



July 2020 / Research Report

EUROPEAN INFRASTRUCTURE STRATEGIC OUTLOOK H2 2020

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1 / Executive Summary¹

- In January 2020, we expected that the economy would decelerate over the course of 2020, but believed that only a material shock could derail European growth prospects. That shock happened in the first quarter of 2020. Covid-19 is pushing the global economy into a recession in 2020, with a simultaneous demand and supply shock concentrated in the first half of 2020. By the end of the second quarter, we have already witnessed a gradual improvement in economic activity as lockdown measures are gradually lifted across Europe. Nevertheless, the timing of the recovery is uncertain as the full impact of the downturn on consumers and firms may take a while to emerge. We also saw a number of fiscal and monetary measures in support of the economy, which may have two additional consequences: higher leverage and interest rates lower for longer.²
- Some infrastructure sectors, particularly regulated networks, are proving resilient in the current economic environment, in our view. Other sectors, namely passenger transportation and North American energy, are experiencing substantial cyclical volatility. The movement of goods has remained relatively resilient so far, supporting ports and rail freight. Power demand and power prices have seen a substantial reduction across European markets, but utilities remain mostly shielded by hedging.³ Digital infrastructure is demonstrating its essential nature in current market conditions, in our view. We expect sectors impacted by the pandemic to start recovering in the second half of 2020, but at different paces. We expect dividend reductions for 2020, but dividend growth should gradually resume from 2021 onwards. We continue to observe supportive liquidity and financing conditions for high quality infrastructure assets, as lenders assume a gradual convergence of earnings to original business plans over the medium term.⁴
- Fundraising has now largely resumed, after an initial slowdown in the first quarter of 2020.⁵ Investors may perceive that the 2020 fund vintage may represent an interesting entry point to the asset class, as entry return expectations may be more favourable than in previous vintages. Nevertheless, we are witnessing a partial shift in allocations from value added, to core⁶ and core plus⁷ strategies.⁸ Investors may appreciate higher entry dividend yields of core and core plus strategies, but, in the current macroeconomic environment, they seem more cautious about the prospects for capital appreciation, typically associated with value added strategies. With the North American energy infrastructure market substantially impacted by the Covid-19 pandemic, allocations to European infrastructure may accelerate in 2020, as Europe also offers more opportunities for portfolio diversification by sector and country.
- We note that private infrastructure transaction activity is now resuming, but it may take several quarters before it reaches pre-Covid-19 volumes.⁹ We believe that private infrastructure is proving more resilient than other asset classes, but we are witnessing an adjustment in average entry valuations.¹⁰ We anticipate that, as clearer prospects for economic recovery emerge, valuations may gradually rebound, driven by interest rates expected to remain lower for longer. For 2020, we now forecast levered entry returns for core assets in mature European markets to be in the range of 7% to 9.8% (IRR¹¹). For core plus, levered entry return assumptions are in the range of 9.9% to 13.4% (IRR).¹² This is on average about 65 bps. wider than our expectations in January 2020.
- In our assumptions, long-term business fundamentals should remain largely supportive across different infrastructure sectors. Nevertheless, Covid-19 may represent a pivotal moment, as investors may decide to tilt their strategies to mitigate emerging risks and capitalise on new opportunities. The pandemic is acting as a catalyst for some megatrends, particularly digitalisation and energy transition. We expect more capital to flow into these sectors as a result.

¹ Any forecasts provided herein are based on DWS's opinion at time of publication and are subject to change.

² Based on Oxford Economics, as at May 2020.

³ Based on Moody's, "EMEA unregulated electric & gas utilities sector outlook turns stable on coronavirus impact", as at April 2020.

⁴ Based on a number of sources, including Bloomberg, InfraNews, Moody's Investor Service, as at May 2020.

⁵ Based on Preqin database, as at May 2020.

⁶ 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.

⁷ 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.

⁸ Based on Preqin database, as at May 2020.

⁹ Based on Infrastructure Journal database, as at May 2020.

¹⁰ DWS proprietary database of European private infrastructure deals, based on publicly available information from Infrastructure Journal, InfraNews, as at May 2020.

¹¹ IRR=Internal Rate of Return.

¹² Based on DWS proprietary methodology, as at May 2020. There is no guarantee the forecast shown will materialise.

2 / Strategic Themes¹³

Strategic Themes for Unlisted Infrastructure Investment and Portfolio Management

Strategic Themes ¹⁴	1	Long-term Industry Trends: Target sectors that may be favourably positioned to capitalise on long-term industry trends. Some trends, including digitalisation and energy transition, may be accelerated by Covid-19. Other trends, such as the expansion of global aviation, or renewables continuing to achieve grid parity, may be delayed by Covid-19, but are expected to remain viable long-term investment assumptions. ¹⁵
	2	Yield and Platforms: Target brownfield assets offering a platform for growth. Operational assets with solid infrastructure characteristics may support yield through regulated or contracted profiles. Platforms may help support growth and capital appreciation to optimise valuations at exit.
	3	Mature Markets: Focus on European markets with a comparatively predictable investment environment and a transparent legal and regulatory framework, including Germany, the United Kingdom, the Netherlands, Belgium, the Nordics, France, Italy, Spain and Portugal. ¹⁶
Risk Awareness	1	Covid-19: Assess the impact of the pandemic on business plans. The direct impact of Covid-19 may be fading, but the economic impact is yet to fully materialise. In an uncertain economic environment, business plan assumptions may not materialise as quickly as expected. A prudent approach on growth assumptions may be beneficial.
	2	Interest Rates: Assess the impact of potential interest rate movements on asset valuation and cost of debt. Central banks have reacted to Covid-19 with unprecedented monetary stimulus. Interest rates have reduced further, and are expected to remain lower for longer. Nevertheless, in case of a faster than expected economic recovery, inflation may surprise policymakers on the upside and trigger interest rate increases sooner than currently anticipated.
	3	Sustainability: The Covid-19 pandemic may accelerate policymakers' sustainable infrastructure targets, such as renewables, to support economic recovery. Acquiring and managing assets that comply with rigorous ESG ¹⁷ criteria and responsible investment guidelines may offer a wider pipeline of investment opportunities, and potential for long-term value creation. ¹⁸
Portfolio Optimisation ¹⁹	1	Diversification: Aim for portfolio diversification across European countries, sectors, and contract structures. An adequate exposure to regulated infrastructure may be key to balance systemic risk in a portfolio. Exposure to contracted assets may provide additional flexibility to adjust cash flows in a changing economic environment if necessary. ²⁰
	2	Middle Market: The middle market may offer opportunities to acquire assets in a less competitive space than the large-cap market, where dry powder remains high. ²¹ Opportunities requiring structuring may enable value creation through operational, strategic and financial expertise.
	3	Greenfield: Greenfield opportunities may remain a valuable strategy in mature markets. Such opportunities may offer potential to generate alpha and complement a portfolio with higher returns, while incremental risks may be largely mitigated.

¹³ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

¹⁴ No assurance can be given that investment objectives will be achieved.

¹⁵ DWS proprietary methodology for ranking unlisted infrastructure sectors, as at May 2020.

¹⁶ DWS proprietary methodology for ranking unlisted infrastructure markets, as at November 2019.

¹⁷ ESG = Environmental, Social, and Governance (ESG) refers to the three key factors in measuring the sustainability and societal impact of an investment.

¹⁸ DWS proprietary methodology for ranking unlisted infrastructure sectors, as at May 2020.

¹⁹ No assurance can be given that investment objectives will be achieved.

²⁰ Based on DWS, "Private Infrastructure and the Macro Environment", as at September 2019.

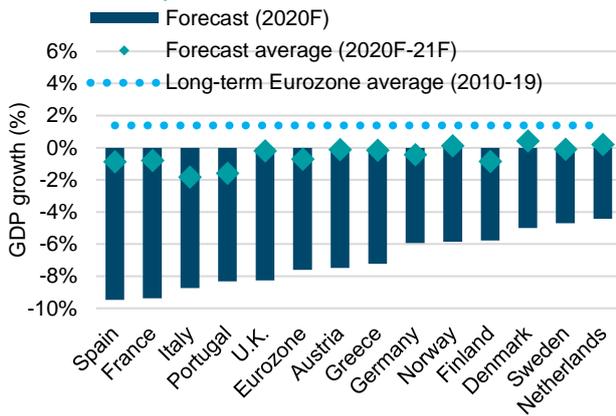
²¹ Based on InfraNews database transactions, as at June 2019.

3 / Macroeconomic Outlook²²

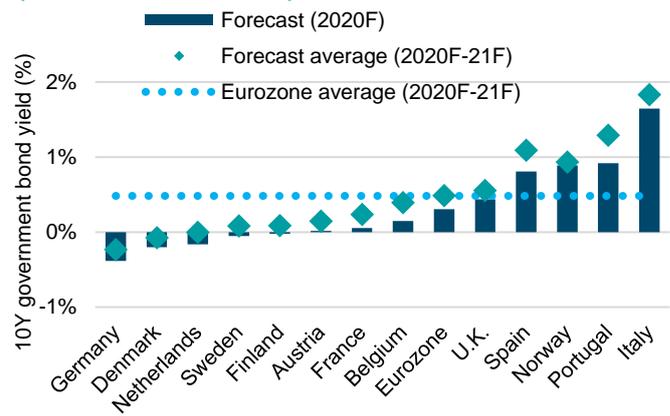
Global Growth: The simultaneous demand and supply shock caused by Covid-19 in the first half of the year is pushing the global economy into a recession in 2020. Mobility and energy demand levels dropped to unprecedented lows due to the sudden stop of economic activity, while trade proved more resilient so far. The global economy may contract by 5% in 2020. However, forecasts remain uncertain, as the full impact on consumers and firms may take a while to emerge.²³

In Europe and in the U.S., we saw an unprecedented fiscal and monetary stimulus in support of the economy. This should contribute to partially relieve pressure on domestic demand and provide firms with liquidity. We expect a substantial recovery of GDP in 2021. Nevertheless, due to the staggered profile of the Covid-19 pandemic across global regions, the timing of the economic recovery remains uncertain.²⁴

REAL GDP GROWTH (%, 2010-2021F)



SOVEREIGN BOND YIELDS (10Y, %, 2020F-2021F)



Source: Oxford Economics, as at 15 May 2020. Notes: F = forecast, E = expected. Past performance is not a guide for 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.

China started to recover in the second quarter of 2020, and we expect GDP to grow by 1.3% this year. By the end of May, most European countries started to lift lockdown restrictions, and we are now observing an improvement in economic conditions. In the U.S., we expect activity to gradually resume from June. Nevertheless, the U.S. economy is still expected to shrink by 7% this year, and risks remain skewed to the downside.²⁵ The peak of infections may not have been reached yet across emerging markets, and we expect them to be hit substantially, in particular those exposed to commodity prices.

European Growth: We expect Eurozone GDP growth to shrink by 7.6% in 2020. The economy already contracted in the first quarter of 2020, but with the peak of the pandemic reached in April, and most Eurozone economies in lockdown until end-May, the biggest economic impact could be in the second quarter of 2020. We expect a gradual recovery in the second half of 2020 and a rebound of around 6% in 2021. The U.K. economy is expected to shrink by 8.3% this year, more than the Eurozone average, but growth should resume with 7.8% rebound next year, provided that the Brexit process is orderly.²⁶

²² Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

²³ Based on Oxford Economics, as at May 2020. There is no guarantee the forecast shown will materialise.

²⁴ Based on Oxford Economics, as at May 2020. There is no guarantee the forecast shown will materialise.

²⁵ Based on Oxford Economics, as at May 2020. There is no guarantee the forecast shown will materialise.

²⁶ Based on Oxford Economics, as at May 2020. There is no guarantee the forecast shown will materialise.

The ECB²⁷ announced a number of monetary measures in response to Covid-19, including a total rescue plan at around EUR 1.35 trillion.²⁸ The EU and individual governments provided additional support in excess of 10% of the Eurozone's GDP. In the U.K., the BoE²⁹ cut the policy rate to 0.1% in March and widened its QE³⁰ programme, while the government provided additional support to firms and consumer demand.³¹ The outlook for inflation remains weak, while interest rates are now expected to remain low for longer. Nevertheless, rising leverage levels may have an impact on credit spreads.³²

Risks: In Europe, no evidence suggests yet that the lifting of lockdowns may lead to a material rise of infection levels. Nevertheless, new lockdown measures may jeopardise the pace of economic recovery. A no-deal Brexit by the end of 2020 may result in a slower economic recovery in the U.K. than currently anticipated.

²⁷ ECB = European Central Bank.

²⁸ European Central Bank, Monetary policy decisions, as at 4 June 2020.

²⁹ BoE = Bank of England.

³⁰ QE = Quantitative Easing.

³¹ Bank of England, Monetary Policy Summary for the special Monetary Policy Committee meeting, as at 19 March 2020.

³² Based on Oxford Economics, as at May 2020. There is no guarantee the forecast shown will materialise.

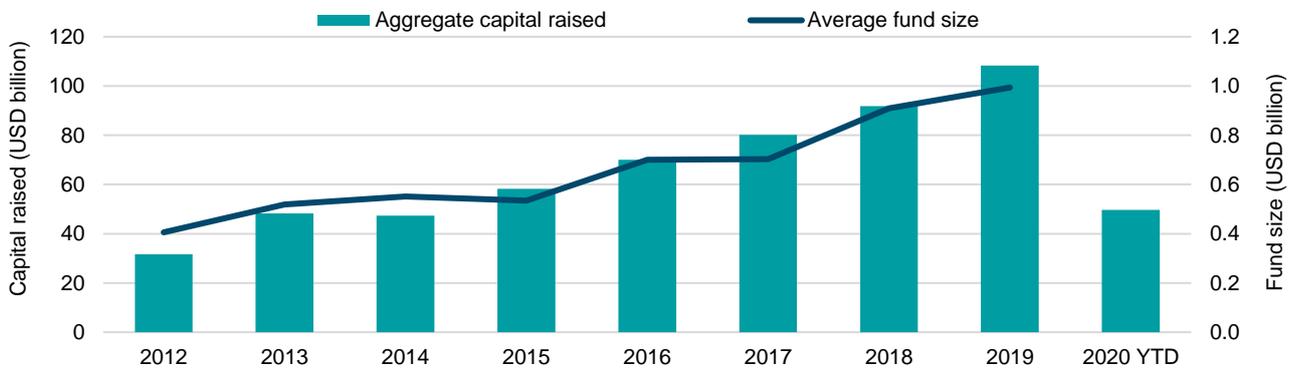
4 / Infrastructure Market Outlook³³

4.1 Fundraising Update³⁴

Fundraising proved relatively resilient so far in 2020. Investors continue to see private infrastructure as an asset class that has historically offered diversification benefits, long-term cash flow visibility matching long duration needs, and a yield premium over government bonds. Nevertheless, with substantial volatility observed in the North American energy market this year, we expect a gradual shift in investors’ appetite from North America to Europe. We are also witnessing a shift from value added infrastructure, a market segment that had accelerated over 2018 and 2019, back to core/core plus strategies that are perceived as more defensive in the current economic environment.³⁵

As at May 2020, the infrastructure market raised over USD 49 billion, which was collectively secured by twenty-nine funds around the world. Established fund managers attracted a considerable proportion of investor commitments. Eleven North America focused funds secured USD 35 billion, fifteen Europe focused funds secured USD 11 billion, and three funds focusing on other, global regions secured USD 3 billion.³⁶ Despite the Covid-19 outbreak, 2020 private infrastructure fundraising may reach a volume close to 2019.

UNLISTED INFRASTRUCTURE FUNDRAISING (Global, USD billion, 2012-2020 YTD)



Source: DWS, Preqin, as at 19 May 2020. For illustrative purpose only. Past performance is not a guide for future results.

4.2 Historical Transactions Overview³⁷

As at May 2020, EUR 34 billion of private infrastructure equity transactions in Europe had closed, somewhat below the 2019 volumes over the same period. Due to the Covid-19 pandemic, we observed a slowdown in transaction activity, particularly in March and April. A number of transactions were put on hold, as investors wait for more clarity around the economic impact of Covid-19 on business plans to emerge.³⁸

From a global perspective, we may observe a slowdown of the North American market, compared with Europe. In North America, the private infrastructure investment market has been historically more skewed towards the energy sector and core

³³ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

³⁴ No assurance can be given that investment objectives will be achieved.

³⁵ Based on Preqin database, as at May 2020.

³⁶ Based on Preqin database, as at May 2020.

³⁷ No assurance can be given that investment objectives will be achieved.

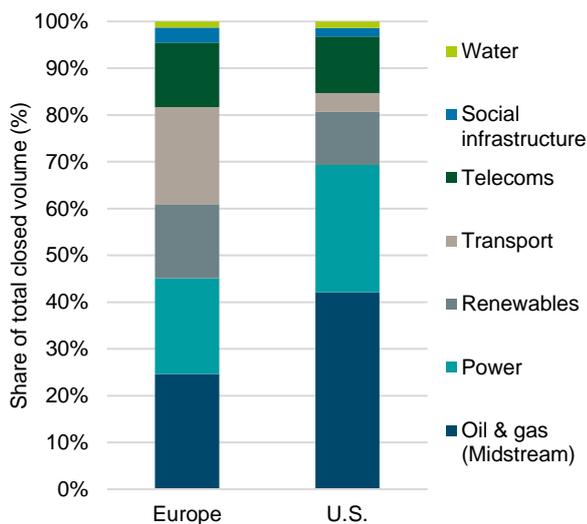
³⁸ Based on InfraNews and Infrastructure Journal databases, as at May 2020.

Past performance is not a reliable indicator of future returns.

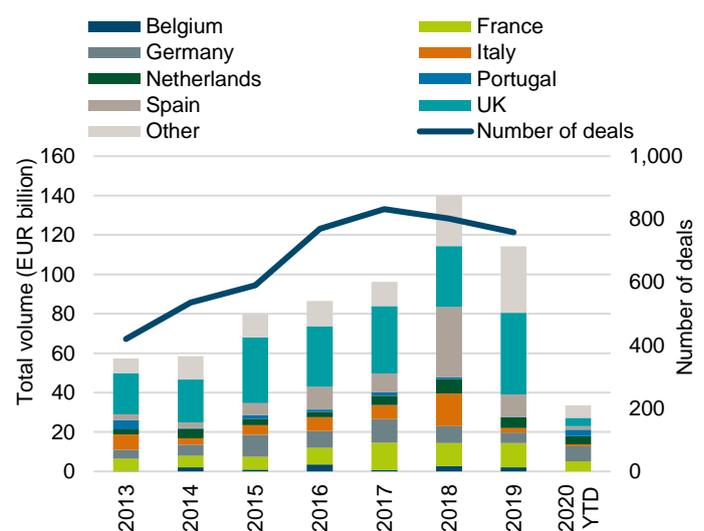
plus/value add strategies, and has therefore been more volatile. This dynamic has been emphasised by the Covid-19 pandemic and the sharp drop in oil prices, putting the North American shale industry under substantial pressure.³⁹ Relative to North America, Europe provides access to a more diversified pipeline of investment opportunities by sector and country. This includes regulated networks with mature regulatory frameworks that may largely shield returns from price and volume risk, and that have proven particularly resilient during the Covid-19 pandemic.⁴⁰

Nevertheless, we observed that transactions activity since the Covid-19 outbreak has been mainly concentrated in core assets and European markets with comparatively lower country risk.⁴¹ Mature European countries have historically offered an established investment environment, a transparent legal and regulatory framework, and a history of private infrastructure ownership.⁴² As a result, as at May 2020, Germany led the market accounting for about 23% of total transaction volume. France accounted for about 15%, while the United Kingdom and the Netherlands accounted for about 12% each.⁴³

PRIVATE INFRASTRUCTURE EQUITY DEALS (Europe, U.S., By Sector, %, 2013-2020 YTD)



PRIVATE INFRASTRUCTURE EQUITY DEALS (Europe, By Country, in EUR billion, 2013-2020 YTD)



Source: DWS, InfraNews, Infrastructure Journal, as at 15 May 2020. For illustrative purpose only. Figures include all greenfield and brownfield European projects in the database that have been listed with the status "Financial Close". Past performance is not a guide for future results.

Transaction activity started to gradually resume in May, and we expect an acceleration in the second half of 2020, particularly in the core and core plus market segments, where dividend predictability may be higher than for value added strategies. Activity for value added infrastructure, typically focusing on capital appreciation, may recover more slowly.

4.3 Valuation Trends⁴⁴

In 2019, we observed an increase in average valuations for private infrastructure transactions compared with 2018. However, as at May 2020, we witnessed a decrease in average valuations due to the Covid-19 pandemic. Transaction multiples (EV/EBITDA) reached a level of ca. 14.5x compared to an average of ca. 16x a year ago.⁴⁵ The reduction in transaction multiples observed to date was relatively limited compared with other asset classes. It was driven by several factors, including higher entry dividend yields, lower earnings expectations and a focus on core assets.

³⁹ Based on Bloomberg, as at April 2020.

⁴⁰ Based on Bloomberg, as at June 2020.

⁴¹ Based on InfraNews database, as at May 2020. Figures include all greenfield and brownfield European projects in the database that have been listed with the status "Financial Close".

⁴² Based on DWS proprietary methodology for ranking unlisted infrastructure markets, as at November 2019.

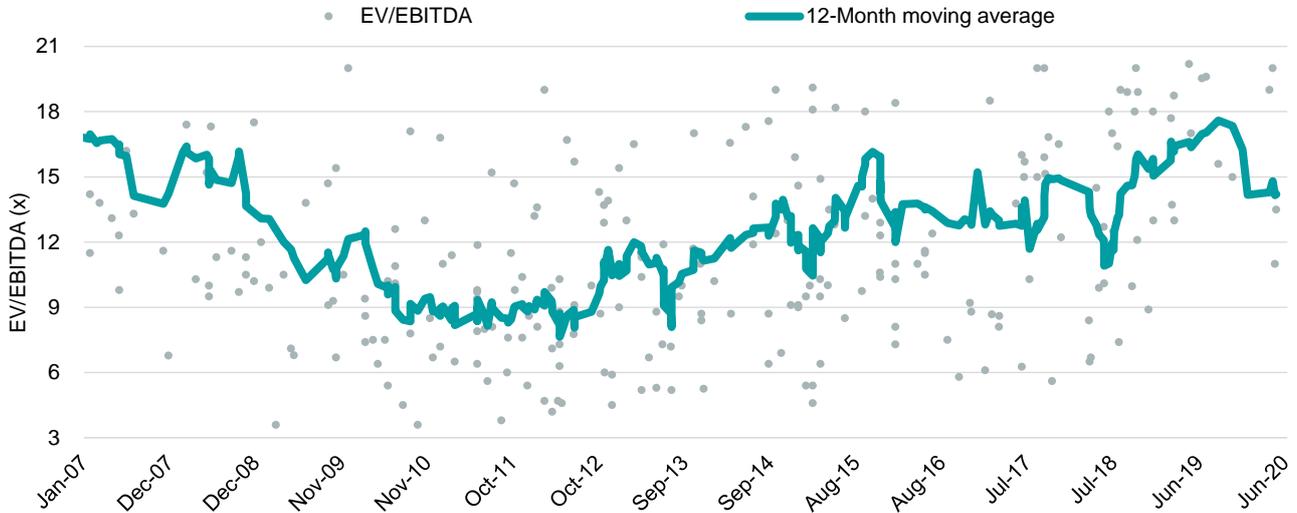
⁴³ Based on InfraNews database, as at May 2020. Figures include all greenfield and brownfield European projects in the database that have been listed with the status "Financial Close".

⁴⁴ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns. 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.

⁴⁵ 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 May 2020. Past performance is not a reliable indicator of future returns.

We do not exclude the possibility of further adjustments throughout 2020, and see a potential floor of average transaction multiples at around 12.5x in our base case. Nevertheless, as more clarity around the economic impact of Covid-19 emerges, we may observe an increase in valuations, driven by expectations of interest rates remaining lower for longer.

EV/EBITDA MULTIPLES FOR UNLISTED INFRASTRUCTURE TRANSACTIONS IN EUROPE (2007 - 2020 YTD)

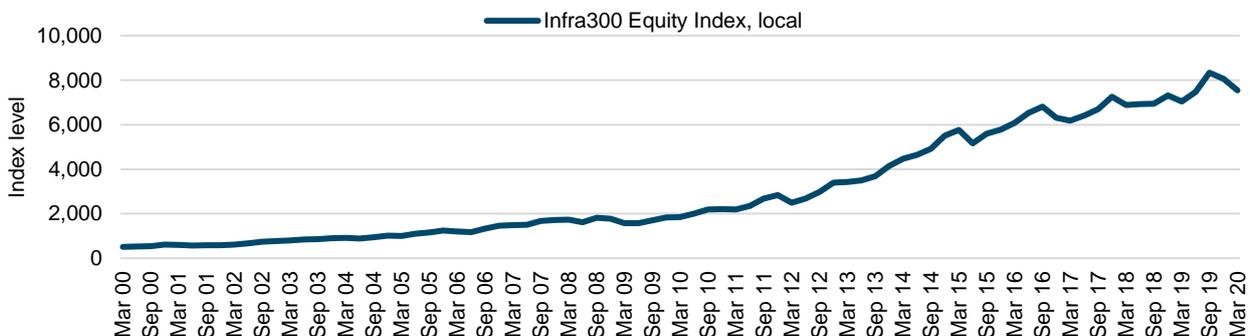


Source: DWS proprietary database of European unlisted infrastructure deals, based on publicly available transaction information from various sources, including Infrastructure Journal, InfraNews, as at 5 May 2020. For illustrative purpose only. Past performance is not a guide for future results.

4.4 Historical Performance Overview⁴⁶

Historical Index Performance: Private infrastructure has demonstrated a resilient historical performance in the long term, at both asset and fund level.⁴⁷ We expect performance for private infrastructure to remain resilient in the long term. Nevertheless, Covid-19 is having a negative impact on earnings expectations across several infrastructure sectors, and we expect index performance to reflect this over the coming quarters.

PRIVATE INFRASTRUCTURE INDEX – EDHEC (SCIENTIFIC INFRA) INFRA300 EQUITY INDEX (Index level, Quarterly, 2000-2020)



Source: Bloomberg, EDHECinfra (Scientific Infra), as at May 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.

⁴⁶ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns. 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.

⁴⁷ Based on a number of sources, including MSCI, EDHECinfra (Scientific Infra), Prequin, as at March 2020. Past performance is not a reliable indicator of future returns.

Data for private infrastructure lag by several quarters and, as a result, the impact of Covid-19 on performance may take some time to crystallise. Nevertheless, the EDHEC (Scientific Infra) Infra300 Equity Index tracking the performance of global private infrastructure has already released its Q1 2020 performance. Data indicate a decline of total returns of 6.4% in the first quarter of 2020.⁴⁸ We may have more clarity around the impact of Covid-19 on total returns in the second half of the year when we expect performance data for the second quarter of 2020 to be released.

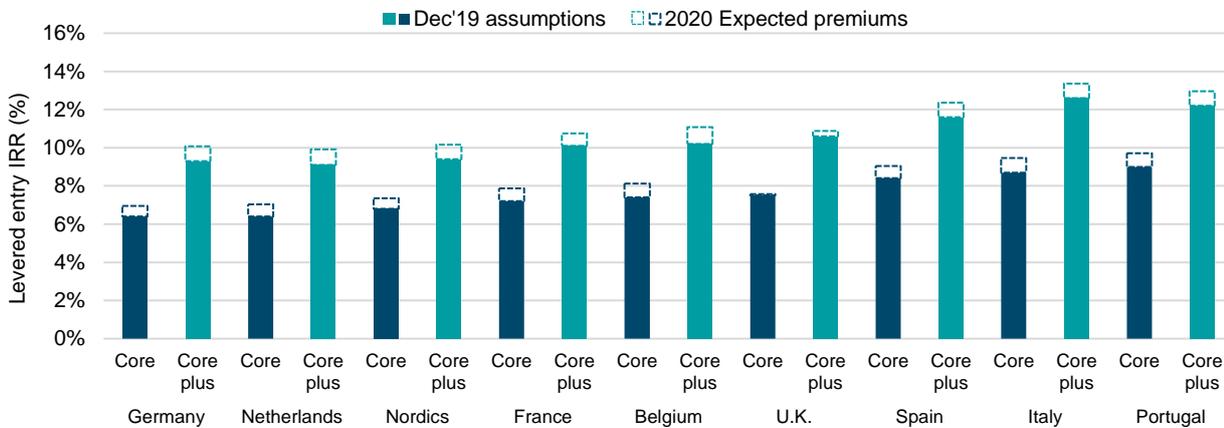
4.5 Performance Outlook⁴⁹

Evaluating the outlook for private infrastructure performance requires considering the complex interaction of several factors. This includes entry valuations, dividend yield growth varying by sector, leverage, interest rates driving cost of debt and discount rates. Moreover, the competitive environment and assumptions around exit valuations play an important role.⁵⁰

For 2020, we expect an average widening of entry IRR assumptions of 65 bps. across mature European countries, driven by lower entry valuations than in our 2019 forecast. This reflects a combination of factors, including higher entry dividend yield expectations driven by underlying market conditions, dividend cuts for 2020 across several infrastructure sectors, lower earnings potential in the short term, and more prudent medium-term business plan assumptions. We expect discount rates to reflect interest rates remaining lower for longer and higher government bond yields driven by rising government debt.⁵¹

ENTRY IRR RETURN ASSUMPTIONS

(%, 2020, Estimate by Strategy and by Country, Levered, Average)



Source: DWS proprietary database, based on DWS proprietary methodology for ranking unlisted infrastructure sectors, as at May 2020. Valuations for 2020 are based on a ten-year dividend discount model and a terminal value at exit. Dividend yields, leverage, growth, exit assumptions and discount rate vary by country and sector. Dividends for core plus in 2020 are assumed to be reduced. 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.

⁴⁸ 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.

⁴⁹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁵⁰ 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.

⁵¹ 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.

Past performance is not a reliable indicator of future returns.

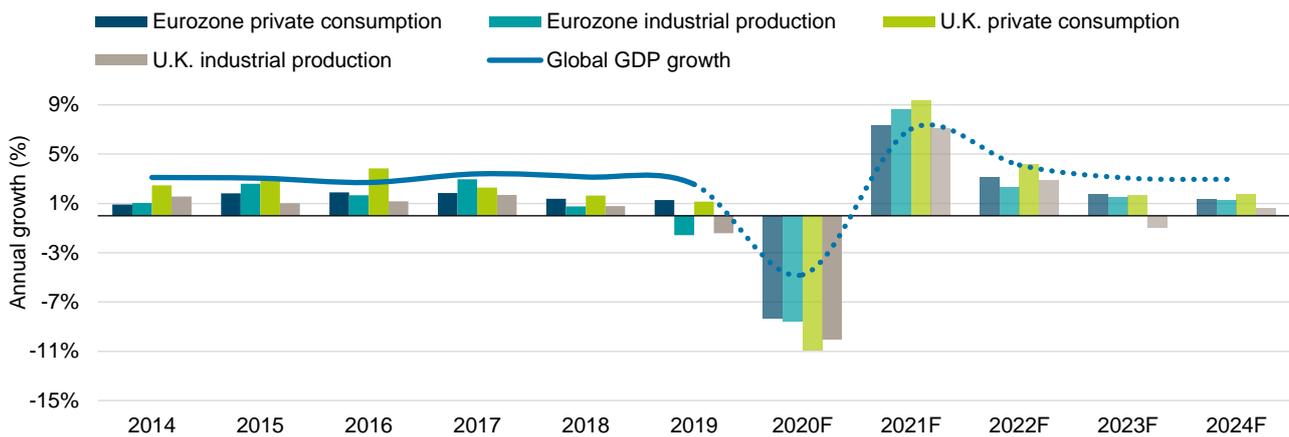
5 / Infrastructure Market Outlook⁵²

5.1 Transportation⁵³

Covid-19 caused an unprecedented disruption in the transportation sector. Passenger transport experienced a sharp drop in demand due to travel restrictions and lockdown measures. Global supply chains proved relatively resilient, but freight still experienced a contraction due to lower industrial production and lockdown measures delaying the movement of goods. As countries begin to ease restrictions, we observe an improvement in mobility. We expect mobility to accelerate in the second half of the year, but the speed of recovery to pre-Covid traffic levels may vary by sector and protract in the medium term.⁵⁴

KEY MACROECONOMIC TRANSPORTATION VOLUME DRIVERS

(%, 2014-2024F)



Source: Oxford Economics, as at 7 May 2020. Notes: F = forecast. Past performance is not indicative of future returns. 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.

Airports⁵⁵

Operating Performance Outlook 2020	Negative
Long-Term Industry Trend	Stable/Positive

Covid-19 is having an unprecedented impact on passenger volumes in the airport sector in 2020, with European airports effectively at a standstill in March and April. The International Air Transportation Association (IATA) expects global air passenger volumes to fall by roughly 50% in 2020, the sharpest contraction in history.⁵⁶

⁵² Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁵³ 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.

⁵⁴ Based on number of sources, including Moody's Investor Service, Bloomberg, as at June 2020.

⁵⁵ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

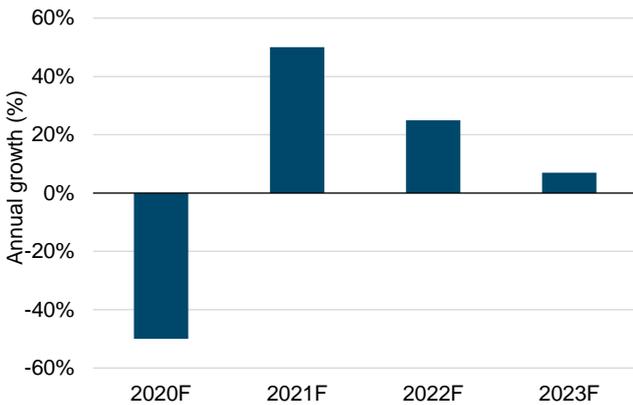
⁵⁶ International Air Transportation Association, as at 13 May 2020.

Past performance is not a reliable indicator of future returns.

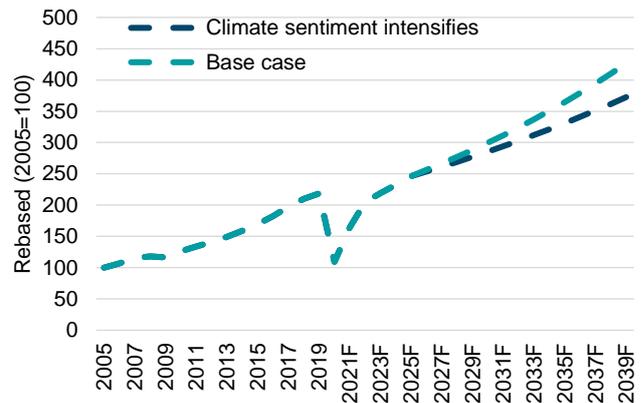
Airports are responding to the passenger decline by reducing operating expenditure and reprofiling investment to preserve financial performance, but we expect dividend payments for 2020 to be severely impacted by Covid-19. Some airlines may enter a restructuring process and dispose of non-strategic assets to buffer the financial impact.⁵⁷ In several cases, governments stepped in and provided extraordinary support in the form of loans or nationalisations.

Air passenger demand should recover gradually from the second half of the year, as travel restrictions are progressively lifted across Europe. Airports are incorporating new health and safety measures for air travelers.⁵⁸ Domestic air travel may recover quicker than international travel, as some countries may hang onto travel restrictions to mitigate the risk of a second Covid-19 wave. Nevertheless, we may see a full recovery to pre-Covid levels only by 2023.

AIR PASSENGER TRAFFIC RECOVERY OUTLOOK
(%, Global, 2020-2023F)



AIR PASSENGER TRAFFIC SCENARIOS
(Global, 2005-2039F)



Source: DWS, International Air Transport Association, Oxford Economics, as at 13 May 2020. Notes: F = Forecast. 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. Past performance is not indicative of future returns. There is no guarantee that forecasts highlighted will materialise.

Despite the short-term uncertainty driven by Covid-19, our long-term view on the airport sector remains supportive. However, we cannot exclude that business travel may experience a structural change driven by Covid-19, as we may observe a partial substitution of physical travel with virtual meetings. In the medium term, sustainability policies may impose new carbon emission offsetting measures on the industry, potentially absorbed by passengers in the form of increased air fares.

We still expect global air passenger demand to grow at a CAGR of 4% in the long term, driven by the essential nature of air travel and resilient industry trends, including a substantial expansion across Asian markets, particularly for tourism.⁵⁹ European hubs with exposure to key growth markets may outperform regional airports in the long term. Technological innovation reducing aircraft emissions, and airline business models evolving, such as with the potential introduction of point-to-point flying may support industry competitiveness and traffic volumes.

Risks: A second wave of the Covid-19 pandemic may disrupt the expected recovery.⁶⁰ Weaker domestic consumption driven by the economic downturn may cap air travel demand.

⁵⁷ Bloomberg, "Lufthansa Plans Far-Reaching Restructuring to Repay Bailout", as at 3 June 2020.

⁵⁸ European Union Aviation Safety Agency (EASA), "EASA/ECDC issue joint guidelines to assure health safety in air travel despite COVID-19 pandemic", as at 20 May 2020.

⁵⁹ Based on International Air Transportation Association, as at 14 April 2020.

⁶⁰ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not a reliable indicator of future returns.

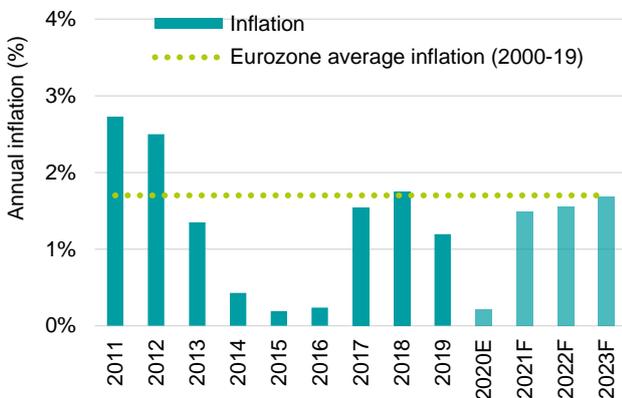
Toll Roads⁶¹

Operating Performance Outlook 2020	Negative
Long-Term Industry Trend	Stable

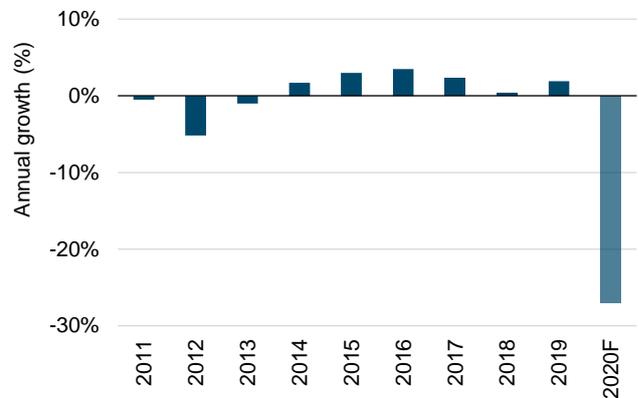
We expect traffic volumes on European toll roads to decline by about 25% in 2020, due to the lockdown measures introduced in the first half of the year. Private vehicle traffic was particularly impacted during lockdown, while heavy vehicle traffic remained relatively resilient as restrictions largely excluded the movement of essential goods. Nevertheless, lower industrial production has led to weaker freight traffic, a trend that may continue, particularly in case of a sluggish economic recovery.⁶² We have also observed a partial intermodal shift from road to rail and to container ships, supporting port operations.

Traffic volumes are expected to recover gradually in the second half of 2020. Light vehicle traffic should rebound more rapidly than other types of transport. Revenues of toll road operators may be negatively impacted by the reduction in traffic in 2020, and this effect may protract into 2021. Toll road tariffs may not benefit from substantial increases, as inflation is expected to be subdued in 2020 across the Eurozone.⁶³ We believe that some toll road operators may postpone non-essential capital expenditure to partially offset the effects of the pandemic.⁶⁴

CPI INFLATION
(%, YoY, Eurozone, 2011-2023F)



TOLL ROADS TRAFFIC ANNUAL GROWTH
(%, Europe, 2011-2020F)



Source: DWS, Oxford Economics, Moody’s Investor Service, as at May 2020. Notes: E = expected, F = forecast. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

In the long term, we believe that technology, including automated tolling and demand-based pricing, may increase operating efficiency in the toll road sector. Investment in sensors may lead to greater safety, lower congestion and emissions.⁶⁵

Risks: The introduction of new lockdown measures may impact traffic volumes of toll roads materially.

⁶¹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.
⁶² Based on Moody’s Investor Service, as at April 2020.
⁶³ Based on Oxford Economics, as at May 2020.
⁶⁴ Based on Moody’s Investor Service, as at April 2020.
⁶⁵ Roland Berger, July 2018.

Ports⁶⁶

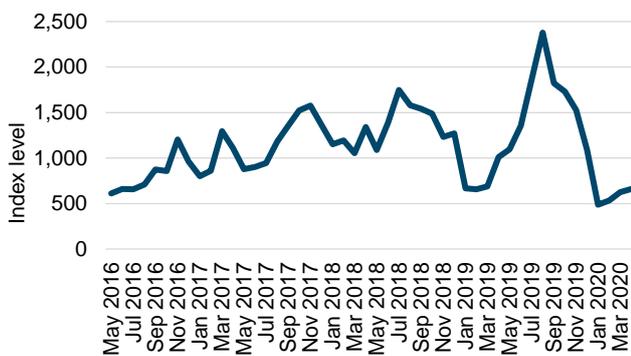
Operating Performance Outlook 2020	Stable/Negative
Long-Term Industry Trend	Stable

In 2019, European ports proved relatively resilient, notwithstanding the increased volatility in the global trade environment. In the first half of 2020, the Covid-19 outbreak led to a contraction in trade volumes. Nevertheless, freight transport proved more resilient than passenger transport. The performance of ports may differ significantly from one port to another.

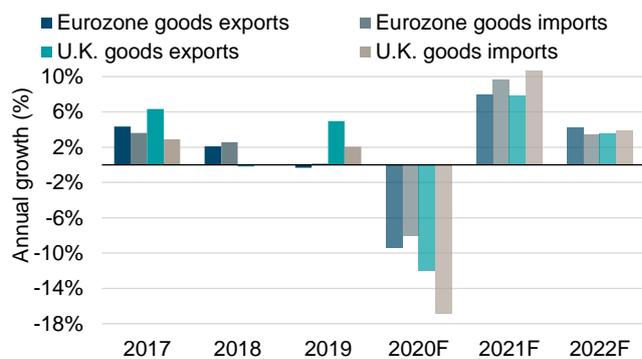
According to the World Trade Organisation (WTO), global trade is expected to contract between 13% and 32% in 2020.⁶⁷ European ports with a focus on freight transport may prove more resilient, but may still experience a drop in freight volumes of ca. 15% in 2020, and a gradual recovery thereafter throughout 2021.⁶⁸ Ports with a large exposure to the cruise business may be more negatively affected by the Covid-19 outbreak and by related travel restrictions. Privately owned ports in strategic locations with a focus on freight transportation should prove more resilient and be better placed for a gradual recovery.

In January 2020 the Baltic Dry Index (BDI)⁶⁹ dropped to the lowest level since April 2016.⁷⁰ However, as China lifted lockdown measures, we have already seen a gradual recovery of the BDI and expect the rebound in demand for dry bulk commodities to continue over the course of 2020. Looking forward, risks may be higher for the container segment than for the bulk segment, particularly in case of sluggish consumer demand. On the positive side, weaker oil prices may partially support profitability of ship operators.⁷¹ Decarbonisation of maritime transport may play an important role over the coming years.

**BALTIC DRY INDEX (BDI)
(2016 - 2020)**



**EXPORTS AND IMPORTS
(%, Real Growth, 2017-2022F)**



Source: DWS, Oxford Economics, Bloomberg, as at 7 May 2020. Notes: E = expected, F = forecast. The Baltic Dry Index (BDI) is issued daily by the London-based Baltic Exchange. The BDI is a composite of the Capesize, Panamax and Supramax Timecharter averages. It is reported around the world as a proxy for dry bulk shipping stocks as well as a general shipping market indicator. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

Risks: Rising trade barriers and deglobalisation remain a threat to the sector.⁷² In the long term, technological innovation such as 3D printing may cap container goods volume growth for ports.⁷³

⁶⁶ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁶⁷ World Trade Organisation, "Trade set to plunge as COVID-19 pandemic upends global economy", as at 8 April 2020.

⁶⁸ Based on a number of sources, including S&P, Moody's Investor Service, Inframation News, as at May 2020.

⁶⁹ The Baltic Dry Index (BDI) is issued daily by the London-based Baltic Exchange. The BDI is a composite of the Capesize, Panamax and Supramax Timecharter averages. It is reported around the world as a proxy for dry bulk shipping stocks as well as a general shipping market indicator.

⁷⁰ Based on Bloomberg data, as at May 2020.

⁷¹ Based on Moody's Investor Service, as at May 2020.

⁷² Moody's Investor Service, "Global Trade Monitor", as at 18 May 2020.

⁷³ Based on Moody's Investors Service, "Privately Managed Ports Chartbook", as at 5 August 2019.

Past performance is not a reliable indicator of future returns.

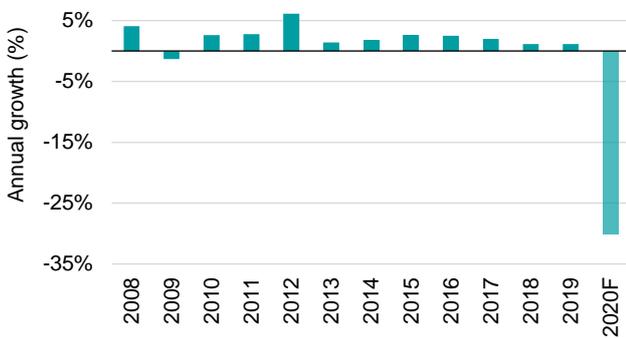
Rail (Freight Rail and Long-Distance Passenger Rail)⁷⁴

Operating Performance Outlook 2020	Stable/Negative
Long-Term Industry Trend	Stable/Positive

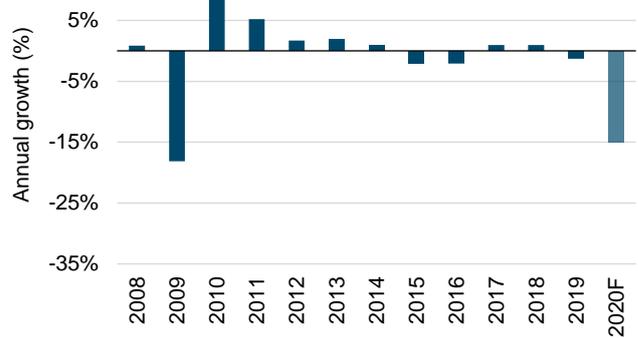
Historically, rail passenger traffic in Europe has been resilient to economic downturns, supported by long-term demographic trends, capacity improvements, and a gradual liberalisation processes of the sector. Rail freight has been traditionally more exposed to the economic cycle.⁷⁵ However, in 2020, rail passenger traffic is expected to be hit harder than freight traffic, due to lockdown measures limiting the movement of people in the first half of 2020.

We believe that rail freight may be partially supported by the intermodal shift from road to rail, a trend that has been accelerated by Covid-19, as long-distance rail involves less human participation per volume of goods transported compared to the road mode.⁷⁶ We expect freight and passenger traffic to drop by 15% and 30%, respectively, in 2020,⁷⁷ followed by a gradual recovery in 2021. Governments have implemented a number of extraordinary measures to support passenger rail.

RAIL PASSENGER ANNUAL TRAFFIC GROWTH
(%, YoY, Europe, 2008-2020F)



RAIL FREIGHT ANNUAL TRAFFIC GROWTH
(%, YoY, Europe, 2008-2020F)



Source: DWS, Eurostat, as at May 2020. Notes: E = expected, F = forecast. Includes Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and United Kingdom. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. There is no guarantee the forecast shown will materialise. 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.

In the medium term, we believe that digitalisation including sensors and 5G may improve the operational efficiency of rail operators.⁷⁸ We expect the rolling stock market to be increasingly supported by the ongoing liberalisation process of rail networks across Europe, and by the relatively old age of the existing fleets. The European rail industry is expected to grow in the long term, also driven by policies supporting the decarbonisation of transport. We expect an acceleration in the shift of freight traffic from roads to rail, driven by tighter regulation around diesel trucking capacity.⁷⁹

Risks: New lockdown measures may lead to a further decline of rail passenger and freight volumes.⁸⁰

⁷⁴ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁷⁵ Based on Eurostat, Oxford Economics, as at May 2020.

⁷⁶ Rail Journal, "Intermodal operators urge action in face of coronavirus downturn", as at 13 March 2020.

⁷⁷ Based on a number of sources, including Rail Journal, as at May 2020.

⁷⁸ Global Railway Review, "Exploring the advantages of 5G for the railway sector", as at 6 March 2020.

⁷⁹ Based on a number of sources, including Bloomberg and Moody's Investors Service data, as at November 2019.

⁸⁰ Based on Rail Journal, as at May 2020.

Past performance is not a reliable indicator of future returns.

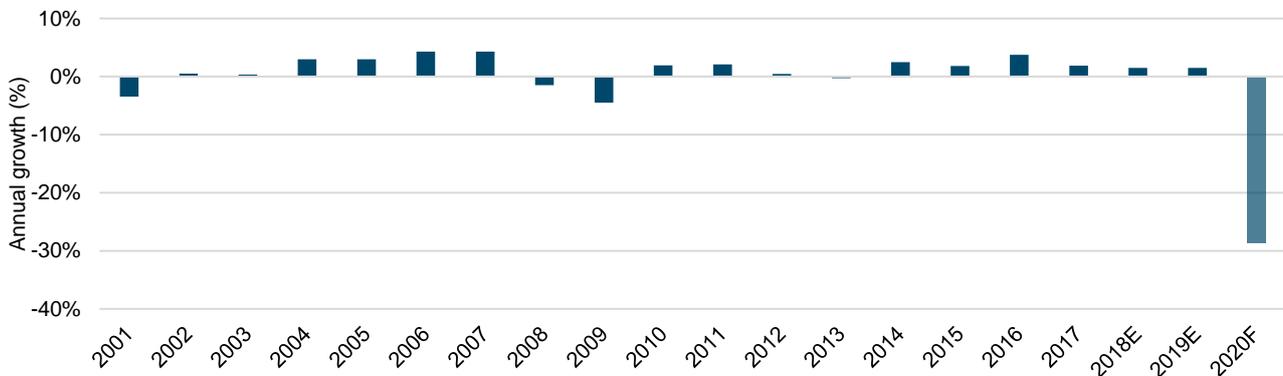
Public Transportation (Bus Transportation and Regional Rail)⁸¹

Operating Performance Outlook 2020	Negative
Long-Term Industry Trend	Stable/Positive

Historically, European public transportation has demonstrated resilience to macroeconomic cycles and a slow, albeit steady, growth in passenger volumes driven by demographics, urbanisation, and a supportive policy framework.⁸² Lockdown measures have led to an unprecedented decrease in passenger volumes in the first half of 2020. Across Europe, such as in the U.K.,⁸³ a number of governments have provided extraordinary support to public transportation networks, to ensure continuation of operations during the lockdown. The impact on financial performance varies by country and regulatory system, with some operators proving neutral to the sudden decrease in passenger volumes, and other operators more heavily exposed. We expect a progressive recovery of passenger volumes in 2020. However, social distancing rules may cap capacity to about 40% of previous volumes, and we expect passengers to prefer personal vehicles where possible to minimise the risk of contagion. In the medium term, we expect the fundamentals of the European public transport sector to remain strong.

Public transport remains a focus of the European Commission on the path towards a climate-neutral Europe by 2050.⁸⁴ We expect policy making to promote liberalisations and competition, supporting the pipeline of investment opportunities. As fleet electrification investment increases, we expect to see more opportunities for rolling stock leasing.

PUBLIC TRANSPORTATION PASSENGER VOLUMES
(Europe, Estimate, 2001-2020F)



Sources: DWS, Oxford Economics, as at May 2020. Notes: E = expected, F = forecast. Includes Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

Risks: New lockdown measures may jeopardise the recovery of public transportation. Covid-19 may accelerate a trend towards remote working, and we may observe a structural reduction in commuter passenger volumes.

⁸¹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁸² Based on a number of sources, including Oxford Economics, as at May 2020.

⁸³ UK Government, "Rail emergency measures during the COVID-19 pandemic", as at 23 March 2020.

⁸⁴ Based on European Commission press release, as at 28 May 2020.

Past performance is not a reliable indicator of future returns.

5.2 Energy Transition, Utilities and Circular Economy⁸⁵

5.2.1 Energy Transition⁸⁶

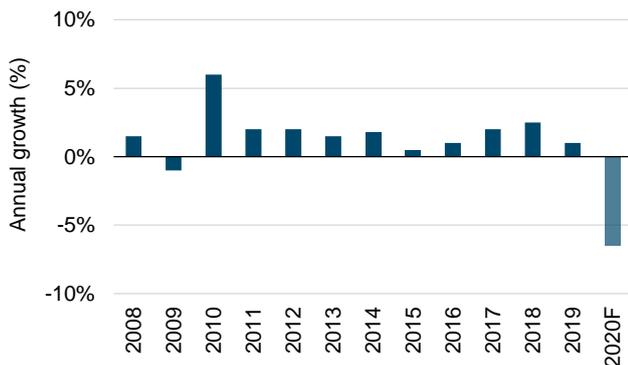
Regulation and CO₂ Emission Policies

The Paris agreement aims to control global warming and keep the global average temperature below 2 degrees Celsius over pre-industrial levels, and Europe supports the transition from fossil fuels to a sustainable economy. In the past decade, renewable energy generation has expanded rapidly, driving a change in the business model of utilities. In 2020, Covid-19 is expected to cause the biggest drop in global energy demand in modern history. To put things in perspective, the 6% reduction in energy demand expected for 2020 may be over six times the scale of the drop experienced during the Great Financial Crisis. In this context, the only energy source expected to continue growing in 2020 are renewables.⁸⁷

We expect renewables to accelerate over the coming years, as they continue to reach grid parity, pushing thermal generation out of the merit order. We also expect digitalisation to support demand response business models, and energy efficiency services to increasingly expand to residential customers. Nevertheless, the evolution of the power sector may only represent one side of the energy transition process.

Over the coming years this process may gradually extend to the electrification of transportation, particularly private vehicles and buses, and trigger substantial changes in the Oil & Gas sector. Similarly to what observed for utilities in the last decade, Oil & Gas companies may increasingly adjust their business models, focusing on the development of biofuels, carbon storage, renewables and the provision of energy efficiency services. They may also explore the application of alternative energy sources, particularly green hydrogen. Green hydrogen developed through renewable power may increasingly be considered as a fuel source where batteries may have limited applicability, such as for industrial production, heavy vehicles and shipping, and require a substantial investment in infrastructure to support its processing and transportation.

GLOBAL ENERGY DEMAND (%, 2008-2020F)



CO₂ PRICE (EUR/tonne)



Source: DWS, International Energy Agency, as at April 2020, Bloomberg, as at 3 June 2020. Notes: F = forecast. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

⁸⁵ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁸⁶ 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.

⁸⁷ Based on International Energy Agency, "Global Energy Review 2020", as at April 2020. Past performance is not a reliable indicator of future returns.

The sharp decrease in energy demand triggered by Covid-19 has also resulted in a decline of global CO₂ emissions, now expected to decrease by 8% in 2020. In Europe, CO₂ emission prices have initially dropped substantially, before stabilising at about 20 EUR/tonne. This price, coupled with historically low demand, pushes coal generation out of the merit order, while largely preserving gas generators.⁸⁸ As lockdown measures are gradually being lifted across Europe, we expect CO₂ emissions to progressively increase. We also expect an increase in the price of CO₂ in the medium term above 30 EUR/tonne.

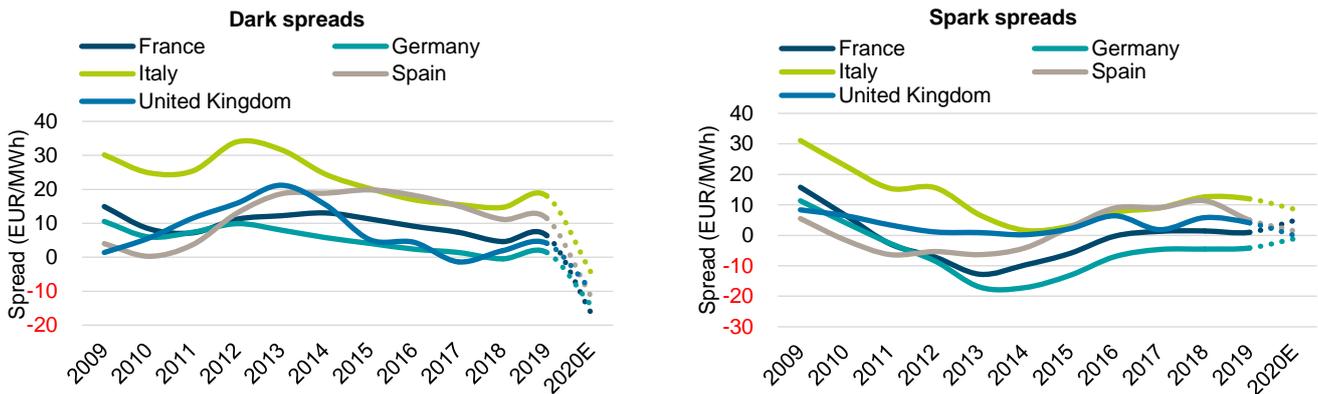
We expect the EU's energy and climate targets for 2030 to increasingly drive individual governments' policies resulting in investment opportunities. The EU aims to be climate neutral by 2050,⁸⁹ and this may require substantial steps – including the development of a fully integrated internal energy market – enabling the free flow of energy in the EU through adequate infrastructure. Regulation is expected to increasingly support low-carbon and clean energy technologies.

Power Generation⁹⁰

Operating Performance Outlook 2020	Coal: Negative	-	Gas: Stable	-	Nuclear: Stable
Long-Term Industry Trend	Coal: Negative	-	Gas: Stable/Negative	-	Nuclear: Stable/Negative

Demand: Covid-19 caused power demand to contract by about 20% in Europe, driven by a sudden stop of industrial production, while residential demand remained relatively stable.⁹¹ As lockdown measures are being progressively lifted across Europe, we can already observe a gradual recovery of electricity consumption. Nevertheless, we expect power demand to recover only gradually throughout 2021, in line with the projected economic recovery. In the long term, several drivers may boost power demand, including the electrification of transportation and heating.⁹²

AVERAGE BASELOAD DARK AND SPARK SPREADS BY COUNTRY (EUR/MWh, 2009-2020E)



Source: Bloomberg, as at 28 April 2020. Notes: E = expected, F = forecast. The dark spread is the theoretical gross margin of a coal-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity. The spark spread is the theoretical gross margin of a gas-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

⁸⁸ Based on a number of sources, including International Energy Agency, as at April 2020, and Bloomberg, as at June 2020.
⁸⁹ European Commission, "Committing to climate-neutrality by 2050: Commission proposes European Climate Law and consults on the European Climate Pact", as at 4 March 2020.
⁹⁰ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.
⁹¹ Based on International Energy Agency, "Global Energy Review 2020", as at April 2020.
⁹² Based on a number of sources, including Moody's Investor Service, Bloomberg, as at May 2020.

Supply: Lower energy demand resulted in a substantial contraction of power prices in the first half of 2020. Countries characterised by a comparatively inflexible generation fleet, such as France (with nuclear) and Germany (with renewables) experienced negative power prices at times of lower demand.⁹³ Resilient CO₂ emission prices pushed coal generation out of the merit order, while largely preserving more efficient gas generators, as described by the recent dynamic of negative dark spreads, and stable spark spreads.⁹⁴ As economic activity resumes, we expect power prices to recover. However, we expect dark spreads to remain under pressure, while spark spreads should continue to remain supportive. Efficient Combined Cycle Gas Turbines (CCGTs) may increasingly be supported by capacity markets to ensure power supply safety.

While power prices may remain sluggish in the medium term, we see some upward potential in the long term. Energy transition and decarbonisation may continue to drive the closure of thermal generation capacity. A reduction in thermal power, driven by climate change policies, may lead to a decline in reserve margins across Europe, supporting power prices. However, the growing interconnection of European grids should partially offset this trend. Germany plans to stop nuclear generation by 2023, becoming a net power importer, while France, Spain, and Sweden are positioned for a more gradual phase out.

Risks: As the share of renewables is set to increase materially, power prices may become more volatile over time. A rising share of energy storage may provide some stability to prices in the long term, but also drive a reduction of peak power prices.

Renewable Generation⁹⁵

Operating Performance Outlook 2020	Stable
Long-Term Industry Trend	Positive

European renewables continue to grow at a fast pace, driven by regulation supporting the energy transition process. Renewables may be one of the key areas of policy response to Covid-19. We expect this to translate into a growing set of investment opportunities, part of the European Green Deal, supporting the transformation of Europe into a low carbon economy. In addition to EU policies, individual countries have clear targets for the development of renewables and we expect France, the Benelux, and Germany to be particularly supportive in this regard.

In the first half of 2020 most new capacity added included offshore wind and photovoltaic (PV) projects. The sector continues to move from feed-in-tariff mechanisms to more competitive auction or contract for difference frameworks, providing a floor to power prices, but somewhat capping profitability and reducing long-term cash flow visibility. We also continue to witness a gradual development of the European Power Purchase Agreement (PPA) market, with projects supported by contracts providing long-term cash flow stability, and expect the PPA market to accelerate in the medium term. The contracted or regulated nature of revenues supports renewables, with the impact of Covid-19 limited to merchant revenues.

With power prices expected to recover only gradually, we expect a delay to the development of greenfield renewable projects under grid parity assumptions. However, falling technology costs, particularly for PV, should in our view support renewables in the medium term, particularly with regard to PV projects in Southern Europe. We also expect the sector to become increasingly commoditised, spreading from industrial scale to residential scale projects, particularly for PV. As technology costs reduce, we continue to see clear signs of battery storage accelerating. Storage may complement greenfield renewables projects, or be retrofitted to brownfield projects to optimise the revenue generation profile.

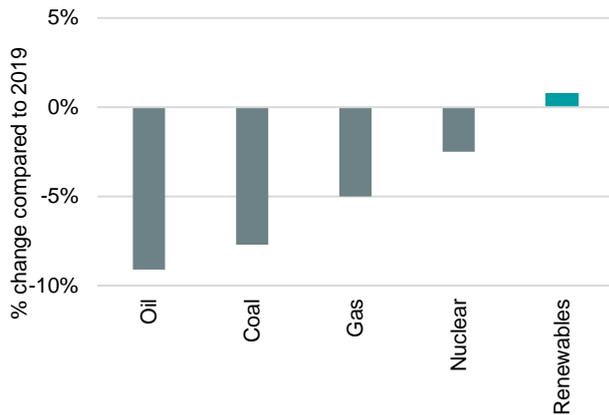
Risks: Fading subsidies may expose projects to power price volatility in the absence of PPAs. A growing share of battery storage may cap peak prices.

⁹³ Based on Bloomberg, as at April 2020.

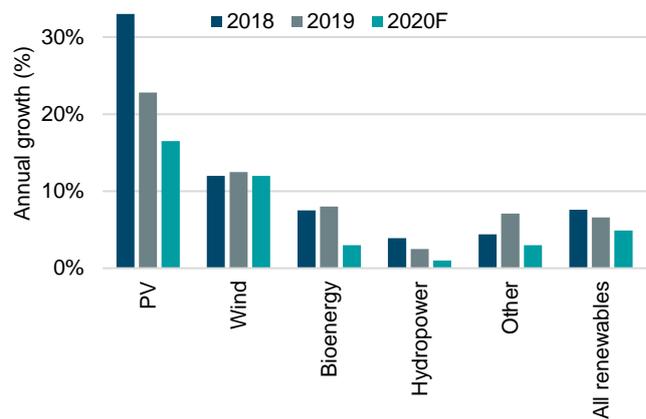
⁹⁴ The dark spread is the theoretical gross margin of a coal-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity. The spark spread is the theoretical gross margin of a gas-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity.

⁹⁵ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

EXPECTED CHANGE IN ANNUAL ENERGY DEMAND BY SOURCE
(% Change in 2020F Compared to 2019)



RENEWABLE ELECTRICITY GENERATION BY SOURCE
(%, 2018-2020F)



Source: DWS, International Energy Agency, as at 29 April 2020. Notes: F = Forecast. Past performance is not a guide for future returns. 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. There is no guarantee the forecast shown will materialise. 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.

5.2.2 Utilities and Networks⁹⁶

Regulated Networks⁹⁷

Operating Performance Outlook 2020	Stable
Long-Term Industry Trend	Stable/Negative

Regulated electricity, gas and water networks in Europe are mostly supported by RAB⁹⁸ regulation, providing a volume-neutral, regulated return to investors. Therefore, in the first half of 2020, regulated networks were generally not impacted by Covid-19. In the long term, we expect regulated networks to continue to expand, albeit mostly at a growth rate below GDP for water and gas networks. At the same time, a growing share of renewables may require substantial investment in power grids.

Risks: The expected economic downturn may cap inflation expectations and interest rates. As regulated returns for networks are linked to inflation and government bond yields, we may observe a further compression in regulated returns.

Integrated Utilities⁹⁹

Operating Performance Outlook 2020	Stable/Negative
Long-Term Industry Trend	Stable/Negative

The business profile of European integrated utilities includes mainly a combination of regulated networks, power generation, and renewables. As a result, the impact of Covid-19 was largely manageable and concentrated on the power generation segment. Based on capacity mix and geographical location, utilities may have experienced a reduction in load factors and

⁹⁶ 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.

⁹⁷ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

⁹⁸ RAB = Regulated Asset Base.

⁹⁹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

electricity sale margins. Hedging generally in place for 12-18 months provided a buffer but, as existing hedging contracts gradually roll over, we may see an impact on profitability.

Covid-19 may accelerate the transformation process of European integrated utilities in response to the growing trends of digitalisation, energy efficiency and transport electrification.

Risks: A gradual shift to new business segments may increase the risk profile and the volatility of financial performance for European integrated utilities in the medium term.

5.2.3 Circular Economy¹⁰⁰

Recycling and Waste Management¹⁰¹

Operating Performance Outlook 2020	Stable
Long-Term Industry Trend	Stable/Positive

Energy-from-Waste (EfW): We expect Covid-19 to lead to a reduction of industrial waste volumes in 2020, due to lower industrial production. While initial data indicate that residential waste volumes increased during lockdown, the economic downturn may cap private consumption and residential waste going forward. Municipal waste contracts with local authorities may contribute to support revenue visibility. Contracted electricity and steam contracts should also provide some stability. EfW plants supported by a diversified profile of waste supply contracts and plants located strategically to benefit from waste imports may prove more resilient in the current market environment.

The European Commission aims to reduce landfill to a maximum of 10% for municipal waste by 2030,¹⁰² leading to the gradual closure of landfill sites, thus providing sustainable waste flows towards EfW projects. Therefore, we expect EfW capacity to continue growing in the medium term, particularly across European countries with EfW under capacity.

Recycling: Europe represents a key region for the development of a circular economy, to limit the production of waste and maximise the reuse of industry by-products. The European Union has specific targets for 2030, including recycling 65% of municipal waste and 75% of packaging waste.¹⁰³ Most European countries have structural under capacity of recycling services compared with 2030 targets. Therefore, we expect a growing set of opportunities for waste collection and recycling facilities.

Risks: A new Covid-19 pandemic or a protracted economic downturn may cap waste volumes beyond what currently anticipated.

¹⁰⁰ 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.

¹⁰¹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

¹⁰² European Commission, "Review of Waste Policy and Legislation", as at 31 December 2019.

¹⁰³ European Commission, "Review of Waste Policy and Legislation", as at 31 December 2019. Past performance is not a reliable indicator of future returns.

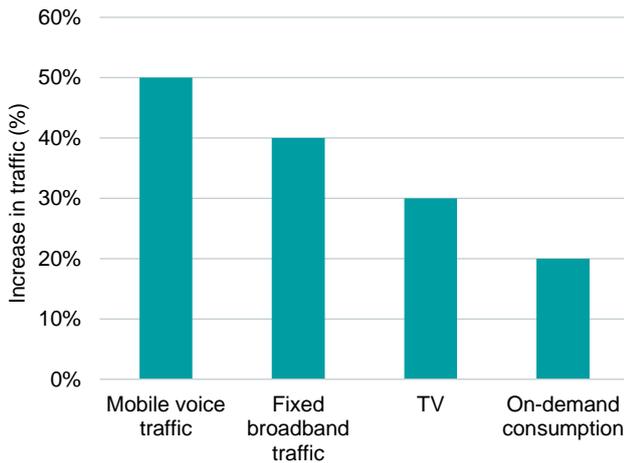
5.3 Digital Infrastructure¹⁰⁴

Digital Infrastructure¹⁰⁵

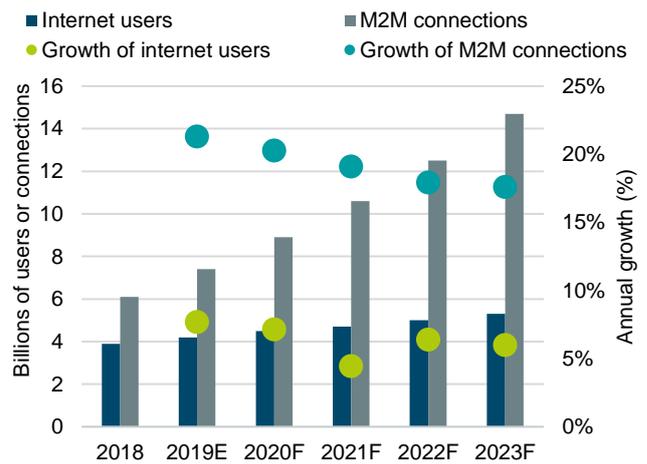
Operating Performance Outlook 2020	Positive
Long-Term Industry Trend	Positive

We observed a 46% increase in data usage during Covid-19,¹⁰⁶ as digital infrastructure proved its essential role and supported economic activity during the lockdown period. The pandemic led to a further acceleration of digitalisation, a trend that we expect to continue in the future. Therefore, the outlook for European digital infrastructure is positive in our view. Investments in digital infrastructure should be driven particularly by new fibre networks and new data centre capacity.

AVERAGE TRAFFIC INCREASE SINCE COVID-19 (% Estimate)



INTERNET USERS AND M2M CONNECTIONS (Global, M2M = Machine-To-Machine)



Source: DWS, Moody's Investor Service, Cisco Annual Internet Report, 2018-2023, as at April 2020. Notes: E = expected, F = forecast. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

Fibre Networks: Covid-19 emphasised the importance of high speed fibre, and we expect demand for Fibre-to-the-Home (FTTH) installations to accelerate in the short term, with a substantial flow in greenfield fibre projects continuing to come to the market in Europe. A shift towards working from home may lead to more investment in FTTH over 5G mobile data networks, due to higher data capacity and stability.¹⁰⁷ We expect 5G technology to lead to an increase in data consumption, requiring improved fibre capacity up to Fibre-to-the-Cabinet (FTTC). Nevertheless, in our view, some greenfield fibre projects today may rely on overly optimistic growth assumptions, particularly for FTTH in rural areas.¹⁰⁸

Data Centres: Colocation data centres continue to experience a high single-digit revenue increase.¹⁰⁹ Short-term growth may be capped by the economic downturn, particularly for the corporate clients. In the long term, the sector is expected to continue

¹⁰⁴ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

¹⁰⁵ 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.

¹⁰⁶ Refers to the average increase in data usage during the day (8 am to 5pm) in 16-27 March 2020, compared to January 2020, S&P Global Market Intelligence, as at March 2020.

¹⁰⁷ S&P, "UK telcos could rethink fixed, 5G network spend as COVID-19 impacts usage", as at 5 May 2020.

¹⁰⁸ Based on Bloomberg and Moody's Investors Service data, as at May 2020.

¹⁰⁹ Based on Moody's Investor Service, as at April 2020.

expanding, particularly with regard to new edge and colocation data centres capacity coming to market due to the increased need for low latency connectivity driven by IoT technologies.

Telecom Towers: Telecom towers remain largely unaffected by Covid-19, as long-term contracts with tenants, concentrated mainly in the telecom and media sector, support revenue stability. Due to a competitive environment driven by high pricing and ongoing consolidation, we believe that telecom towers may provide limited alpha potential for infrastructure investors. In the medium term, the sector may capitalise on growth opportunities provided by the shift from legacy tower ownership models to lighter asset base models, as the industry comes closer to the deployment of 5G.¹¹⁰ In the medium term, the Internet of Things (IoT) should increase data consumption and the need for low latency connectivity.

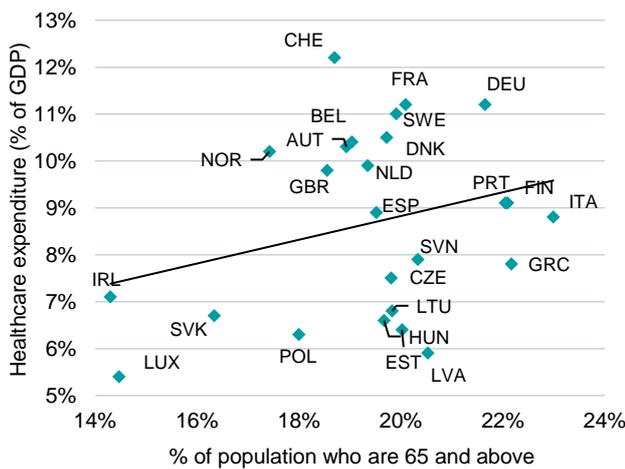
5.4 Private Healthcare¹¹¹

Private Healthcare¹¹²

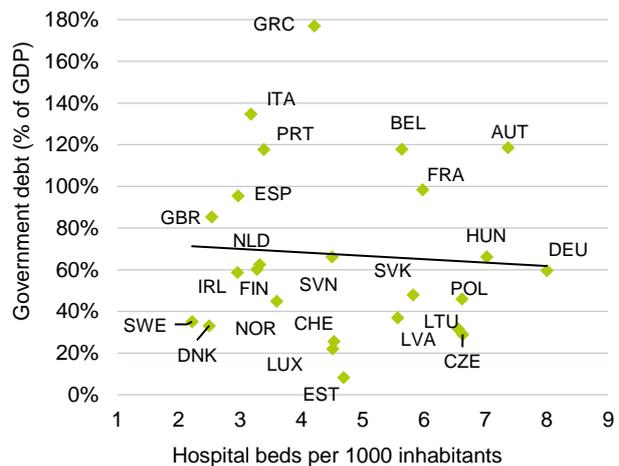
Outlook 2020	Stable
Long-Term Industry Trend	Stable/Positive

In Europe, healthcare expenditure has grown above inflation and we expect this to continue to accelerate, driven by an ageing population in mature European economies, and by the need of new healthcare facilities in Eastern Europe. Healthcare may increasingly weigh on government budgets, and governments with high public debt may face a bigger challenge. Cuts to healthcare expenditure may lead to a reduction in the number of public hospital beds, and a higher reliance on private facilities.

HEALTHCARE EXPENDITURE AND % OF 65+ (Expenditure as % of GDP, 65+ as % of Population)



GOVERNMENT DEBT AND HOSPITAL BEDS (Debt as % of GDP, Beds per 1000 inhabitants)



Source: DWS, OECD, Oxford Economics, as at May 2020. Notes: E = expected, F = forecast. Past performance is not indicative of future returns. There is no guarantee the forecast shown will materialise. 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.

We expect private investors to be increasingly involved in the healthcare sector, and the European market to grow in the long term. Investors may have the option to acquire healthcare facilities funded via Public-Private Partnership (PPP) models. However, we believe that these opportunities may be limited in size and often involve construction risk delaying income return. We witness a growing interest from investors for private, non-acute healthcare services, supported by regulated long-term cash-flow visibility and potential for growth. Private healthcare services can be funded by a combination of public and private resources: services are paid directly by the government when offering essential levels of care guaranteed to all citizens, while additional healthcare services are paid out of pocket by private patients.

¹¹⁰ Based on Moody's Investors Service data, as at November 2019.

¹¹¹ Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

¹¹² Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not indicative of future returns.

Historically, government funding for the provision of essential, non-acute healthcare services has proven to be relatively stable and predictable across Europe. Regulation changes by country, but is generally supported by a clear framework. Nevertheless, regulatory fragmentation may represent a barrier to cross-country consolidation strategies. In the long term, we expect the digitalisation of healthcare services to be a potential driver of investment opportunities.

Risks: Covid-19 may drive deficit levels of European governments higher. This may lead to a revision of public funding provided to private non-acute healthcare services, particularly for services not deemed as essential.

6 / Appendix

Calendar Annual Performance

Index	2015	2016	2017	2018	2019	YTD Mar-2020
Infra300 Equity Index	5.0%	9.1%	15.0%	0.8%	10.3%	-6.4%

Source: Bloomberg, EDHECinfra (Scientific Infra), as at March 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. 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. Past performance is not a reliable indicator of future returns.

Rolling Annual Performance

Index	Mar-2015	Mar-2016	Mar-2017	Mar-2018	Mar-2019	Mar-2020
Infra300 Equity Index	28.8%	5.5%	1.6%	11.5%	2.2%	7.2%

Source: Bloomberg, EDHECinfra (Scientific Infra), as at March 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. 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. Past performance is not a reliable indicator of future returns.

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