.

[8] MSCI Global Private Infrastructure Asset Index as at December 2019.

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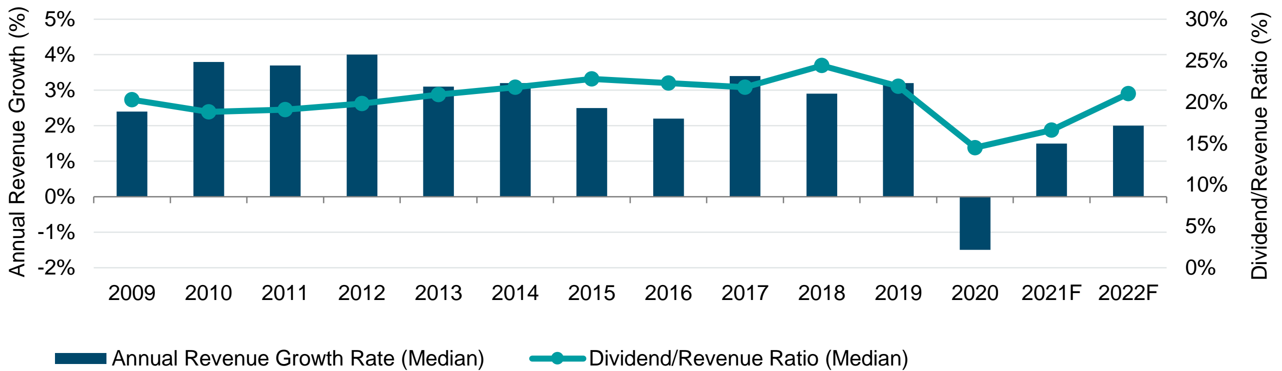
PRIVATE INFRASTRUCTURE REVENUE GROWTH RATE AND DIVIDEND-TO-REVENUE RATIO (GLOBAL, MEDIAN)



Source: EDHECinfra, as at May 2021. Past performance is not indicative of future results. Notes: F = Forecast. There is no guarantee the forecast shown will materialise. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Dividends are not guaranteed. The amount of dividend payments can change or not take place at all.

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PRIVATE INFRASTRUCTURE OPERATIONAL PERFORMANCE OUTLOOK (ESTIMATE BY SECTOR, EUROPE)

	Operating Performance Outlook	Strategic Outlook
Sector	**Short-Term** (12–18 Months)*	**Long-Term** (5–10 Years)
Transportation		
Airports	Negative	Stable/Positive
Toll Roads	Stable/Negative	Stable/Negative
Public Transportation	Stable/Negative	Stable
Rail (Passenger)	Stable/Negative	Stable
Rail (Freight)	Stable/Positive	Stable/Positive
Ports	Stable/Positive	Stable
Logistics	Stable/Positive	Stable/Positive
Energy & utilities		
Electricity Generation Coal	Stable/Negative	Negative
Electricity Generation Gas	Stable	Stable
Electricity Generation Renewables	Stable/Positive	Positive
Regulated Networks	Stable	Stable
Integrated Utilities	Stable	Stable
Midstream Energy (Oil & Gas)	Stable	Stable/Negative
Circular economy		
Waste Management (EfW & Recycling)	Stable	Stable
Digital infrastructure		
Data Centres	Positive	Positive
Fibre Networks	Positive	Positive
Telecom Towers	Stable	Stable/Positive
Social infrastructure		
Education	Stable	Stable
Healthcare	Stable	Stable/Positive

Notes: *Comparison with pre-pandemic performance in 2019. Source: DWS, as at June 2021. Past performance is not a reliable indicator of future returns. No assurance can be given that any forecast, target or opinion will materialise. This information is intended for informational purposes only and does not constitute investment advice, recommendation, an offer or solicitation. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

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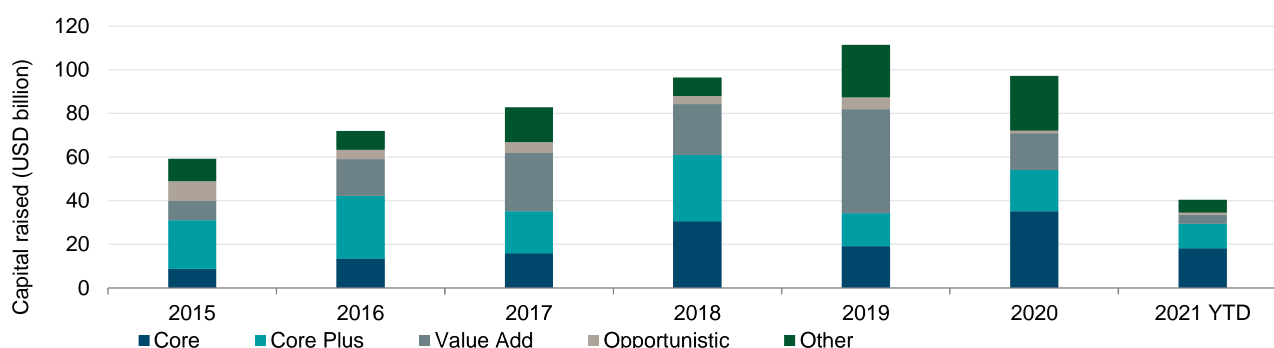
2 / Market Update

2.1 Fundraising

In 2020, private infrastructure fundraising remained strong despite Covid-19, and 2021 appears to continue in a similar pattern. As at May 2021, private infrastructure raised a total of USD 40.5 billion, secured by thirty-three funds globally. Europe and North America focused funds led the fundraising market, securing a combined USD 35.5 billion to date. Investors continue to see private infrastructure as an asset class that may offer diversification benefits, an illiquidity premium, and a supportive long-term yield profile. Funds focusing on Core and Core Plus strategies secured USD 29.4 billion of capital, corresponding to around 73% of total capital raised so far this year.[9] In 2021, we anticipate that rising bond yields and inflation expectations may drive interest in diversified Core and Core Plus private infrastructure strategies, supported by solid yield targets assumptions and potential for regulated or contracted cash flows linked to inflation.

PRIVATE INFRASTRUCTURE FUNDRAISING BY STRATEGY (GLOBAL, USD BILLION)



Source: Preqin database, as at May 2021. Past performance is not indicative of future results.

In the medium term, we also anticipate an expansion of the asset class across a broader set of strategies and risk/return propositions. On the asset supply side, this is driven mainly by megatrends, including energy transition and digitalisation leading to a widening of the transaction opportunity set towards the Value Add space. In the Value Add space, investors may pursue a stronger focus on growth and capital appreciation compared with Core and Core Plus strategies, in the context of an anticipated return to economic growth following the pandemic and several megatrends supporting earnings' growth expectations. Moreover, investors with an existing portfolio of Core and Core Plus infrastructure assets may increasingly seek to complement their portfolios with more targeted risk/return propositions. In this regard, we also expect an expansion of thematic and sector specific strategies, such as with funds focusing specifically on renewables or digital infrastructure.

We also expect increased focus on strategies focusing on ESG, as policymakers take action to steer capital towards sustainability objectives, and ESG increasingly becomes a key strategic driver of the investment management industry. The EU Sustainable Finance Disclosure Regulation (SFDR) provides a classification tool to establish the degree to which an investment may be considered sustainable.[10] It provides guidance on the integration of sustainability risks in the investment decision process and related disclosures (Article 6). EU regulation initially focuses on environmental aspects, but may expand to social and governance factors over time. We expect the SFDR to lead to an acceleration of infrastructure strategies that promote sustainable investment objectives (Article 8) or with impact investment as an objective (Article 9).[11]

[9] Preqin database, as at May 2021.

[10] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, 18 June 2020.

[11] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, 18 June 2020.

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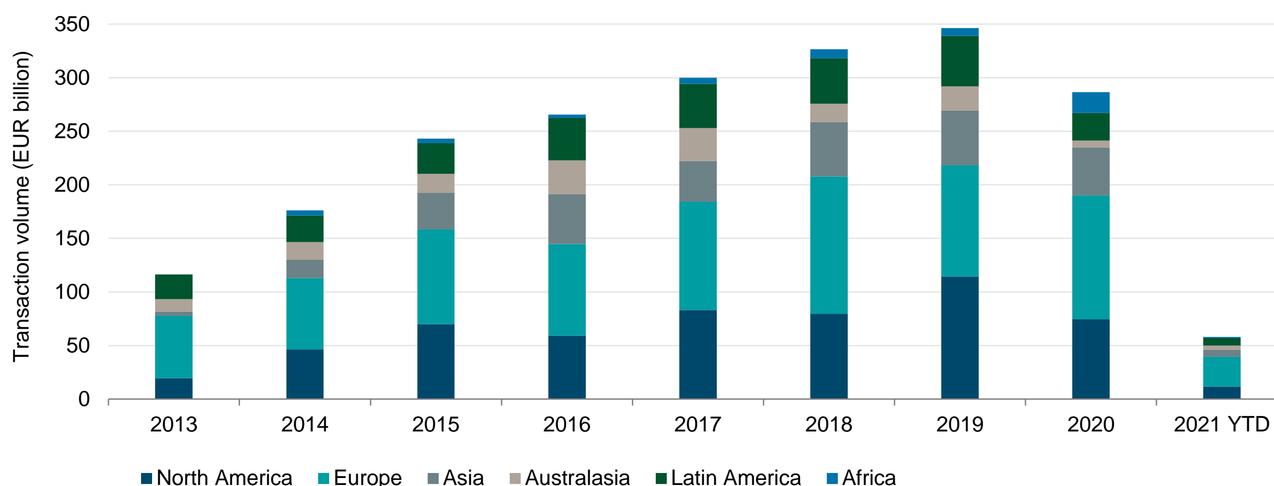
We observe a stronger focus of private infrastructure investors on assessing the financial materiality of ESG risks as part of their strategy, and in increasingly setting investment criteria linked to double materiality and real world ESG outcomes.

2.2 Transaction Activity

In 2020, the global private infrastructure equity deal volume stood at EUR 287 billion, declining by 17% compared to 2019.[12] Transaction volumes were at a near-standstill in the first half of 2020 due to Covid-19, while we observed an acceleration in the second half of the year. In 2020, data indicates that the decrease in deal volume was mainly concentrated in North America, a market historically more skewed to the energy sector, while the European deal volume grew to EUR 115 billion, compared with EUR 104 billion in 2019. However, we note that within Europe, given the macroeconomic uncertainty caused by Covid-19, investors focused mainly on markets such as Germany, France, the United Kingdom and Italy, supported by comparatively stronger institutional and regulatory frameworks for infrastructure.

In the first half of 2021, renewed lockdown measures caused by a second pandemic wave translated into a new slowdown in transaction activity for private infrastructure equity, with a transaction volume of EUR 58 billion reaching financial close as at May 2021.[13] European deals accounted for over half of the transaction volume, followed by North America and Asia with EUR 12 billion and EUR 7 billion respectively. Digital infrastructure and renewables represent the most active segments of the market. As Covid-19 related uncertainty gradually fades over the course of 2021, we anticipate an acceleration of transaction activity, but expect that in 2021 the total transaction volume may be below the level reached in 2019.

PRIVATE INFRASTRUCTURE EQUITY DEALS BY REGION (GLOBAL, EUR BILLION)



Source: DWS, InfraNews, as at May 2021. For illustrative purpose only. Figures include all greenfield and brownfield projects in the database that have been listed with the status “Financial Close”. Past performance is not a guide for future results.

2.3 Valuation Trends

In the first half of 2020, we observed a decrease in average entry valuations for private infrastructure transactions in Europe, due to the market disruption caused by Covid-19. In the second half of 2020, the decrease in government bond yields led to a rebound of entry valuations for Core infrastructure transactions, while persistent macroeconomic uncertainty continued

[12] Based on InfraNews, as at May 2021. For illustrative purpose only. Figures include all greenfield and brownfield projects in the database that have been listed with the status “Financial Close”. Past performance is not a guide for future results.

[13] Based on InfraNews, as at May 2021. For illustrative purpose only. Figures include all greenfield and brownfield projects in the database that have been listed with the status “Financial Close”. Past performance is not a guide for future results.

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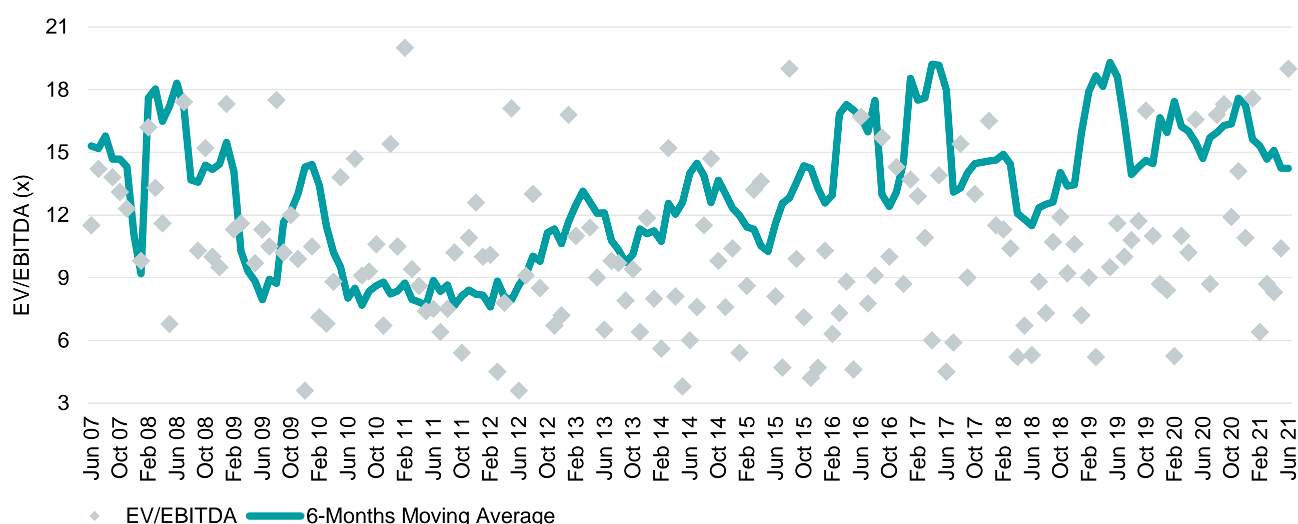
to weigh on valuations in the Core Plus space, where we observed that entry prices remained below 2019 levels. In the first half of 2021, the initial rebound in government bond yields appears to have driven a slight downward adjustment in entry valuations for private infrastructure assets, and particularly for Core assets, despite higher short-term inflation expectations contributing to support earnings expectations.

In the second half of 2021, as Covid-19 related macroeconomic uncertainty may gradually fade, we expect improved earnings visibility to prove supportive for valuations in the Core Plus space, and for assets with GDP-linked revenues impacted by the pandemic, such as passenger transportation. In the medium term, we expect entry valuations for private infrastructure equity, and particularly Core infrastructure focusing predominantly on yield, to remain partially exposed to potential increases in government bond yields. We expect a continued, gradual reduction in cost of equity to contribute to offset the potential effect of higher government bond yields on discount rates, particularly for newer infrastructure sectors, such as digital infrastructure. We also expect that assets with earnings' growth linked to inflation, or supported by solid megatrends may be better positioned to withstand the potential effect of bond yield increases on discount rates.[14]

EV/EBITDA MULTIPLES FOR UNLISTED INFRASTRUCTURE TRANSACTIONS IN EUROPE (2007-2021 YTD)



Source: DWS proprietary database of European unlisted infrastructure deals, based on publicly available transaction information from various sources, including Infrastructure Journal, InfraNews, as at May 2021. For illustrative purpose only. Past performance is not a guide for future results.

2.4 Index Performance Update

Global private infrastructure demonstrated a resilient historical performance over the past decade, delivering total returns in the range of 12.9% to 13.5%.[15] In 2020, the EDHEC Infra300 Equity Index indicates a total return decline of -3.4% due to Covid-19. Despite the pandemic, according to the EDHEC Infra300 Equity Index, income return continued to prove generally supportive, at 6.9%, while capital return was negative at -10.3%, with valuations in sectors impacted by the pandemic, such as passenger transportation contracting, but expected to progressively rebound as more visibility on the passenger demand recovery emerges, supporting earnings growth.[16]

[14] Based on DWS proprietary database of European unlisted infrastructure deals, based on publicly available transaction information from various sources, including Infrastructure Journal, InfraNews, as at June 2021. Past performance is not a reliable indicator of future returns.

[15] Based on a number of sources, including MSCI (10Y annualised return of 12.9% as at December 2020), EDHECinfra (Scientific Infra) (10Y annualised return of 13.5% as at March 2021). Past performance is not a reliable indicator of future returns.

[16] Based on Bloomberg, EDHEC (Scientific Infra), as at December 2020. The Infra300 Index used in the present document are the intellectual property (including registered trademarks) of Scientific Infra and/or its licensors, which is used under license within the framework of the Scientific Infra activity. Scientific Infra is not responsible for the moral or material consequences of their use. Past performance is not a reliable indicator of future returns.

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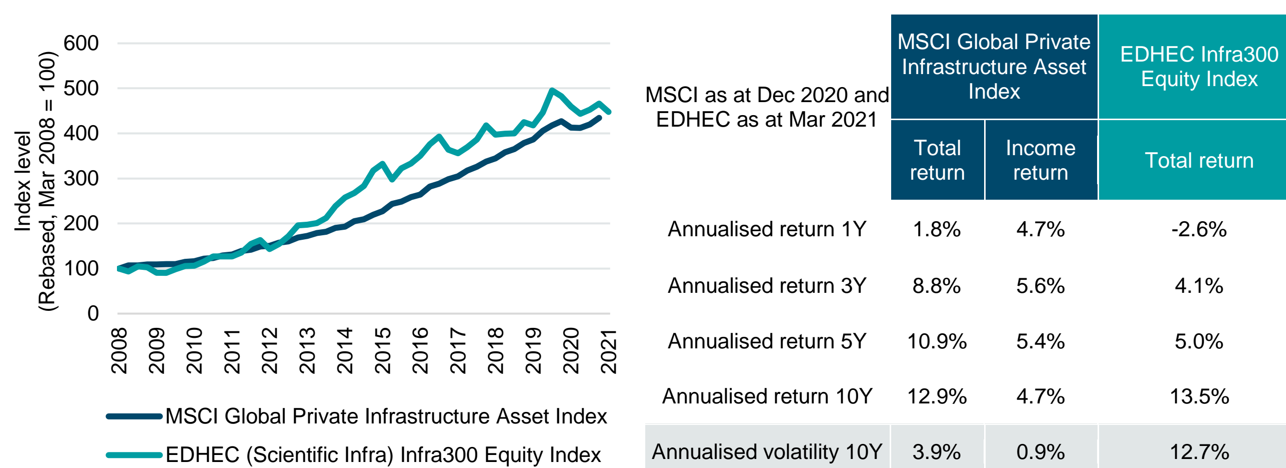
Over the same period, the MSCI Global Private Infrastructure Asset Index indicated an increase of 1.8% in total returns, with income return at 4.7% and capital return at -2.8% respectively. The MSCI Global Private Infrastructure Asset Index is a valuation-based index tracking the performance of infrastructure assets using audited fair value appraisals. The EDHEC Infra300 Equity Index adjusts valuations by incorporating quarterly market data such as transaction prices to calculate returns. Therefore, the EDHEC index may be more reflective of short-term market conditions and return volatility compared with the MSCI Global Private Infrastructure Asset Index.

EDHEC Equity sector indices suggest that in 2020, social infrastructure and power generation assets posted the strongest total return performance, with gains of 2.3% and 0.4% respectively. Over the same period, global transportation saw a contraction in total returns of -14.4%, but continued to post a positive income return at 1.8%, despite the pandemic.[17] As at March 2021, the EDHEC Infra300 Equity Index indicated a decline in total returns of -2.6% year-on-year, due to a combination of factors, including Covid-19 weighing on income across sectors impacted by the pandemic, and the widening in government bond yields capping valuations, particularly for long duration, regulated, core infrastructure assets.

PRIVATE INFRASTRUCTURE TOTAL RETURN INDICES (Global)



MSCI as at Dec 2020 and EDHEC as at Mar 2021	MSCI Global Private Infrastructure Asset Index		EDHEC Infra300 Equity Index
	Total return	Income return	Total return
Annualised return 1Y	1.8%	4.7%	-2.6%
Annualised return 3Y	8.8%	5.6%	4.1%
Annualised return 5Y	10.9%	5.4%	5.0%
Annualised return 10Y	12.9%	4.7%	13.5%
Annualised volatility 10Y	3.9%	0.9%	12.7%

Source: DWS, MSCI, as at December 2020, EDHECinfra (Scientific Infra), as at March 2021. The EDHEC Infra300 Index used in the present document are the intellectual property (including registered trademarks) of Scientific Infra and/or its licensors, which is used under license within the framework of the Scientific Infra activity. Scientific Infra is not responsible for the moral or material consequences of their use. Past performance is not indicative of future returns. It is not possible to invest directly in an index.

[17] Based on value-weighted EDHECinfra indices in local currency as at December 2020.

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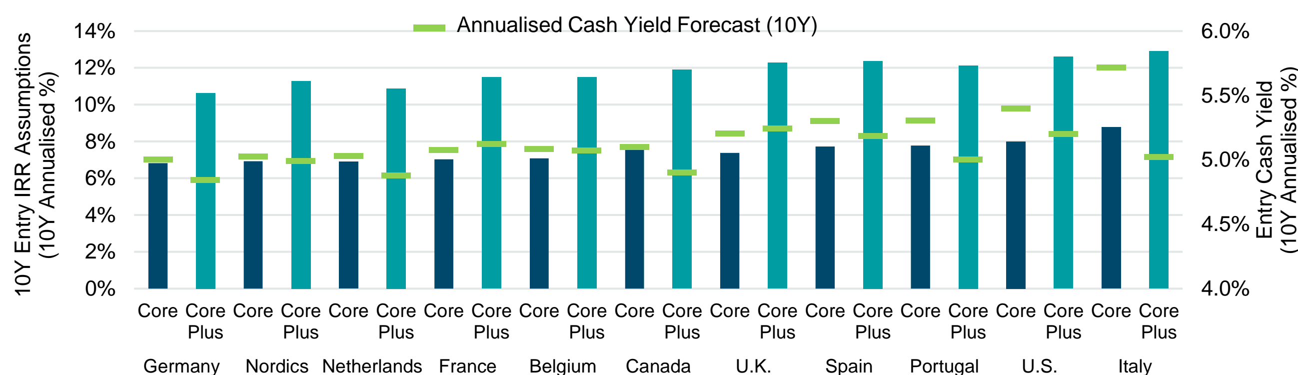
3 / Investment Outlook

3.1 Performance by Strategy

As at June 2021,[18] we forecast levered ten-year entry returns for Core assets to be in the range of 6.8% to 8.8% in mature European markets, and 7.6% to 8% (IRR) in North America, proving broadly stable compared with January 2021.[19] In an uncertain economic environment Core assets supported by regulated returns and potential for inflation hedging appear as an essential building block of long-term investors' portfolios. However, with Core infrastructure strategies focusing mainly on income return and providing limited earnings' growth potential, exit valuations may remain exposed to the risk of rising government bond yields in the long term, thereby capping return expectations.

For Core Plus strategies, our June 2021 forecast indicates ten-year entry returns in the range of 10.6% to 12.9% in Europe, and 11.9% to 12.6% in North America. Entry returns remained broadly stable compared with our January 2021 forecast, with stronger than anticipated economic recovery supporting valuations and earnings' growth expectations, and largely offsetting the effect of higher government bond yields on discount rates and exit valuations assumptions.[20]

ENTRY IRR RETURN ASSUMPTIONS BY STRATEGY AND COUNTRY
(%, 2021F, ESTIMATE, LEVERED, 10Y, AVERAGE, LCL UNHEDGED)



Source: DWS proprietary methodology, as at June 2021. Notes: F = Forecast, LCL = Local currency. There is no guarantee the forecast shown will materialise. Past performance is not a guide for future returns. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

As at June 2021, private infrastructure continues to provide comparatively attractive risk-adjusted entry returns, from a long-term historical perspective. However, we acknowledge that entry return expectations for private infrastructure have progressively reduced over the last decade, largely in line with other asset classes, due to overall reduction in the yield environment.[21] At the same time, private infrastructure is a diverse asset class, and over the last ten years, it has expanded, to cover a broader range of sectors and strategies, a trend that we anticipate to continue. This provides in our view increased

[18] Evaluating the outlook for private infrastructure performance requires consideration of the complex interaction of several factors varying by sector, contract structure and strategy, such as entry and exit valuations, dividends, leverage and discount rates. Due to various risks, uncertainties and assumptions made in our analysis, actual events or results or the actual performance of the markets covered may differ materially from those described.

[19] DWS, based on DWS proprietary methodology, as at June 2021. There is no guarantee the forecast shown will materialise. Past performance is not a guide for future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

[20] DWS, based on DWS proprietary methodology, as at June 2021. There is no guarantee the forecast shown will materialise. Past performance is not a guide for future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

[21] DWS, "Long View – The green decade", 25 February 2021.

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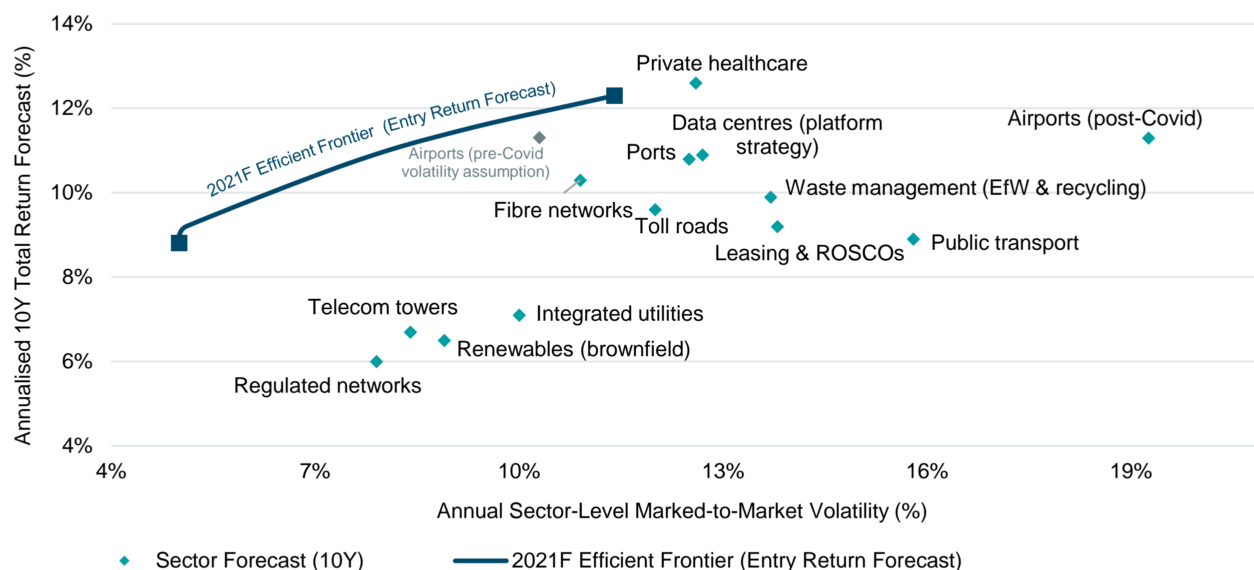
potential for portfolio diversification benefits, and for more targeted strategic asset allocation, supporting risk/adjusted returns in the long term.

3.2 Performance by Sector

As at June 2021, we forecast levered ten-year entry IRRs for European Core infrastructure sectors such as regulated networks, telecommunication towers, brownfield renewables and utilities to be in the range of 6.8% to 8.8% (IRR). In particular, compared with our January 2021 forecast, we have seen a compression in entry return assumptions for brownfield renewables, mainly driven by an increase in dry powder chasing transaction opportunities in this space. We observe that a growing number of long term investors seek to compensate for lower entry returns for brownfield renewables by increasingly complementing their brownfield portfolios with greenfield infrastructure projects. We also observe a progressively deeper Purchasing Power Agreement (PPA) market providing increased cash flow visibility in Europe. In this regard, we note that the recent increase in CO_2 emission prices and baseload power prices has contributed to supporting an increase in 10-year power purchase agreements (PPAs) for renewables across Europe, with average prices reaching EUR 46/MWh in May 2021, from EUR 38/MWh in December 2020,[22] a factor anticipated to support returns.

PRIVATE INFRASTRUCTURE ENTRY TOTAL RETURN FORECAST*, VOLATILITY AND EFFICIENT FRONTIER
(%, EUROPE, 2021F, ESTIMATE, LEVERED, 10Y, AVERAGE)



Notes: *Total return forecast calculations differ from entry IRR calculations. The average ten-year European entry IRR assumptions as at June 2021 are: Airports (12.8%), Toll roads (11%), Ports (12.2%), Public transport (10.2%), Leasing and ROSCOs (10.4%), Networks (6.9%), Utilities (8.1%), Renewables brownfield (7%), Waste management (EfW & recycling) (11.4%), Data centres (12.3%), Fibre networks (11.3%), Telecom towers (7.3%), Private healthcare (14.4%). Source: DWS proprietary methodology, as at June 2021. Notes: F = Forecast. There is no guarantee the forecast shown will materialise. Past performance is not a guide for future returns. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. The 2021F Efficient Frontier represents a forecasted set of optimal portfolios using mean-variance optimisation and based on investment combinations of private infrastructure sectors and their 2021 total return forecasts. This information is intended for informational purposes only and does not constitute investment advice, recommendation, an offer or solicitation.

As at June 2021, our forecast indicates levered ten-year entry IRRs for transportation assets in the range of 10.6% to 12.9% (IRR). On average, entry valuations for transportation assets still appear below pre-Covid levels underpinning entry return assumptions. However, with the economic recovery accelerating, we anticipate that valuations may begin to recover in the second half of 2021, thereby capping entry return assumptions.

[22] Pexa Euro Composite, as at 25 May 2021.

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We acknowledge that the effects of Covid-19 and lockdowns led to a spike in return volatility in 2020 across certain sectors, such as passenger transportation, a factor that we anticipate to continue in 2021 and 2022, due to the comparatively faster earnings' rebound anticipated following the downturn. For this reason, in the passenger transportation sector, and particularly for airports, we now observe higher return volatility compared to historical levels before the pandemic. In the medium term, as earnings' growth rates in the sector normalise, we anticipate a gradual convergence of return volatility to pre-Covid levels. In the Digital infrastructure sector, we expect ten-year entry IRR assumptions to be on average at 7% (IRR) for telecom towers while for fibre networks we expect returns to be at ca. 11% (IRR). For data centres, we expect average ten-year returns to be at 12% (IRR) for platform strategies combining an existing base of operational assets with a greenfield and M&A component, supported by needs for increased data centre capacity.[23]

The digital infrastructure sector remains supported by solid capex requirements and earnings' growth expectations underpinning returns, despite the recent trend of rising valuations, on the back of increased popularity for digital infrastructure following Covid-19. While we continue to anticipate strong growth in the pipeline of digital infrastructure projects, underpinned by material investment needs and supportive earnings' growth assumptions, we also acknowledge that entry prices appear to have increased compared with our January 2021 assumptions, driven by growing popularity for the sector. Investors may increasingly factor higher entry prices for digital infrastructure in their long term entry return expectations.

[23] DWS proprietary methodology, as at June 2021. There is no guarantee the forecast shown will materialise. Past performance is not a guide for future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

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Research & Strategy—Alternatives

OFFICE LOCATIONS:

Chicago
222 South Riverside Plaza
34th Floor
Chicago
IL 60606-1901
United States
Tel: +1 312 537 7000

Frankfurt
Mainzer Landstrasse 11-17
60329 Frankfurt am Main
Germany
Tel: +49 69 71909 0

London
Winchester House
1 Great Winchester Street
London EC2N 2DB
United Kingdom
Tel: +44 20 754 58000

New York
875 Third Avenue
26th Floor
New York
NY 10022-6225
United States
Tel: +1 212 454 3414

San Francisco
101 California Street
24th Floor
San Francisco
CA 94111
United States
Tel: +1 415 781 3300

Singapore
One Raffles Quay
South Tower
20th Floor
Singapore 048583
Tel: +65 6538 7011

Tokyo
Sanno Park Tower
2-11-1 Nagata-cho
Chiyoda-Ku
18th Floor
Tokyo
Japan
Tel: +81 3 5156 6000

TEAM:

Global

Kevin White, CFA
Co-Head of Real Estate Research & Strategy

Simon Wallace
Co-Head of Real Estate Research & Strategy

Gianluca Minella
Head of Infrastructure Research

Americas

Brooks Wells
Head of Research, Americas

Liliana Diaconu, CFA
Office Research

Ross Adams
Industrial Research

Ryan DeFeo
Property Market Research

Ana Leon
Retail Research

Joseph Pecora, CFA
Apartment Research

Europe

Tom Francis
Property Market Research

Siena Golan
Property Market Research

Rosie Hunt
Property Market Research

Martin Lippmann
Property Market Research

Aizhan Meldebek
Infrastructure Research

Asia Pacific

Koichiro Obu
Head of Research & Strategy, Asia Pacific

Natasha Lee
Property Market Research

Seng-Hong Teng
Property Market Research

Hyunwoo Kim
Property Market Research

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The authors

Gianluca Minella
Head of Infrastructure Research

Aizhan Meldebek
Infrastructure Research

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