Anlageklasse

Private Infrastructure

Sammelband 2023

SECA Booklet
no. 16.1

SECA

Swiss Private Equity & Corporate Finance Association
Schweizerische Vereinigung für Unternehmensfinanzierung
Association Suisse des Investisseurs en Capital et de Financement

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Vorwort

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Zug/Rotkreuz, Mai 2023

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BlackRock Alternative Investors

The Inflation Reduction Act

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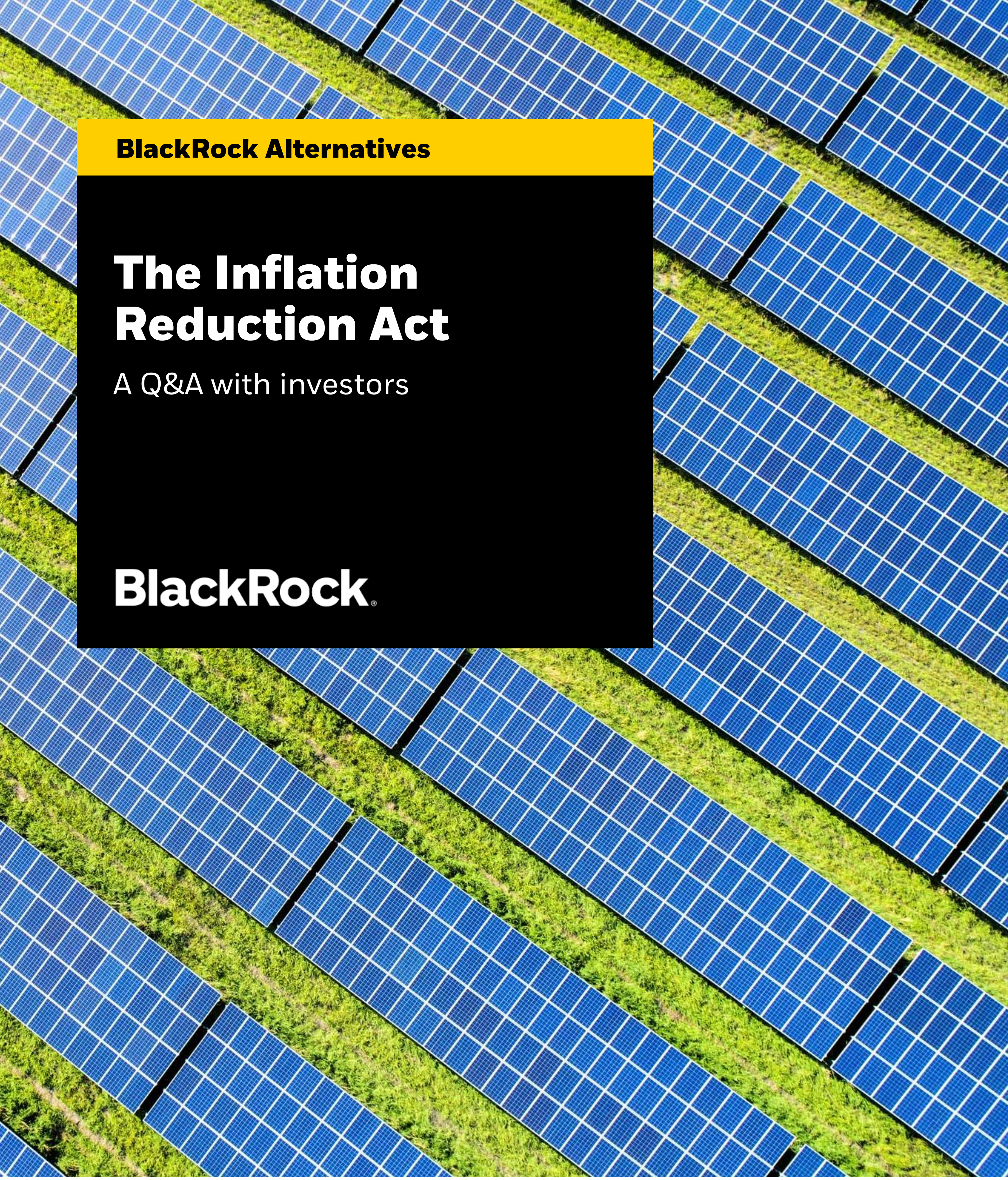

BlackRock Alternatives

The Inflation Reduction Act

A Q&A with investors

BlackRock

FOR QUALIFIED PURCHASERS, PROFESSIONAL CLIENTS, QUALIFIED INVESTORS/QUALIFIED CLIENTS AND PROFESSIONAL, INSTITUTIONAL & WHOLESALE INVESTORS

Ready to roll out: A close look at the new law

August 2022

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Key takeaways

- The Inflation Reduction Act is the biggest commitment ever made by the United States to reduce carbon emissions and advance sustainable technology.
- The law creates policy certainty for the wind and solar industries, which have struggled with supply chain snarls and inflation in recent years and have seen investments stall as a result.
- Carbon capture technologies and green hydrogen will likely be two big winners from the bill, thanks to increased subsidies that should attract investors to these new and developing technologies.
- Requirements in the law for materials to be made in the U.S. will boost segments of domestic industry across the energy sector.
- The law has the potential to create a virtuous cycle across many industries, bringing down costs and increasing demand -- effectively increasing the market for renewable investments.
- The permitting reform bill which was also agreed to in principle as the IRA was negotiated could open up new infrastructure opportunities across the U.S. as projects are approved more quickly.

Introduction

We asked three of the leading portfolio managers on BlackRock's Alternatives platform key questions about the Inflation Reduction Act -- what the new law means for the industry, the economy and investors.

President Biden signed the IRA into law on August 16, officially enacting one of the biggest financial commitments ever made by the United States to reduce carbon emissions and advance sustainable technology. The law also changes how subsidies are paid out, and provides incentives across the energy industry.

What's the biggest takeaway?

David Giordano: This law creates a long runway for U.S. energy transition investments. It creates more certainty around the fundamental policy incentives, which can be significant value drivers for these assets.

Pieter Houlleberghs: For investors like us in sustainable assets, the law injected optimism and momentum -- it's a strong kickstart that will allow other technologies to replicate what we've seen in solar and wind over the last 10-15 years in terms of wider adoption and lower costs.

Does the law create more opportunities in equity or credit?

David Giordano: It's probably both, but I think the bigger opportunity is on the equity side, given the funding stability of the tax credits in the early years. And there's a need for so much new development. We've been in a bit of a stalled pattern around the development of new assets in the U.S. because we've been in this limbo state -- we had increasing capital costs with supply chain constraints and the broader inflation issues. So overall, in the short- and medium-term, I think it's probably a bigger play on the equity side.

What's the most important change to current rules?

Mark Florian: There's going to be five years where you can get cash payments rather than tax credits. Those credits have been a limiting factor for wind and solar – the way they were structured was very complex and it required bringing in a separate entity. The switch to a structure where you're paid directly is huge.

David Giordano: I agree. Just the fact that it allows investors to take a cash benefit instead of the tax benefit will open up more potential sites for development. It will also open these investments to more partners, such as nonprofits, government entities, co-ops and tribes. Basically, the economics are much more easily shared across different ownership types.

The option to take these incentives as cash also opens them to foreign investors who don't have a U.S. tax base. And the tax credits will be more easily transferable, which will also encourage more capital to flow in from various sources. I think we'll probably see a pretty big influx of capital coming into the U.S., which is the largest, lowest penetration market for sustainable energy in the world right now.

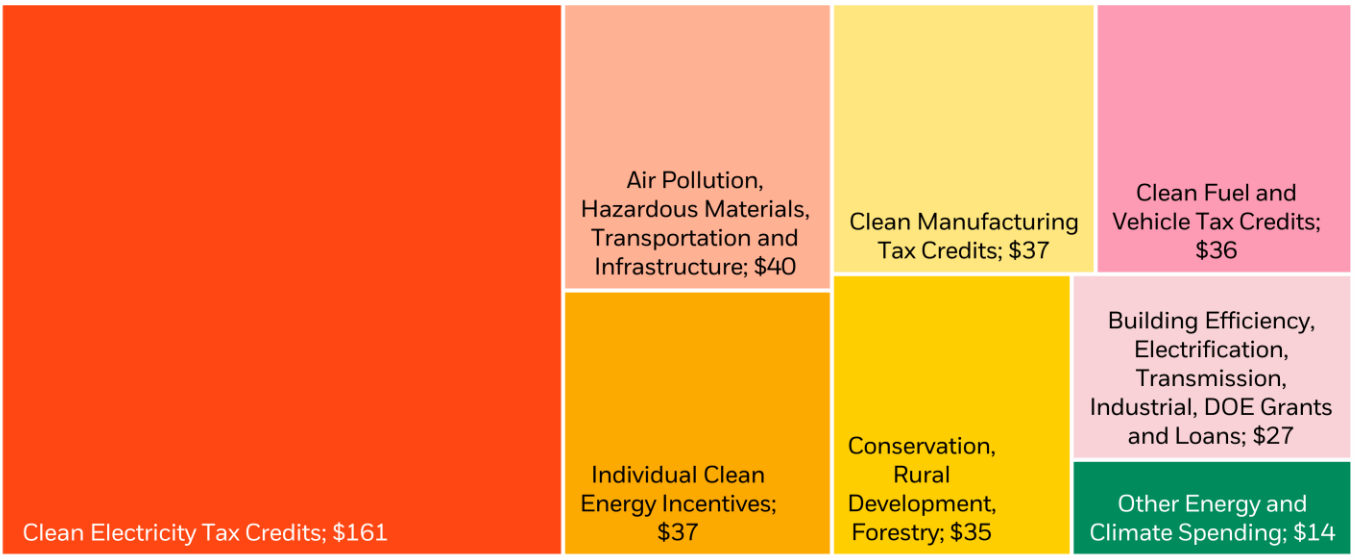
What will the law do for the U.S. sustainable tech industry?

Pieter Houlleberghs: Half or more of the opportunities we see globally are in the U.S. and Canada -- it's been a hotbed for innovation, with leadership from startup entrepreneurs and investors. The new legislation is a strong show of government support, which together with what we're seeing from investors and business leaders suggests the U.S. will maintain a leadership role in the industry.

David Giordano: The bill incentivizes companies to buy from U.S. suppliers. And we've seen in other markets there's been a very swift implementation by large equipment suppliers to meet domestic-content requirements.

By the numbers

A breakdown of the IRA's climate-related spending, in US$ billions



Source: Committee for a Responsible Federal Budget, August 2022. Notes: The chart shows projections for capital investment based on the Committee for a Responsible Federal Budget's analysis of the bill's potential impacts. The analysis should be considered approximate and may be updated or refined by subsequent analysis.

On more projects, even if it's not fully domestic manufacturing, there will be U.S. assembly plants involved to allow for a more diversified supply chain. We've already seen some of the big players looking to build out capacity to manufacture turbine blades and assemble solar cells and things like that. So some of it was already happening, and the law will accelerate that trend.

How will the law help develop new types of transition and net zero technologies?

Pieter Houlleberghs: The incentives in the law could drive a virtuous cycle across newer technologies and markets: It will encourage more adoption, which drives down costs, which drives up adoption, which then further drives down costs -- which is what we as investors look for. The multiplier effect of the incentives in the bill means that the market for attractive green investments effectively just got bigger.

Which sectors will benefit most from the law?

David Giordano: Wind and solar will benefit because of the certainty the bill provides. And it's also now brought battery storage into the mix in a way that it wasn't before. This should accelerate the construction of more utility-scale storage projects. Things like carbon capture now have a lot more certainty around them as well. And we'll begin to see more clean hydrogen as part of the U.S.'s medium-term development cycle.

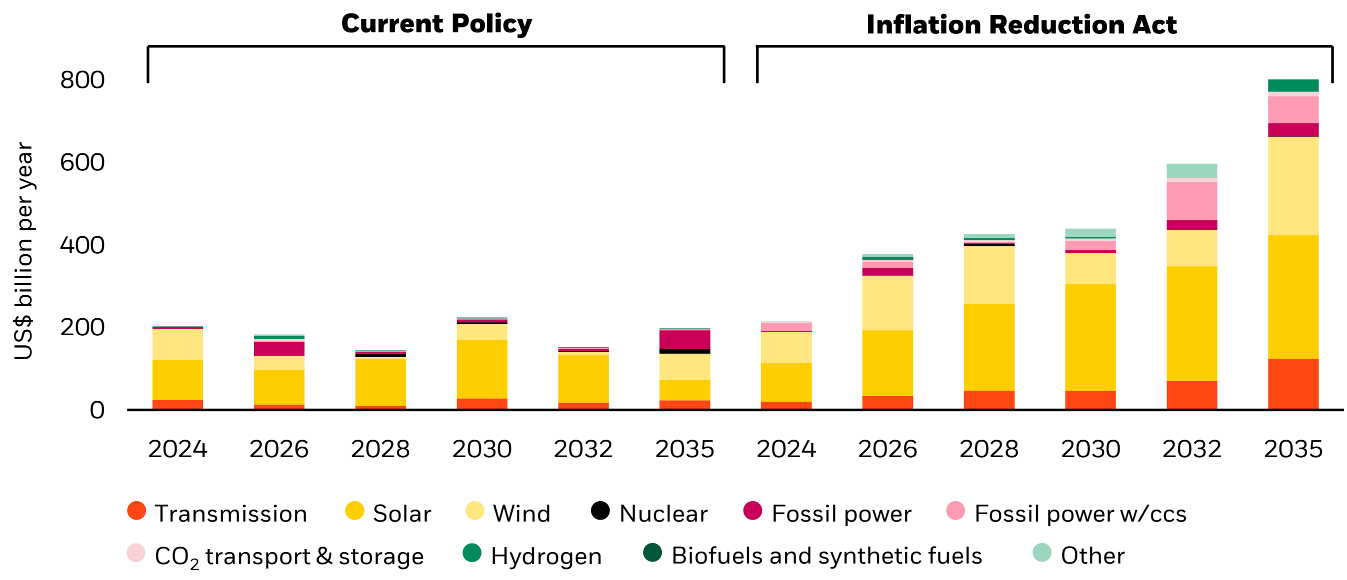
Pieter Houlleberghs: Yes, carbon capture and clean hydrogen stand out as two technologies that are more subsidy dependent and could benefit the most. Point-source carbon capture, where capture equipment is installed at power plants and factories to prevent emissions from going into the atmosphere, is possible at a lower cost than capturing carbon dioxide directly from ambient air. From current levels in the existing tax code of US$50 per ton, the legislation increases the tax incentive per ton for point source capture to US$85 and for direct air capture to US$180. At these improved levels, it will make more sense for developers to build projects, as the improved incentives start to put these new technologies and projects significantly into the money.

Mark Florian: Direct air capture can be placed anywhere in the world, ideally right on top of a place where you can sequester the carbon dioxide. This means you don't have to build huge midstream systems and pipelines to move it hundreds of miles. If you can build sequestration machines right on top of the sequestration sites, it takes out a lot of the costs. The heightened incentives around this technology make it much more viable looking into the future.

Pieter Houlleberghs: Also, the green hydrogen space is growing slowly under the status quo, but the improved incentives in the form of a new hydrogen production tax credit will accelerate its development in a meaningful way.

More capital

Estimated investment in U.S. energy supply infrastructure



Source: REPEAT Project at repeatproject.org, August 2022. Notes: The chart shows projections for capital investment based on repeatproject.org's analysis of the bill's potential impacts. It does not include impacts on clean energy components, batteries, electric vehicles or critical minerals. The analysis should be considered approximate and may be updated or refined by subsequent analysis.

What are some of the most pressing infrastructure and energy concerns going forward?

Mark Florian: Our power systems need three things: to be cleaner over time, to also be relatively cheap and to be available every minute of every day. As we make the transition and there's a higher concentration of wind and solar in the system, we need to ensure the availability of power. We think natural gas has a role going forward as renewables get bigger and bigger -- you need some sort of flexible fuel that can be turned on and turned off very quickly to help the intermittency of renewables.

The deal that created the law included an agreement to reform permitting rules. How important is that aspect?

Mark Florian: There have been years-long discussions about how we accelerate infrastructure investments in the U.S., and one of the barriers has been the permitting process.

As I understand the plans for the new legislation, it would put time limits on how long an environmental review can take for a project. This would be huge for the energy grid and for conventional types of energy in midstream, and also for renewables. The change could be a great catalyst in terms of moving a lot of infrastructure investment.

What will be the broader impact of the law?

David Giordano: I think the bill will make the sustainable energy industry more tangible. People will see more manufacturing and assembly plants in their communities; up and down the east coast from Massachusetts to Virginia there's going to be more offshore wind; you'll see more solar arrays, electric vehicles, and charging stations in the Midwest; and more sustainable projects in places like Arizona and New Mexico.

Mark Florian: I come back to those three elements, where you want energy to be cleaner, and also relatively cheap and available 24/7. And that should ultimately be a benefit to all U.S. consumers.

At a Glance: The IRA's Big Investments

US$27 billion
for the Greenhouse Gas Reduction Fund to support state and local investment in green technology

US$12.8 billion
in loans and grants to help rural communities deploy clean energy

US$3 billion
plus to build and upgrade the electric grid and related infrastructure

US$5.8 billion
to support decarbonization at high-emitting industries

US$9 billion
in rebates for high-efficiency electric appliances and whole-home energy efficiency renovations

US$3 billion
to purchase electric mail trucks for the U.S. Postal Service

US$2 billion
in grants for domestic production of clean vehicles

Sources: Evergreen Action; Blackrock Investment Institute, August 2022. Notes: The chart shows projections for capital investment based on Evergreen Action's analysis of the bill's potential impacts. The analysis should be considered approximate and may be updated or refined by subsequent

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Capital Dynamics

Setting ambitious goals to achieve Net Zero

Capital Dynamics
TRULY INVESTED.

Capital Dynamics is an independent global asset manager. The firm has over three decades of expertise in lower middle-market private equity (primaries, secondaries, direct investing) and private credit, and is an established first mover in mission-critical renewable energy generation.

- Primaries: Investments in mid-market funds within buyout, specialist, turnaround and growth sectors
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- Clean Energy: Direct equity investments in renewable energy technologies, with a focus on utility-scale and distributed generation, solar and wind

Capital Dynamics is an early adopter and consistent innovator in responsible investment, with a trademarked approach to ESG underwriting and best-in-class results from leading ESG benchmarking organizations (e.g., PRI and GRESB). As of Q2 2022, Capital Dynamics oversees more than USD 14 billion in assets under management and advisement, and employs approximately 160 professionals globally across 14 offices in Europe, the Middle East, North America, and Asia.

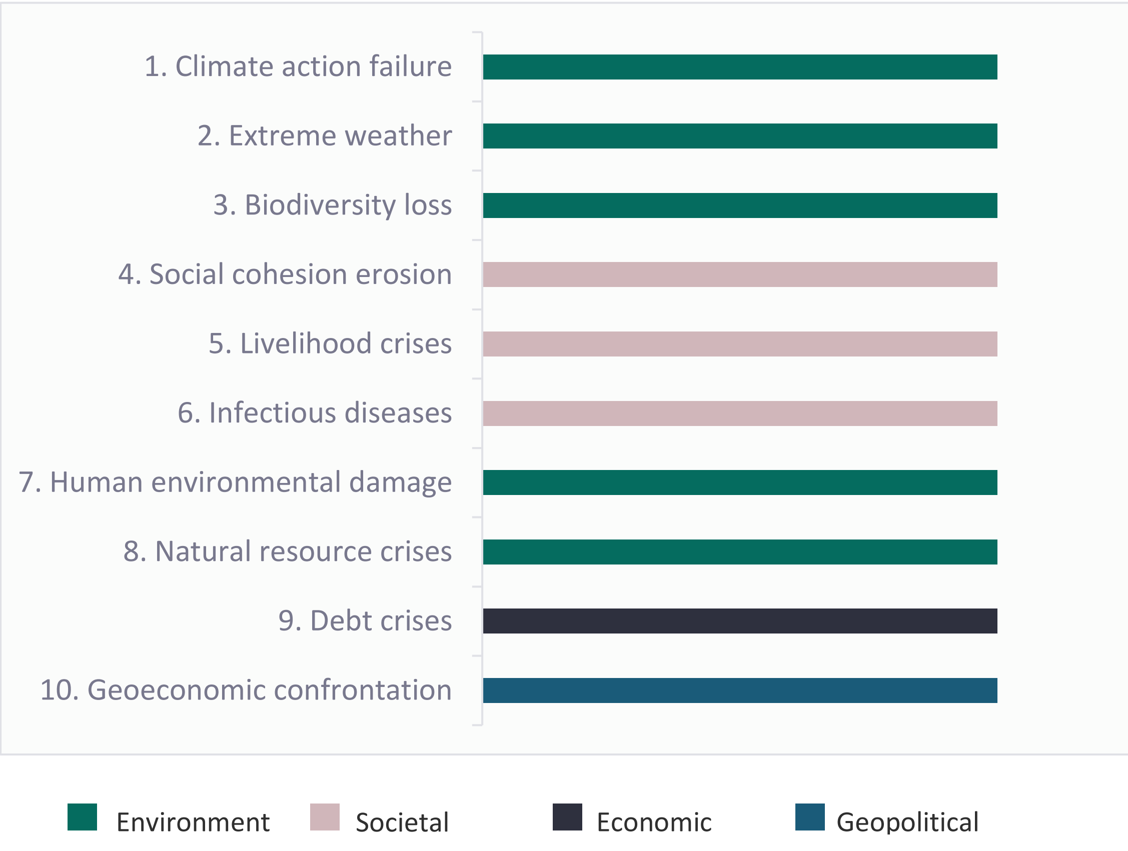
Setting ambitious goals to achieve Net Zero

Commitments by governments and corporates to achieve Net Zero are on the rise around the globe. Net Zero refers to the global objective of limiting human-made greenhouse-gas emissions to minimum levels and removing the residual emissions from the atmosphere by 2050 at the latest. Achieving Net Zero, however, cannot be done without the financial sector. Pressure is mounting on asset managers to support the transition towards lower carbon economies and we observe the role this sector is playing.

Key drivers for aligning investments with Net Zero

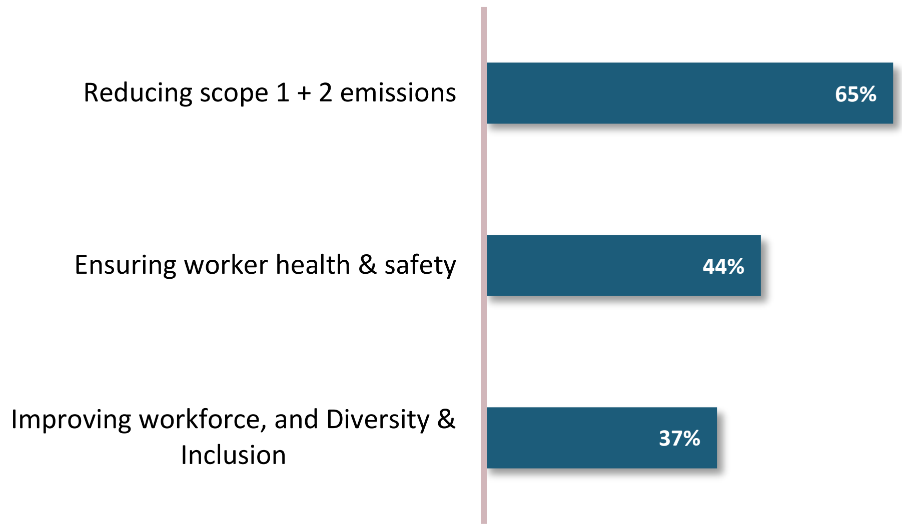
According to the World Economic Forum Global Risks Perception Survey 2021-2022, climate action failure is perceived as the most severe risk over the next 10 years (see figure 1).

Figure 1: The most severe risks on a global scale over the next 10 years



Recently, institutional investors have increased their demands for incorporating environmental, social and governance (ESG) considerations in the investment process, whereby climate-related risks and opportunities have gained special attention. In the PWC Global Investor Survey 2021, 65% of respondents stated that reducing greenhouse gas emissions is the top priority, ahead of worker health & safety and Diversity, Equity and Inclusion measures (figure 2).

Figure 2: Investors' top three ESG priorities



Source: PWC Global Investor Survey 2021

How can we get to Net Zero?

Getting economies onto the path towards Net Zero requires businesses to innovate and adopt sustainability measures centered on reducing greenhouse gas emissions. For many firms this requires cutting greenhouse gas emissions by at least 50% by 2030.

Businesses will need to make investments across their resource management, production lines, and technologies as well as innovate their products and services to achieve such reduction targets. Failing to make these adjustments can be costly to businesses. Not only do consumers expect firms to improve their environmental performance, failure to do so also creates unique financial risks, which can severely affect a firm's performance.

A key question, however, is how to deal with the free rider problem – namely that these are global impacts that individual companies can do little to effect. As such, the goal must be to create a virtuous investment cycle where less carbon-intensive businesses (or businesses on a path to de-carbonization) are favored by public and private investors alike. As this trend develops (and we are already seeing signs of it), capital flows will naturally be attracted to asset managers committed to long-term Net Zero goals.

Another way to limit the free rider problem is through regulation, which is gaining substantial momentum in Europe and the U.S. Since climate-related risks can severely affect investment values, regulators such as the Financial Conduct Authority (FCA) in the U.K., the European Commission, and the Securities and Exchange Commission (SEC) in the U.S. are either planning to roll out, or have already introduced rules, which require the measurement and disclosure of financially-material climate risks. On the flipside, investments into renewable energy projects and businesses, which adjust their business model to be compatible with a Net Zero future, represent attractive investment opportunities and have the potential to generate long-term returns.

Net Zero-aligned investing – three investment solutions for a profitable future ahead

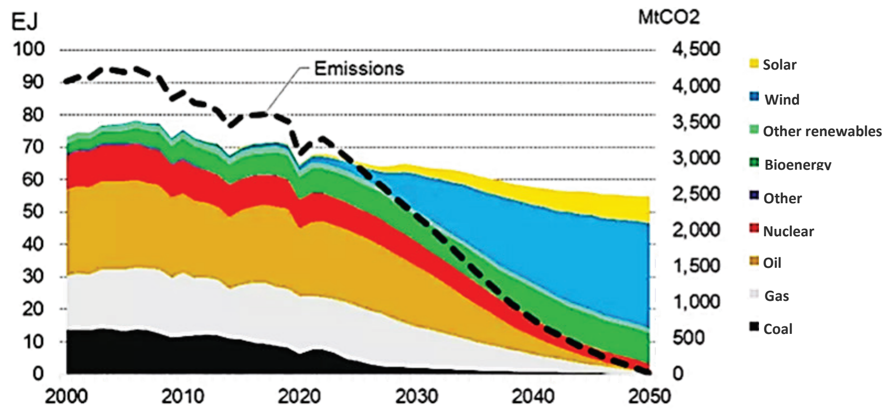
There are different ways in which investors can support the Net Zero transition through their investment decisions. Below we discuss three attractive approaches to align investment portfolios with a Net Zero pathway, which have the potential to generate long-term enhanced investment returns:

1. Investments into Clean Energy to support the scaling of climate solutions
2. Private Equity investments into businesses compatible with a Net Zero future
3. Private Credit investments with ESG ratchets aimed at incentivizing businesses to adopt ESG-friendly practices and reduce emissions over time

Clean Energy

Reaching Net Zero requires economies to decrease their reliance on fossil fuels and scale up green energy sources, such as wind energy, solar energy and other renewables (Figure 3). For many years, there has been a strong argument for renewables as a secure source of energy. However, with rapidly increasing fuel costs and energy security concerns stemming from the invasion of Ukraine, there is an even more urgent need to tackle the climate crisis. This creates substantial opportunities for investors in both well-established and newer, innovative technologies. In the medium term, we expect to see an expansion of new renewables capacity across Europe as governments loosen restrictions and pass new legislation to facilitate further development activities, while what may be now considered 'frontier' technology (such as green hydrogen, and to some extent, batteries) will become more mainstream and vital to Limited Partner portfolios. However, we do not believe these investments to become in any way commoditized over time nor available 'off the shelf'. Barriers to entry will continue to be high, and the quality of an underlying investment in this space will continue to be driven by the expertise of the General Partner and its ability to leverage relationships and local market presence to deliver the most attractive risk-adjusted returns.

Figure 3: Total primary energy by fuel and energy-related CO2 emissions in Europe. Net Zero scenario



Source: Bloomberg NEF – Europe's Path to Clean Energy: A $5.3 Trillion Investment Opportunity

Private Equity

Private Equity investments are well suited to support the transition towards Net Zero and create long-term enhanced returns, consistent with a manager's fiduciary obligation. This is because private equity managers assert influence over portfolio companies and facilitate change in the business model, governance and strategic outlook as part of their value creation plan. In the context of Net Zero, private equity managers can encourage firms to measure and report greenhouse gas emissions, manage climate-related risks and set reduction targets to remain commercially viable in a lower carbon economy, which increases enterprise valuation at exit.

This approach represents a unique opportunity for redirecting capital towards firms specialized in innovative climate solutions and scaling the technologies, but also helps businesses operating in high emitting sectors to adapt. In particular, middle-market buyout funds are likely to gain greater interest under the lens of Net Zero. This is because medium-sized companies increasingly provide the innovation and technologies required to transform a high emissions sector into a more sustainable operating model.

Private Credit

Private Credit investments have the ability to support the goals of Net Zero by introducing incentive schemes (ESG ratchets) which reward borrower companies for achieving pre-defined ESG targets through a reduction of interest rates, or alternatively increase interest rates for failing to meet the targets.

Since the transition to lower carbon economies requires behavioral change on a large scale, using ESG ratchets can be an effective way to incentivize businesses to measure greenhouse gas emissions, define credible emission reduction targets and lay out transition plans, which allows companies to remain viable in a Net Zero world. While ESG ratcheting is still at an early stage at present, we believe this approach will continue to grow and offers great potentials for investors to manage their top ESG priorities in their investment portfolios.

Our approach to Net Zero at Capital Dynamics

As an early adopter of ESG in the private markets, Capital Dynamics recognizes the important role that alternative asset managers can play in leading the transition to a Net Zero economy.

As climate change accelerates, setting a clear focus on greenhouse-gas reduction targets in line with the 1.5°C objective will play a critical role in minimizing environmental-related financial risk to our investments. This represents attractive investment targets for financial and strategic buyers in the future as the world collectively accelerates towards Net Zero goals over the next two to three decades. It is for these reasons that we are committed to taking immediate action in the advancement of Net Zero ambitions at the fund, asset, and operational levels of Capital Dynamics. That is why our firm has pledged to Net Zero with the Net Zero Asset Manager Initiative in 2022.

In addition, we have been the co-lead of the Institutional Investors Group on Climate Change (IIGCC) Net Zero Investment Framework for Private Equity – a momentous achievement in developing the first Paris-aligned investment framework for private market investments. With our deeply rooted passion to combine attractive financial returns with purpose-driven Responsible Investing, we are committed to align our investment portfolios with the goals of Net Zero across all investment strategies and we are proud to be one of the first middle-market Private Equity firms with a substantial U.S. presence committed to do so.

We are also committed to achieve substantial progress towards Net Zero well ahead of the 2050 timeline. That's why Capital Dynamics has defined an ambitious 5-Year Climate Plan to reduce our own emissions across our operations and our financed emissions in our investment strategies by 2027, which includes:

- developing asset decommissioning plans for our new projects to reduce end-of-life emissions in our Clean Energy business
- Increasing the proportion of our Private Equity portfolio companies that set science-based greenhouse gas reduction targets and predominantly invest with managers who are committed to support the goals of Net Zero
- Supporting our borrower companies to measure greenhouse gas emissions and implement ESG ratcheting focused on emission reduction targets in Private Credit
- Reducing our own emissions from our office energy consumption, business travel and employee commuting

At Capital Dynamics, we look forward to creating a prosperous future, by investing with purpose. We believe setting ambitious Net Zero goals and starting the implementation now, rather than in a decade's time, is crucial for capturing the return potential that lies ahead in the transition towards a lower carbon future.

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For more information, please visit: www.capdyn.com

[1]As of June 30, 2022. Assets Under Management are calculated based on the total commitments as of the final closing date for all funds currently managed by Capital Dynamics, including amounts that have been distributed. Assets Under Advisement includes assets for which Capital Dynamics provides services such as reporting, monitoring and risk management.

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IFM Investors

Resilience and transition

I IFM Investors (IFM) traces its formation back to 1994, when our Australian pension fund owners set out to create an investor-owned fund manager where the profits and scale benefits would be shared with investors' members. Today, this investor-owned model is the foundation of everything we do. It affects how we invest and how we manage our people and culture. IFM Investors is a pioneer in infrastructure investing on behalf of institutional investors globally with a proven track record of more than 27 years. We carefully target core infrastructure equity and debt across Australia, North America and Europe. We are proud of our track record and believe we have an opportunity – indeed a responsibility – to selectively grow the capability of our firm to improve the retirement outcomes of over 30 million workers globally represented by our like-minded investors. Established by all-profit-to-members Australian superannuation funds, IFM Investors focuses on protecting and growing the long-term retirement savings of working people worldwide. IFM Investors' distinct ownership drives an alignment with investor objectives, a commitment to investing for the long-term, and respect for labour rights and environmental and social responsibility.

INFRASTRUCTURE

Resilience and transition

Infrastructure Outlook

April 2022

Multiple disruptions are shaping the infrastructure sector, including the global net zero focus, funding shifts driven in part by government stimulus packages and digital transformation.

As one of the world's largest infrastructure investors, with portfolio assets spanning more than 20 countries, we have spent more than 25 years analysing and understanding the dynamics that shape the industry. We also contribute to these dynamics through our investment and active asset management activities, which we undertake in our efforts to protect and grow the long-term retirement savings of working people.

We have observed that some of the macro trends that have been shaping the industry over the last decade are now converging and accelerating – as a result of the impact of the COVID-19 pandemic. While the impacts are still continuing, this period has heightened the industry's focus on resilience and transition, which we expect to continue for some time to come.

Leveraging the expertise of our global infrastructure team, asset management experts and public policy advisers, this report looks at some of the overarching forces that we believe will shape the sector over the next 12 months. We've flagged four areas we believe investors will hear a lot about over the coming year and which may create investment opportunities.

FLAGS FOR INFRASTRUCTURE INVESTORS Four areas to watch

FLAG 1
2050, 2030 or today: decarbonising existing portfolios
(page 4)

FLAG 2
Brown-to-green: alternative energy sources
(page 7)

FLAG 3
Fibre, data centres and the digitalisation of infrastructure
(page 10)

FLAG 4
Increasing scope for public-private partnerships to build back better
(page 11)

The macro environment - COVID-19 recovery

COVID-19 has impacted sectors in our portfolio to varying degrees (see Figure 1). Assets focused on the transportation of people were particularly affected, with airports experiencing significant passenger reductions. As vaccination rates increase and travel, border and quarantine restrictions ease across regions, passenger numbers have been rising. However, the sector's recovery remains uncertain given the emergence of new COVID-19 variants and renewed restrictions. Across our toll-road assets, traffic recovery has been firmly underway led by heavy-vehicle traffic that is linked with the flow of consumer goods and industrial production. Ports continued to show resilience, however, with ongoing supply chain disruptions, experience has been mixed. While other assets that have counter-cyclical drivers, such as certain midstream assets, have performed well.

Focus on supply chain resilience

Global supply chains already strained by the pandemic, have been tested further by flow-on impacts from Russia's invasion of Ukraine. The vulnerabilities highlighted through this period may prompt businesses to prioritise supply chain resilience over efficiency.[1] More broadly, countries may become increasingly vigilant around sovereignty over key supply chains and sectors of the economy, such as energy, agriculture, health and defence.[2]

IFM believes some infrastructure assets with large land banks (ie significant available land for development), such as certain airports and seaports, may be well placed to support the creation of further industrial precincts. For example, at Melbourne Airport, an asset in our Australian infrastructure portfolio, world-

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1 www.imd.org/research-knowledge/articles/the-localization-of-global-supply-chains-amid-the-pandemic/
2 www.infrastructureinvestor.com/ifm-investors-michael-hanna-countries-may-be-increasingly-vigilant-over-key-sectors-of-the-economy/

FIGURE 01 IMPACT OF COVID-19 ON INFRASTRUCTURE SECTORS

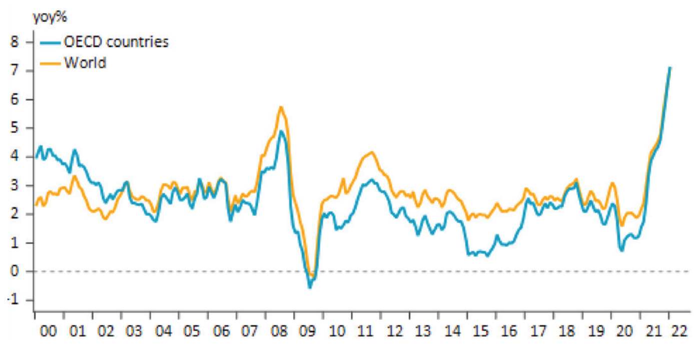
LOWER ········ **DEGREE OF IMPACT** ········ HIGHER

Utilities: Water, Heating & Telco | Midstream | Seaports | Toll roads | Airports

Three ways rising interest rates can impact infrastructure investments

1. Impact on asset financing costs and capital structures
2. Effect of accompanying changes to inflation and economic growth
3. Impact on infrastructure equity discount rates

FIGURE 02 GLOBAL INFLATION



Source: IFM Investors, OECD, World Bank, Macrobond.
As of 3 March 2022.

leading influenza vaccine company, Seqirus – a part of the CSL Group - is building a new $800 million vaccine manufacturing facility and expects to start operations in 2026.

Coupled with the global e-commerce boom, demand for industrial land is at record levels, with potential industrial clients particularly attracted to the close linkages to global freight supply chains offered by certain seaport and airport land holdings. This could provide further diversification for those businesses.

Impact of rising inflation

Government fiscal and monetary policy has played a crucial role in supporting communities, businesses and the economy through the pandemic. Global growth has recovered well, but ongoing supply constraints have seen inflation accelerate (see Figure 2). Central banks initially expected rising inflation to be transitory and that it would decelerate as strong demand (supported by fiscal policy) and increasing supply found an equilibrium. However, inflation has proved unexpectedly persistent and the outlook remains uncertain, with the Russia/Ukraine conflict complicating matters further. Nonetheless, lower potential growth, moderate levels of inflation and higher debt levels suggest that interest rates will cycle around a structurally lower average level.

Infrastructure assets are well-positioned to perform in higher inflation environments and manage increases in interest rates. Generally, the performance of infrastructure assets is positively correlated to inflation. This typically is driven by a combination of factors including inflation-linked rate setting mechanisms and GDP-linkage.

FLAG 1

2050, 2030 or today: decarbonising existing portfolios

With hundreds of the world's largest businesses and more than 130 countries setting net zero or carbon neutrality policies,[3] emissions targets are creating challenges and opportunities for infrastructure investors.

The targets, together with government policy, may intensify pressure on investors to decarbonise their portfolios and create opportunities to invest in new infrastructure. For instance, prominent technology companies have sought to reduce the carbon impact of their corporate operations through installing renewables on their premises or through power purchasing agreements for energy generated from renewable sources, which, in turn, creates opportunities for investments in infrastructure. Similarly, significant opportunities exist in transitioning existing infrastructure to meaningfully participate in a net zero economy.

IFM's own focus on net zero infrastructure started almost two decades ago. It first invested in renewable energy in 2005 with the acquisition of Pacific Hydro, a global developer of hydro-electric projects. Since then, in addition to other acquisitions, it has worked with portfolio companies to develop renewable energy assets and other carbon reduction initiatives. Most recently, building on its ESG Strategy, IFM set a target to reduce its Scope 1 and 2 emissions by 1.16 million tonnes by 2030 (from a 2019 baseline) and achieve net zero by 2050.

Supply-side opportunities

To achieve net zero, the entire energy ecosystem will need to undergo a profound transition (see Figure 3), which will require unprecedented levels of new investment in infrastructure. This will require meticulous planning, especially in ensuring energy certainty, and tackling intermittency issues through the continued evolution in the use of transition fuels, batteries and other technologies.

In its Net Zero by 2050 scenario, the International Energy Agency says that by 2030 close to US$4 trillion will be needed annually for clean energy infrastructure and projects.[4] While governments are committing increasing amounts to sustainable infrastructure to reach the level of investment required, IFM believes the private sector has a long-term role to play.

Today, the green infrastructure universe is mainly renewables and the transmission lines required to connect energy supply to meet demand. IFM believes this infrastructure is a critical pillar and the foundation to achieving a net-zero economy. As demand for these types of assets has risen, the supply of assets and investment opportunities has also seen a notable increase, and is likely to grow further as more countries commit to ambitious emission-reduction targets. Moreover, the market is evolving quickly and the energy transition opportunity set continues to expand beyond renewables.

The opportunities IFM sees emerging include:

- an increasing take up of low carbon fuels (such as biofuels and hydrogen)
- infrastructure investments that support electrification (including creation of grids to accelerate connection to offshore wind and electric vehicle charging stations); and
- selected carbon capture and storage facilities.

Competitive asset acquisitions are not the only way to participate in the new project supply, with platform models becoming an increasingly common strategy to generate alpha and achieve higher returns than typical standalone financial investments.

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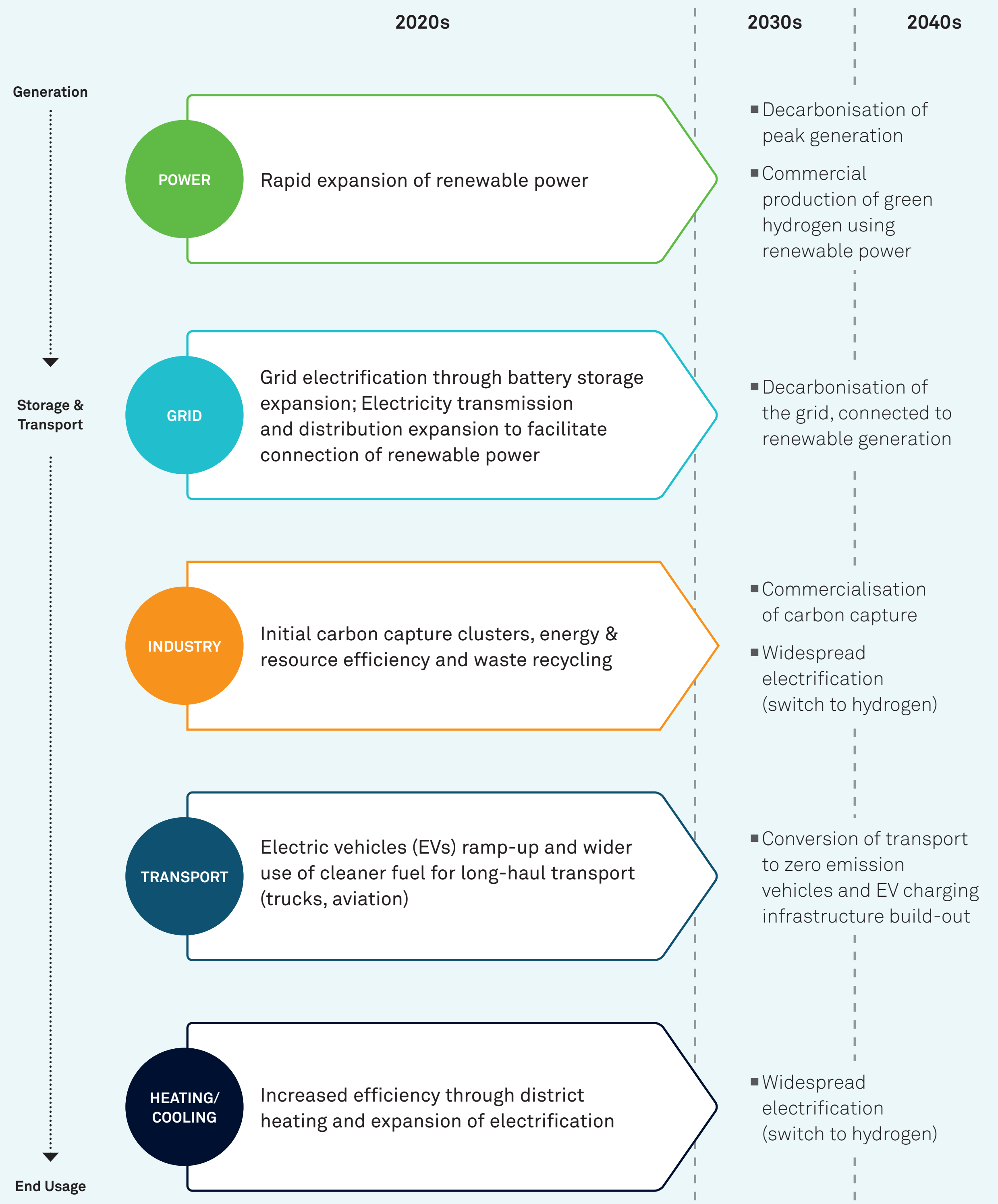
[3] https://zerotracker.net/
[4] www.iea.org/reports/world-energy-outlook-2021/executive-summary

FIGURE 03

To achieve net zero, the entire energy ecosystem will require a profound transition



Source: IFM analysis

Transitioning assets rather than divestment

According to some estimates, half of the global infrastructure of 2050 is already built, under construction or being planned,[5] implying that active transition strategies will be necessary to meet carbon reduction targets. IFM believes that the role of existing infrastructure in a net zero world is significantly understated. There are, and will continue to be, attractive investment opportunities in transitioning infrastructure assets to generate long-term investment returns. Asset divestment forgoes these long-term investment opportunities and, by not addressing the problem, does not achieve the emissions reductions that are possible through responsible asset stewardship.

Although a necessary task, transitioning infrastructure assets to a net zero economy is complex and challenging. Decarbonisation pathways are likely to be different for each asset and will depend on many factors, including: the source of the emissions; the level of control the asset has over the emissions; the commercial viability of existing abatement options; technological advances; and the prevailing policy and regulatory environment.

Nevertheless, we see real opportunity in repurposing traditional infrastructure for alternative uses in the long-term, and leveraging the extensive operational experience and expertise within those companies to diversify and transform their respective business models. Assets such as seaports and airports may also play a key role by constructing supporting infrastructure that facilitates the transition in hard-to-abate sectors, including global shipping, heavy industry and long-haul aviation.

Energy security and an orderly transition

Prompted by Russia's invasion of Ukraine and the global spike in fuel prices, governments globally are examining options to enhance energy security, which is even more important now. In the EU and UK, especially, the geopolitical imperatives for developing renewable energy have become clearer and industry commentators have flagged the potential for these events to provide a catalyst in accelerating investment in the net zero transition.

In the short term, however, we may see increased use of coal and other fossil fuels as markets look for substitutes for Russian products and as governments look to protect the poorest members of society from increases in the cost of fuel, food, heating and cooling.

More broadly, fossil fuels are expected to have a role to play across the globe in enabling energy security for some time to come, and in supporting an orderly transition to net zero as technologies for climate solutions mature and are scaled up. Critically important sectors such as global shipping, heavy industry and long-haul aviation are difficult to abate carbon emissions from. This is due to the limitations of existing energy transition technologies. Additionally, even as technology improves, global industry-wide adoption of such technologies will take time to achieve due to long lead times and the sheer scale of the transition. Adoption of such technologies will likely also be uneven across the globe, with developed countries having far greater capacity to undertake such shifts in key economic industries in the short term compared to developing countries.

Similarly, the effect of the energy transition on market participants will be uneven, with marginal firms more heavily affected than strategic market leaders. As the energy transition progresses, these uneven impacts should be expected to continue. Infrastructure asset managers who take a long-term view of the energy landscape are well positioned to seize emerging opportunities to transition assets into new business models as the world continues to pursue lower greenhouse gas emissions.

PORTFOLIO EXAMPLE

Steps towards transition

Veolia Energia Polska (VEP), heating and steam company, UK/Europe has converted coal units to biomass in the cities of Łódź and Poznań. The conversion has resulted in an annual 10 – 12% emissions reduction for the company, equivalent to 350,000 – 400,000 metric tonnes of carbon emissions a year.

NSW Ports (Port Kembla), seaport, Australia has signed an agreement with Squadron Energy to construct Australia's first LNG import terminal at the port, which will help meet the state's gas needs. As part of the energy transition, with a massive increase in the take-up of renewable energy across the state, significant coal generation retirements are expected. Further discussions are underway with the NSW Government to construct a gas-hydrogen co-fired power station at the port.[6]

Melbourne Airport, Australia has completed a 12-megawatt (MW) solar farm on 19 hectares (47 acres) of airport land. This is the largest behind-the-meter solar farm at any Australian airport, and is expected to generate up to 15% of the airport's annual electricity consumption - enough to power all four passenger terminals.

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[5] www.gihub.org/articles/net-zero-infrastructure/
[6] www.planning.nsw.gov.au/News/2021/Proposed-Port-Kembla-power-station-declared-critical

FLAG 2

Brown-to-green – alternative energy sources

To achieve global net zero ambitions, the energy mix for the transport sector is expected to shift over the long term to employing clean and renewable sources of energy. A scenario developed by the International Energy Agency is useful in highlighting the directional step change that is required across the sector over the coming decades (see Figure 4).[7]

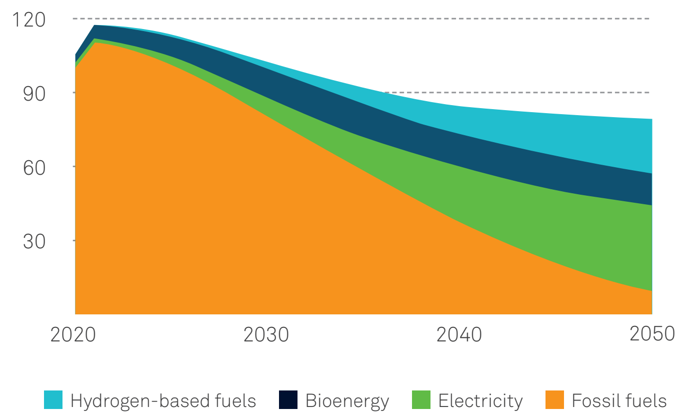
Much focus has been on the electrification of road transport; however, significant efforts are also being made to decarbonise the aviation industry. While new aircraft technologies have a role to play, keeping pace with expected long-term demand for air travel will require additional solutions.

Sustainable aviation fuels

Alternative fuels, including sustainable aviation fuels (SAFs), have been identified as a potential solution for helping meet the industry's climate targets (see Figure 5). Part of the broader category of biofuels, SAFs can be safely mixed with conventional jet fuel, use the same infrastructure and do not require aircraft modification.[8]

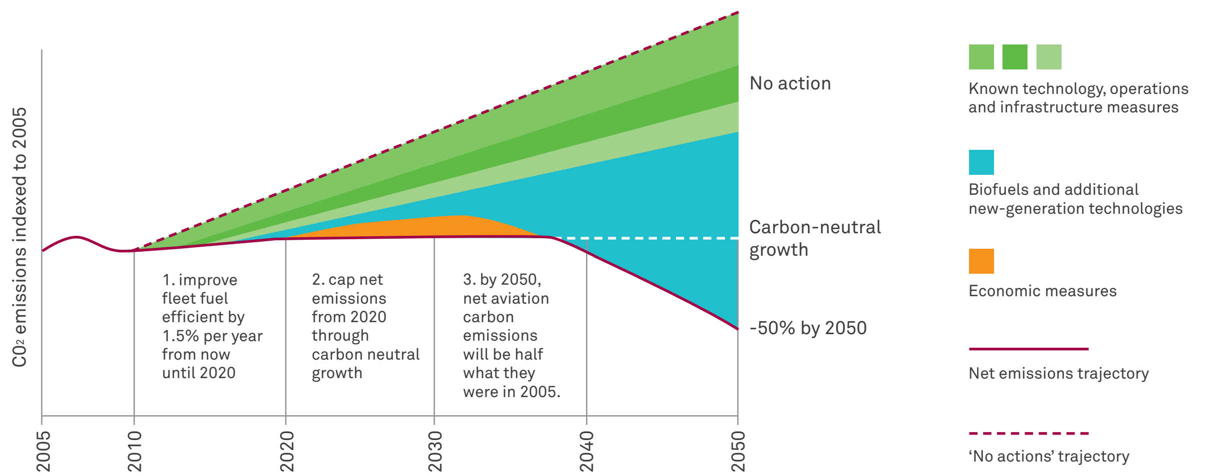
The International Air Transport Association (IATA) expected that production could potentially be in the billions of litres by 2025 under optimal conditions and with appropriate policy support.[9] Countries across Europe, for instance, are looking at supportive policy changes with various governments having defined and implemented SAF 2030 mandates to support the shift to biofuels, with an EU-wide mandate expected from 2025.[10]

FIGURE 04 GLOBAL TRANSPORT - CONSUMPTION BY FUEL TYPE (2020 TO 2050)



Source: International Energy Agency, 2021

FIGURE 05 IATA SCHEMATIC C02 EMISSIONS REDUCTION ROADMAP



Source: www.iata.org

[7] www.iea.org/reports/net-zero-by-2050
[8] www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/saf-fact-sheet-2019.pdf
[9] www.iata.org/en/programs/environment/sustainable-aviation-fuels/
[10] www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/fact-sheet---us-and-eu-saf-policies.pdf

PORTFOLIO EXAMPLE

Manchester Airport becomes first UK airport with direct sustainable jet fuel supply

Manchester Airport Group (MAG) recently announced a partnership with Fulcrum BioEnergy to support the development and delivery of SAF produced at a new waste to fuels bio-refinery. SAF will be delivered to Manchester Airport through an existing pipeline.

The partnership could see up to 10% of the fuel used by aircraft at the airport replaced with SAF within five years of the new facility becoming operational. The facility will produce approximately 100 million litres of SAF per year. The fuel produced will have a C02 footprint at least 70% lower than that of its traditional jet fuel equivalent and will be produced from non-recyclable household and commercial wastes. Once blended and certified, the SAF can be used in aircraft without the need for modifications.

MAG will explore opportunities to supply SAF to its other airports at London Stanstead and East Midlands.

A number of cross-functional coalitions across various regions are also forming to support the take-up of SAFs, with various airlines announcing commitments as well. British Airways, for example, as part of International Airlines Group has committed to powering 10% of flights with SAF by 2030.[11] Ryanair is targeting 12.5% over the same timeframe.[12] American Airlines has announced SAF commitments totalling more than 120 million gallons, signalling the integral role SAF will play in its sustainability strategy this decade.[13] Similarly, Australia's national carrier Qantas recently announced it had signed an agreement to purchase 10 million litres of SAF in 2022 with an option to purchase up to another 10 million litres in 2023 and 2024 for flights from Heathrow Airport. This represents up to 15% of its annual fuel use out of London.[14] Successfully scaling up SAF will require a step change in the level of collaboration between airports, airlines, governments and producers, but doing so has the potential to create wide-ranging, long-term benefits.

Emerging opportunities in hydrogen

While still very early stage and not imminent, hydrogen may become increasingly important to the decarbonisation of heavy industry and transportation over the medium term, including aviation by serving as feedstock for the production of e-fuels. By some estimates, as applications grow over the next 30 years, the hydrogen market could potentially expand more than five-fold to over 500m tonnes.[15]

Although nearly all hydrogen today is produced from fossil fuels without carbon abatement (known as "grey" hydrogen), the industry is committing substantial resources to uncover ways to increase the economic viability of cleaner hydrogen. Development of economical methods to generate less carbon-intensive forms of hydrogen will be critical to enabling widespread adoption.

Investors may be aware that green hydrogen (produced through an electrolysis process powered by renewable energy) and blue hydrogen (produced by gas reforming with associated carbon capture and storage) are

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[11] https://mediacentre.britishairways.com/news/03122021/british-airways-and-phillips-66-agree-first-ever-uk-produced-sustainable-aviation-fuel-supply
[12] https://corporate.ryanair.com/news/ryanair-trinity-college-launch-saf-centre-ryanair-commits-to-12-5-saf-goal-by-2030-2/
[13] https://news.aa.com/news/news-details/2021/American-Airlines-Makes-Additional-Commitment-to-Sustainable-Aviation-Fuel-CORP-OTH-12/default.aspx#
[14] www.qantas.com/agencyconnect/au/en/agency-news/agency-news-december-21/qantas-purchases-sustainable-aviation-fuel-for-kangaroo-route.html
[15] The Economist, The hydrogen economy: a very big balancing act, 2021

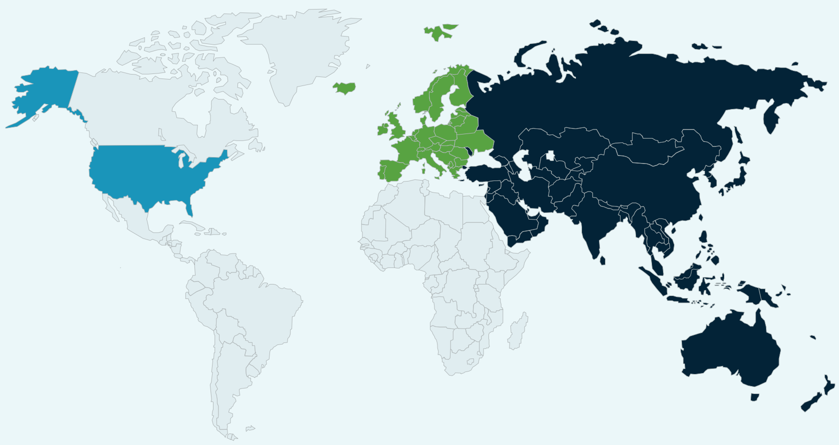
featuring in net-zero strategies globally.[16] Potential for high growth and strong ESG impact are part of hydrogen's appeal to investors. Infrastructure themes best positioned to capture emerging opportunities in hydrogen include new green hydrogen electrolyser installations; renewable energy to produce green hydrogen; as well as (in some geographies); gas processing and carbon storage infrastructure.

Existing infrastructure, with investments made to enable compatibility, has the opportunity to benefit from an increase in the use of hydrogen. For example, selected gas grids and pipelines may benefit from future product transportation opportunities, while storage terminal operators could benefit from new opportunities in ammonia storage or underground gas storage. Multiple opportunities will likely also arise in the long-term in end-user mobility and heating services.

The take up and end uses of hydrogen will vary across regions (see Figure 6). Encouragingly, we are already seeing policy and regulatory attention on this topic.

FIGURE 06

Hydrogen uptake will vary across regions



EUROPE

- Leader in promoting hydrogen production
- Many countries have introduced a production subsidy regime
- Green hydrogen receives the lion's share, blue may be selectively supported
- Industrial off-take dominates
- First projects are "closed-cycle" (producer-dedicated pipe-industrial user)
- Emerging midstream solutions, largely based on current gas grids
- Landmark German subsidy announcement in May 2021: Eur 8 bn across 62 projects, covering not only production but midstream and mobility

US

- Series of federal and state incentives, mostly via tax credits
- Set of incentives for mobility - encouraging the installation of fuel cells and hydrogen fueling infrastructure
- Growing network of hydrogen-powered fork-lift trucks and plans for road trucks
- Policy to support hydrogen production evolving
- Market participants predict high share of blue hydrogen

ASIA/AUSTRALIA

- Diverse set of policies
- Japan and South Korea in the lead with a strong set of policies
- China sets targets with details yet to emerge
- Australia recognises potential to produce and export green hydrogen

[16] www.icf.com/insights/energy/hydrogen-power-zero-carbon-future

FLAG 3

Fibre, data centres and the digitalisation of infrastructure

In the ongoing transition to a digital world, technology and data are increasingly central to many aspects of daily life. As a result, internet traffic growth will likely continue to accelerate with global networking solutions company Cisco expecting year-on-year growth of 25-30% between 2017 and 2022.[17] This represents a greater than threefold increase of internet traffic over the five-year period, driven by mass adoption of internet video and the demand for bandwidth-intensive applications growing. Furthermore, having been created prior to the global pandemic, these forecasts do not take into account the significant impact of COVID-19 on the proliferation of internet use and remote working.

Cisco also expect that the number of devices connected to IP networks will outpace the global population by more than three times by 2023, as new devices with increased capabilities and sophistication are introduced to the market. This represents a forecast 29 billion networked devices globally by 2023, up from 18 billion in 2018.[18]

IFM expects several key technologies will help drive strong long-term growth in computing power, and data traffic (both consumer and business). These include:

- a continuation of strong growth in internet video services and entertainment
- increasing adoption of the Internet of Things, big data, artificial intelligence and machine learning applications
- the arrival of connected and automated vehicles.

As a result of this growth, IFM expects digital infrastructure across the telecommunication towers, data centres and fibre networks segments will face greater demand and continue to attract interest from infrastructure investors. There are certain opportunities in these asset types that demonstrate core infrastructure characteristics such as essentiality, high barriers to entry, cash-flow stability, and limited technology risk.

In November 2021, for example, IFM announced a long-term partnership with Deutsche Telekom (one of the world's leading integrated communication companies), establishing a new joint venture, which plans to roll out gigabit-capable Fibre-to-the-Home broadband to over four million homes in rural areas of Germany by 2028.

Data centres have also claimed their place within the infrastructure space with many assets demonstrating resilience and the fundamentals to support long-term stable cash flows, driven by growth in the digital economy. While IFM would not view all data centre assets as core infrastructure, there are segments of the market that can demonstrate these characteristics.

Digitalisation of infrastructure

Across our portfolios, IFM is observing how the digitalisation of infrastructure is working to meet changing consumer expectations, as well as create operational benefits across all stages of the asset lifecycle.

Infratech solutions are providing access to real-time information and redefining how consumers interact with infrastructure services.[19] These enable energy and other resources to be optimised, and space better managed. This is especially relevant for airports and train station operators to manage crowds in a COVID-safe economy. They are facilitating smart water management, and the use of sensing technologies that enhance asset operations. And they are underpinning the development of more tailored products and services.

The introduction of automated number plate recognition on the M6 toll road in England is an example of how data collection will drive the creation of more tailored pricing strategies connected to vehicle type, duration of travel and frequency. Similarly, since launching in 2017, Manchester Airport Group's data-driven MAG-O platform has increased business-to-consumer airport revenues through offering services such as car parking, hospitality reservations and retail pre-ordering.

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17 Cisco Annual Internet Report 2017-2022
18 Cisco Annual Internet Report 2018-2023
19 www.pwc.com/gx/en/capital-projects-infrastructure/pdf/global-infrastructure-trends.pdf

Increasingly smart mobility platforms are integrating transport modes. Over the coming years, there may be possibilities for the digitalisation of roadside infrastructure to facilitate communication with vehicles, potentially enhancing safety and traffic flow.

With increasing digitalisation, infrastructure sectors will face an evolving set of opportunities and challenges, such as the need for a substantial focus on cyber security. Developing a nuanced understanding of the technology landscape will be essential to acting on emerging trends to minimise risks and unlock value.

M6 toll road, England UK

FLAG 4

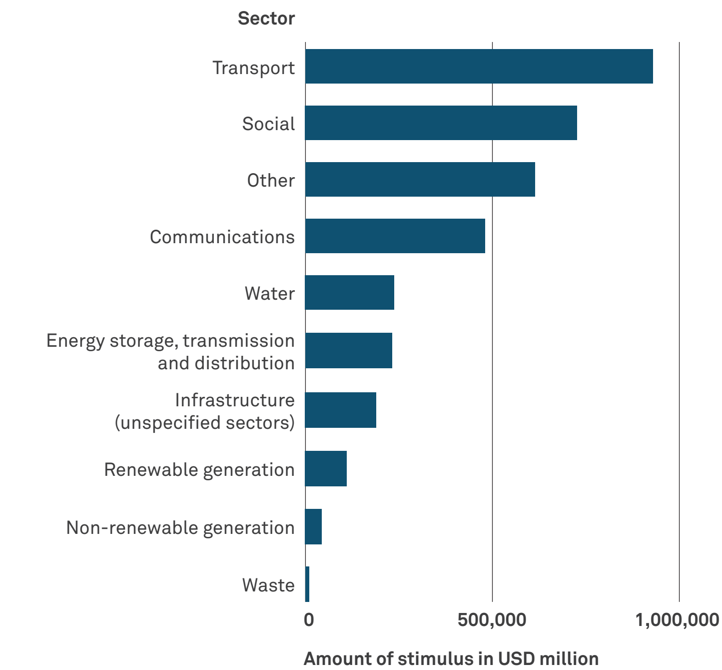
Increasing scope for public private partnerships to build back better

Infrastructure investment is playing a key role in national recovery plans through generating economic and jobs growth, and delivering infrastructure that communities need.

Governments have announced an estimated US$3.2 trillion allocated to infrastructure globally as part of COVID-related stimulus (see Figure 7),[20] and while much of this will be delivered through public grant funding and traditional contracting, we also see significant opportunities for governments to partner with the private sector – particularly long-term, responsible investors like superannuation and pension funds – to deliver infrastructure that is transformational for communities and economies.

The scale of the infrastructure task is substantial, particularly in the United States (US). Private investment in US public infrastructure has lagged behind other countries as infrastructure projects have traditionally been funded with government grants and financed through the issuance of municipal bonds, with little scope for the private sector to invest and partner with governments to deliver public infrastructure more efficiently and at a lower whole-of-life cost. This

FIGURE 07 INFRASTRUCTURE AS A STIMULUS BY SECTOR – G20 SPEND[21]



Source: https://transformativeinfratracker.gihub.org/overview

[20] Between February 2020 and August 2021.Source: https://transformativeinfratracker.gihub.org/overview/

[21] Other includes: Disaster management infrastructure, Environment and nature based solution, agriculture and commercial and industrial infrastructure. Source: https://transformativeinfratracker.gihub.org/overview/

has remained true even as there are record levels of dry powder among equity investors looking to put capital to work in infrastructure.

With President Biden signing the Infrastructure Investment and Jobs Act into law, the federal government has formally recognised and encouraged the role of the private sector in helping governments close the infrastructure investment gap. The Biden Administration plans to spend an incremental US$284 billion on transportation, including roads, bridges, rail, public transit, airports, ports and electric vehicle infrastructure. Another US$266 billion is earmarked for enhancing core infrastructure including power grid, broadband, water and environmental resiliency/remediation.[22] The private sector will have many opportunities to participate in the buildout of this infrastructure; as well as potentially invest equity (given how substantial the planned incremental spending is) as many state and local infrastructure needs may remain unmet.

In addition, the Act introduces new measures, which encourage states and local governments to consider alternative infrastructure procurement models such as public-private partnerships (PPPs or P3s) when determining how to finance infrastructure. These measures may work to elevate the profile of PPPs and start the national conversation on alternative infrastructure procurement models, which may include long-term leases of infrastructure or asset recycling opportunities.

The Build Back Better Act could be even more directly consequential in boosting equity investment opportunities through its extension and expansion of tax incentives for investment in renewable energy projects. These incentives enhance project economics and have been essential to the US development of its private-sector renewable energy industry. The inclusion of a direct pay option for monetising the tax incentives would broaden the range of viable industry participants, further spurring investment. However, at the time of this publication, the outcome of the Act is uncertain.

European governments are also turning to the private sector to help deliver their sustainable infrastructure agenda. The European Green Deal – which provides a blueprint for the world's first climate-neutral continent - seeks to mobilise at least €1 trillion in sustainable investments through a mix of public and private sources.[23]

On a smaller scale, as Australia looks towards a federal election in 2022, both major parties have policies that seek to catalyse private investment in the post-COVID recovery, clean energy and the commercialisation and development of technologies that are likely to be critical to the net zero transition.

An example of this kind of partnership can be drawn from IFM's experience working with Australian federal and state governments on projects that upgrade and expand the existing transport, defence, education and justice PPP assets it manages. Currently IFM is working with the Federal Government to facilitate a major upgrade of Defence's Joint Headquarters facility. The project will support the doubling of the facility's original capacity and create a 1.9 megawatt solar farm, among a range of other benefits.

More broadly, the Australian Government is planning to invest A$250 million in its new future fuels policy and hopes to stimulate another A$250 million in private investment.[24] It has also committed to provide the Clean Energy Finance Corporation, Australia's public green bank, with A$500 million in additional capital for a Low Emissions Technology Commercialisation Fund, which will seek matching investment from the private sector.[25]

PORTFOLIO EXAMPLE

Private capital supporting the electrification of road transport

Ausgrid, energy provider, Australia has partnered with JOLT, an electric vehicle (EV) charging network company, to create an EV charging network across Sydney. Using existing street-side kiosks, which are common in every suburb, the charging stations will be powered by renewable energy.

Indiana Toll Road, North America has deployed Level 3 fast charging infrastructure for EV customers, providing an 80% charge in 30 minutes.

Aleatica, global toll-road company has rolled out EV charging infrastructure and launched a pilot project to test cutting-edge wireless inductive charging for EVs on a one-kilometer section of road, adjacent to Brebemi in Italy. The collaborative project was named by Time Magazine to be among the 100 most important inventions of 2021 for its contribution to sustainable mobility.

[22] www.mckinsey.com/industries/public-and-social-sector/our-insights/the-us-infrastructure-investment-and-jobs-act-breaking-it-down
[23] https://ec.europa.eu/commission/presscorner/detail/en/ip_20_17
[24] As at 1 March 2022 Source: www.pm.gov.au/media/driving-consumer-choice-uptake-low-emissions-vehicles
[25] As at 1 March 2022 Source: www.pm.gov.au/media/billion-dollar-fund-drive-low-emissions-technology-investment

Conclusion

While some of the themes flagged here may be well known to industry watchers, their impact is undeniably shaping the infrastructure landscape. The emerging opportunity sets are thought-provoking (see Figure 8) and will contribute to the resilience of infrastructure assets and services, which communities globally rely on every day; as well as their transition to a net zero economy and an increasingly digital world.

FIGURE 08

Selected examples of potential opportunity areas by report theme

FLAG 1: Setting and delivering on net zero targets

Real assets or platform companies across:
- Renewable energy
- Low carbon fuels
- Electrification
- Carbon capture /storage

FLAG 2: Brown-to-green: alternative energy sources

- Renewable energy
- Gas processing (some geographies)
- Carbon storage (some geographies)

FLAG 3: Fibre, data centres and the digitalisation of infrastructure

Selected opportunities across:
- Data centres
- Telecommunications
- Fibre

FLAG 4: Increasing scope for public-private partnerships

- US transportation
- US water/wastewater systems
- US broadband
- US, EU and AU green infrastructure

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INSIGHT

Infrastructure – rising rates and the "natural hedge"

July 2022

By Michael Landman, IFM Investors Executive Director

Inflation has accelerated globally as a result of consumer demand, fuelled by fiscal policy, pushing into supply constraints due to COVID-19 and geopolitical upheaval. US inflation is running at 40-year highs and other advanced economies are at or near similar extremes.

Central banks were initially quick to label this inflation as "transitory", but it has proven unexpectedly persistent. In response, markets shifted their interest rate expectations. The US Federal Reserve is in the initial stages of an aggressive rate-hiking cycle, with market expectations foreshadowing materially higher interest rates.

Higher interest rates have traditionally been viewed as a negative for the performance of long-duration investments, like infrastructure, as they put downward pressure on asset valuations. This occurs not only because of the potential increase in the cost of borrowed capital, but also because the discount rate that is used to value infrastructure asset cash flows is likely to increase in response to changes in the relevant long term sovereign bond rate (known as "the risk-free rate").

While this is true, one could believe the positive linkages that some infrastructure assets have to inflation and economic growth can provide a natural hedge that may be sufficient to offset these negative valuation impacts.

The natural hedge explained

There are two key revenue characteristics that one can target when investing in infrastructure assets.

The first is inflation protection, which usually comes in the form of contracted increases in pricing that are linked to the prevailing rate of inflation. This is often a feature of regulated utilities (like water and power companies) and »

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toll roads, and it normally means that revenues continue to rise as inflation increases.

The second is exposure to economic growth. For some infrastructure assets, volumes, and thus revenues, tend to increase with the size of an economy. For example, toll roads have a variety of linkages to economic variables, with many road concessions benefiting from both rising economic activity lifting traffic volumes as well as toll escalation (often linked to inflation). There is some downside risk here; if rate-hikes are too aggressive and therefore adversely impact economic growth.

Value can also be created by reinvesting capital into investments that grow with their customer base

Infrastructure's natural hedge against interest rate rises occurs because inflation and above-trend economic growth tend to be pre-cursors to, or coincide with, increased interest rates, providing mitigants to the effects of rate increases.

Appropriate capital structures and long-term risk-free rates

Appropriate capital structures can also help insulate infrastructure assets from the impact of rising rates. When interest rates are low, asset owners can refinance debt and lock in the cost of long-term financing at attractive rates.

A few examples of measures infrastructure investors have used in the past include lengthening loan or bond tenors and laddering debt maturities to mitigate refinancing risk; use of fixed-rate debt or use of interest rate swap strategies to largely eliminate floating rate exposures; and using our market presence to access highly competitive debt margins.

One can therefore believe that the positive effect on portfolio performance from rising inflation is expected to be greater than the adverse effects of rising interest rates on the cost of debt.

The impact of rates on asset valuations is also partially mitigated because of the industry-wide practice employed by independent valuers using long-term risk-free rates (recognising the long-term nature of infrastructure assets) as part of their discount rate formulation, rather than the prevailing ten-year sovereign bond rate, for example.

Infrastructure investments can withstand higher rates

Although infrastructure assets are diverse and subject to a wide range of macro-economic exposures, one could expect the performance of a well-balanced portfolio of infrastructure assets to remain relatively robust through an inflationary cycle. This should stand the sector in good stead throughout the rest of 2022, given the possibility that central banks may continue to respond to accelerating inflation with tighter monetary policy settings.

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Private infrastructure - The platform-building opportunity

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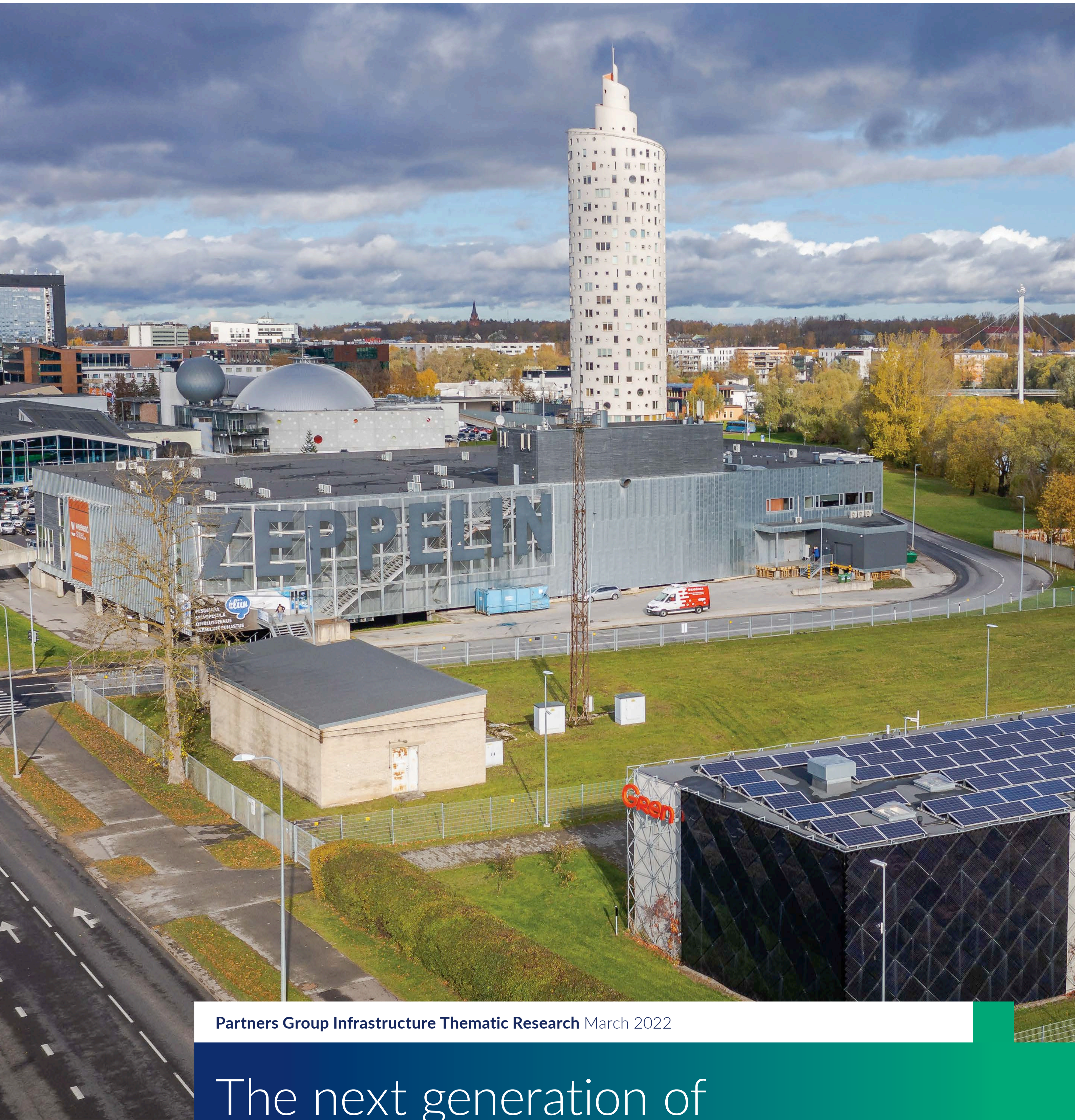

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Executive summary

Combatting climate change is one of the greatest humanitarian and economic imperatives of our time.

The increased frequency and intensity of natural disasters costs nearly USD 250 billion per year; this is a cost increase of around 600% since the 1980s[1]. With a global consensus that man-made greenhouse gas (GHG) emissions are overwhelmingly responsible for climate change, we are witnessing mitigation efforts from both governments and corporates across the world on an unprecedented scale. There is also a growing recognition that efforts to tackle climate change must extend beyond the electric power sector to address the more challenging decarbonization of industry, transportation, and buildings. Today, decarbonization is about far more than just renewables and the breadth and depth of decarbonization investment opportunities is, therefore, growing at speed.

'Decarbonization' is one of the giga-themes guiding Partners Group's thematic investing across asset classes, in line with the strategic asset allocation described in our Climate Change Strategy. In this paper, we will discuss the significance of decarbonization for infrastructure investors and why we believe it offers compelling investment opportunities both today and for decades to come.

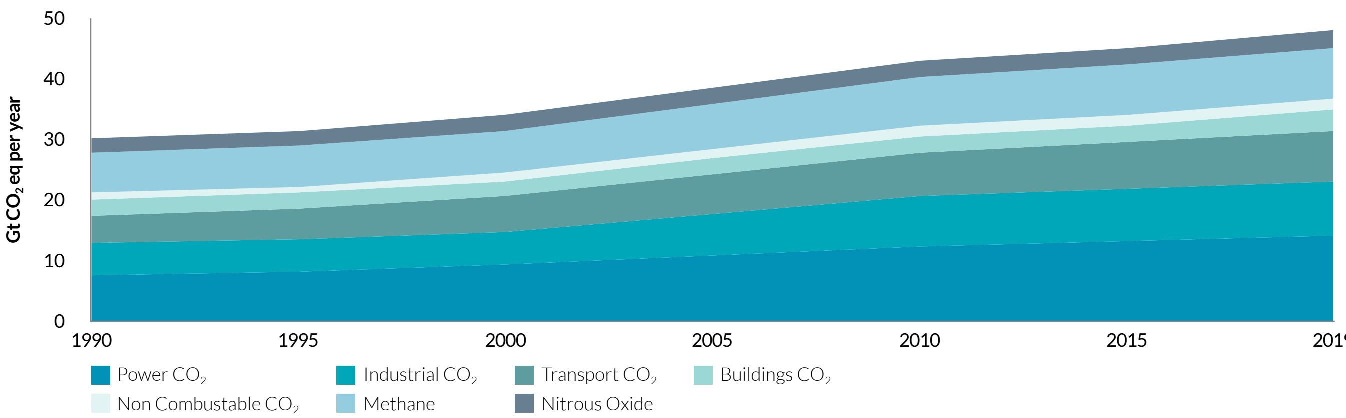
1 Source: Munich RE (2020).

Beyond clean power

Partners Group has invested in over 8.4 gigawatts (GWs) of renewable power generation assets to date. In fact, the development of incremental clean power, as well as reliability and flexibility assets that address renewable power intermittency, remain vital to achieving Paris Agreement goals. But the power sector accounts for just 39% of direct carbon dioxide (CO_2) emissions. Transportation and industrial sources are each responsible for around a quarter, with buildings and non-combustible sources, such as agriculture and waste, contributing between 5% and 10% of the total.

In other words, over 60% of CO_2 emissions stem from outside the power sector. And, of course, CO_2 is not the only GHG to be considered but it is the largest volumetric contributor, which is why GHG emissions are typically referred to as gigatons of carbon dioxide equivalent (Gt CO_2eq). Prior to the Covid-19 pandemic, CO_2 was 74% of the 50 Gt CO_2eq of total GHG yearly emissions. Other GHGs such as methane, nitrous oxide, and several fluorinated gases account for the remaining 26%. These other gases are mostly created from agriculture, land use, waste and fugitive emissions from hydrocarbon production, and they typically do not reflect the characteristics for stand-alone infrastructure investment (outside of waste management or waste-to-value). Because of this, they will not be the primary focus of this paper.

Figure 1 – Historical source of global man-made greenhouse gas emissions, 1990-2019



Source: International Energy Agency (2021), BP Energy Outlook (2020), World Resource Institute (2020), Global Methane Initiative (2021).

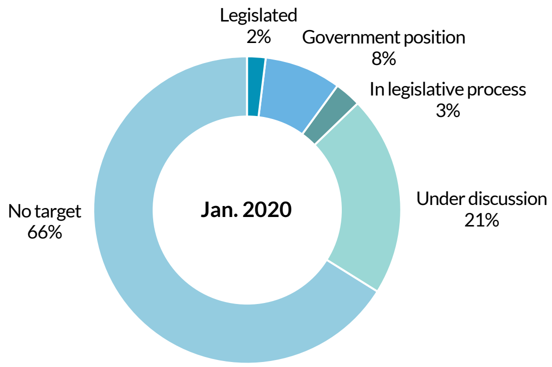
Why now

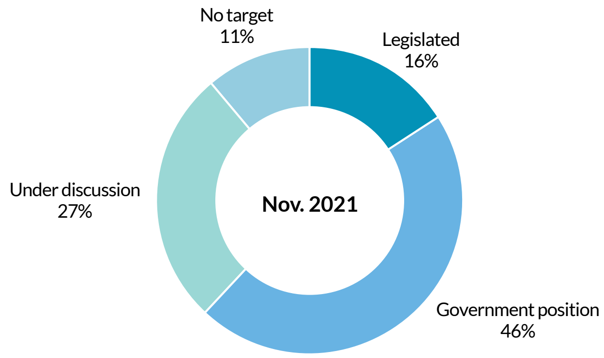
Policymakers are deploying direct investment, economic incentives, and regulatory frameworks with unprecedented vigor to expand decarbonization and reach net zero carbon goals, with an increased focus on 'hard to abate' sectors. The United Nations Climate Change Conference (COP26), which was held late last year in Glasgow, was the first opportunity for governments to outline their 'Nationally Determined Contributions' for reaching the 2015 Paris Agreement goals. While the submitted contributions do not fully achieve the reduction goals, they are moving in the right direction and 62% of global man-made GHG emissions are now covered by law or official government policies, compared to only 10% at the beginning of 2020[2].

To meet Paris Agreement objectives, we estimate that **USD 20 trillion of decarbonization infrastructure investment will be required by 2030**; around half of this will go beyond renewable power and electrification. Several investment and policy goals already extend to at least 2070, offering a uniquely long runway of investment opportunities. While the volume of capital deployed behind decarbonization is expanding dramatically, we believe that the more complex investments required for 'hard to abate' sectors offer compelling returns for private capital.

2 Source: Bloomberg New Energy Finance (2021).

Figure 2 – Share of global emissions covered by net zero carbon targets





Source: Bloomberg New Energy Finance (2021).

The decarbonization investment spectrum

According to our research, decarbonization investment opportunities broadly fit into three categories:

Figure 3 – Categories of decarbonization

	Replacement	Conservation	Carbon management
Function	Replacing high emission fuel sources with lower emission alternatives	Reducing emissions by improving processes or tools without replacing the high emission source	Capturing and removing produced emissions
Related investment themes	**Clean power** • Renewables • Reliability & flexibility • Electrification • Power storage **Low carbon fuels** • Natural gas • Bioenergy • Synthetic fuels • Hydrogen	**Energy & resource efficiency** • Process gains • Efficiency gains • Heat exchange **Circular economy** • Recycling & re-use • Waste-to-value **Agriculture & forestry management**	**Carbon capture, utilization, and sequestration (CCUS)** • Natural sinks • Underground sequestration • Direct Air Capture (DAC) • Carbon transportation • Carbon use

Replacement

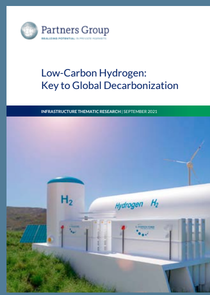
Carbon replacement covers renewable power generation and the use of natural gas as a complementary fuel to support grid reliability and flexibility. Replacement also spans the growing bioenergy industry and, in the longer-term, synthetic fuels and hydrogen.

The replacement of high emission fuels represents the largest opportunity for decarbonization and investment in the near-term. It holds the potential to lower CO_2 emissions by up to 5.5 Gt CO_2 per year beyond current policy levels and requires USD 14 trillion of capital by 2030. For now, this category remains focused on **clean power**, where business models are relatively well established, while low carbon fuels develop further.

The clean power investment theme includes the development of renewable power generation; infrastructure that enables power distribution and electrification; and reliability and flexibility assets, including batteries. Reliability and flexibility assets support renewable power growth while maintaining power resiliency during periods of low renewable utilization.

While we expect renewable power generation investment will remain high and relatively stable for at least the next twenty years, **the focus on removing 'hard to abate' emissions will accelerate later this decade**. We believe there will be increased spending on downstream electrification in industry and buildings, and the use of more **low carbon fuels**. Currently, more than half of the investment flow in low carbon fuels is targeted at natural gas power generation and midstream transportation. But we expect this will decline to around a third in the next decade as new solutions, including bioenergy, hydrogen, and synthetic fuels, become more investable.

Partners Group has been an active infrastructure investor in the replacement of high carbon emission fuels through renewable clean power, natural gas, and bioenergy infrastructure, with over USD 6.2 billion invested in 28 assets since 2001.



To learn more about Low-Carbon Hydrogen, see our recent thematic report published in September.

Low-Carbon Hydrogen: Key to Global Decarbonization

Select Partners Group investments in Replacement

DIMENSION RENEWABLE ENERGY — A platform to develop over 800 MWs of community-based solar parks and accompanying battery storage across the US. The company provides direct access to locally-generated renewable power for historically underserved households and businesses.

Gren — District heating, cooling, and power assets across 375 km of pipelines in the Baltic region of Europe, using sustainable biomass and waste as fuel to reduce the impact of carbon intensive fuels used heavily in this region.

cwp Renewables — One of the largest integrated renewable platforms in Australia that develops, owns, and operates wind and storage assets across the country. The company aims to develop more than 2 GWs of power generation within the next five years.

Conservation

This refers to **energy and resource efficiency** projects in industry, buildings, and transportation, including improvements in processes and the adoption of productivity tools and devices. Although the spectrum of investable assets is more limited, certain niches, including tech-enabled infrastructure services, are creating compelling investment opportunities. **Circular economy** developments, which can help support a closed loop carbon economy, are also drawing attention; for example, efforts to convert waste to valued products, including energy. Meanwhile, innovative sub-sectors, like chemical recycling and the burgeoning electronic waste (e-waste) industry, are also poised for growth.

Conservation will have the largest impact on reducing carbon emissions over this decade in every sector except power. This could lead to a 3.7 Gt CO_2 per year reduction of emissions beyond current policy levels with an investment of almost USD 6 trillion by 2030. In this category, spending will remain high or even accelerate during the next decade with the focus moving toward 'hard to abate' sectors; however, there will likely be diminishing returns after 2030 due to the increased cost of these projects.

Select Partners Group investment in Conservation

techem

A diversified platform across Europe that provides devices for the sub-metering and billing of energy and water, enabling better controls to reduce demand. Today, Techem's solutions account for 8.7 million tons of CO_2 emissions avoided per year, thereby contributing to global climate protection objectives.

Carbon management

This category refers to the ability to capture, sequester, and use CO_2 from industry, power plants, or the air itself. Across each component of the carbon management value chain, new investable business models are emerging. These range from capturing, transporting and sequestering CO_2 underground, to using CO_2 in the creation of building materials, chemical processes and synthetic fuels. This value chain is commonly referred to as Carbon capture, utilization, and sequestration (CCUS). However, we prefer the term carbon management as it better reflects the nature of the carbon waste that must be managed to combat climate change.

In the near-term, carbon management opportunities are likely to be smaller as business models develop, with only around 0.6 Gt CO_2 per year removed by 2030, primarily from industrial emitters. However, we expect this category to become increasingly important over time; regulatory incentives will improve and contribute to **removing 10-20%[3] of the man-made CO_2 emissions which must be abated to reach net zero carbon**. We estimate that approximately USD 250 billion will be spent in carbon management this decade, expanding to over USD 1.6 trillion by 2040. Partners Group is in active discussions with several top industrial partners in the carbon management space.

Investment needs are immense

Each of these decarbonization categories is necessary to reach the Paris Agreement goals.

Current policies are expected to reduce GHGs by an estimated 20-40% by the end of the century, resulting in an average global temperature of c. 2.7°C above pre-industrial levels[4]. Therefore, further action is needed. Throughout this paper, we will highlight the investment required to make emission reductions, particularly for CO_2, that align with the Paris Agreement goals. These reductions are beyond the scope of what is included in current policies but are urgently needed to reverse the impact of climate change.

As noted in the table below, a cumulative investment of **over USD 48 trillion will be required by 2040 to reduce CO_2 emissions by c. 21 Gt CO_2 per year** below current policy levels.

Figure 4 – Summary of global CO_2 emission reduction & investment needed to reach Paris Agreement goals

Cumulative investment & CO_2 reduction	2020 – 2030	2031 – 2040
Replacement	USD 14.1tn; 5.5 Gt CO_2 pa	USD 18.8tn; 7.5 Gt CO_2 pa
Conservation	USD 5.7tn; 3.7 Gt CO_2 pa	USD 8.3tn; 2.0 Gt CO_2 pa
Carbon management	USD 0.2tn; 0.6 Gt CO_2 pa	USD 1.4tn; 1.9 Gt CO_2 pa
Total per decade	**USD 20.1tn; 9.8 Gt CO_2 pa**	**USD 28.3tn; 11.4 Gt CO_2 pa**

Source: International Energy Agency (2020), BP Energy Outlook (2020), Bloomberg New Energy Finance (2021), Partners Group (2021).

3 Source: International Energy Agency (2020).
4 Source: Climate Action Tracker (2021).

What we look for

Partners Group has developed a framework to analyze and assess decarbonization solutions across themes, geographies, and technologies. However, not all approaches are investable for infrastructure investors as they may not present attractive relative value or be scalable. At Partners Group, we focus on the following:

- **Clean power** (replacement) – renewable power development platforms and reliability and flexibility assets;
- **Low carbon fuels** (replacement) – natural gas and bioenergy in the near-term, and hydrogen and synthetic fuels in the longer-term;
- **Energy & resource efficiency** (conservation) – increasing efficiency gains and better waste management solutions;
- **Carbon management** – capture, transportation, and sequestration or use of carbon emissions.

Here are some factors that we focus on when evaluating infrastructure investments in decarbonization:

Stable, long-term cash flows

Many companies in the decarbonization space have venture-like risk-return profiles; they are not expected to generate positive cash flow in the immediate future and customer contracts are short-term. Instead, we prefer assets that will generate stable free cash flow over the long-term. We also look for investments that mitigate that risk through structure and revenue 'stacking', while avoiding decarbonization assets with commodity price or volume risk.

Strong market position with high barriers to entry

Decarbonization assets are becoming highly complex and require strong technical expertise and advanced logistical abilities. We look to be early movers by understanding emerging trends through our thematic sourcing, developing a broad network of industry experts, and finding the right partners. This allows us to assemble the best team to understand these complexities and gives us the time to fully analyze them.

Platforms versus single assets

We have a strong preference for platform expansion investments with a combination of assets that are operating, under construction, and in the pipeline. Platform investments have several advantages over single asset investments, including the potential to deploy significant amounts of capital at scale. It is also possible to create value by de-risking projects from development to construction and completion, and to capitalize on cost efficiencies across projects. In addition, they offer the opportunity for efficient capital allocation between different projects in terms of size, geography and complexity, and risk diversification across projects in terms of geographies, markets, revenue streams, counterparties, sectors, and technologies.

Low disruption risk

Regulatory tailwinds are driving decarbonization investment growth. These long-term plans, in many cases enshrined in law, provide us with comfort that these assets will face low disruption risk for many decades to come.

Near-term transactability

Finally, we prioritize investments where we see a clear path to execution, such as investments in proven technologies with a track record of commercial adoption and in situations where we can establish a competitive advantage; for example, this could be through prior investment in the sector, existing operational expertise, or a wide, sector-specific relationship network.
The synthetic fuels industry is a good example of this. These fuels are being developed by large strategics through in-house research and development, and commercial adoption is not yet proven; this makes it difficult to facilitate a transaction. In addition, we seek investments that have the potential to offer returns within our target range and that are achievable under a conservative base case, with additional optionality built on top via value creation initiatives.

Figure 5 – Examples of characteristics we look for across solutions

	Cash flows	Market position	Platform scalability	Disruption risk mitigation	Near-term transactability
REPLACEMENT					
Renewables	●	●	●	●	●
Reliability & flexibility assets	●	●	●	◕	●
Electrification	◑	◑	●	●	●
Power storage	◑	◕	●	●	●
Natural gas	◕	●	●	◑	●
Bioenergy	◑	◑	◕	●	◑
Synthetic fuels	◔	◔	◑	●	◔
Hydrogen	◑	◔	◑	●	◔
CONSERVATION					
Energy & resource efficiency	◑	◑	◑	◕	◔
Waste to value	◑	◑	◑	◕	◑
Agriculture & forestry management	◔	◔	◔	◑	◔
CARBON MANAGEMENT					
Underground sequestration	●	◕	●	●	◕
Carbon transportation	●	◕	●	●	◕
Direct air capture	◑	◔	◕	●	◑
Carbon use	◔	◔	◑	●	◔

Source: Partners Group (2021). For illustrative purposes only.

CWP Renewables – Australia

Partners Group's approach to carbon intensive investments

We are committed to avoiding greenhouse gas-intensive activities in our direct investment universe as we consider climate change regulations a material investment risk. Generally, this includes the following investments, which we avoid in principle due to their long-term risk and misalignment with market trends, unless we can develop a carbon reduction strategy to positively influence them towards a low-carbon transition:

- Businesses whose main product or service supports thermal coal extraction, transportation, or use for energy generation, and have no plans to address this;
- Businesses whose main product or service supports crude oil exploration, production, refining, transportation, or storage; or the transportation and storage of refined products (specialist derivatives production is not excluded);
- Service providers for the coal and oil upstream industry, such as drilling rig operators, fracking sand suppliers, and oilfield service providers;
- Treatment and logistics services for Canadian oil sands; and
- Deforestation or the burning of vast natural ecosystems for the purpose of land clearance.

In addition, for our direct infrastructure investments, which are those most exposed to carbon-intensive industries, we carefully assess their potential impact on climate change based on four critical factors:

1. Emissions intensity;
2. Alignment with a low-carbon economy transition pathway;
3. The materiality of carbon-intensity to operations; and
4. Partners Group's capacity to mitigate impacts through active ownership.

For primary and secondary infrastructure investments, we strive to invest with investment managers that align with our commitment to support a transition to a low-carbon economy. We also aim to reduce our exposure to carbon-intensive portfolios.

The next generation of decarbonization infrastructure requires greater expertise

With traditional infrastructure investor profiles evolving and value-add investors continuing to innovate, private infrastructure is changing from portfolios of single assets to multi-dimensional businesses. This requires greater in-house expertise to navigate the growing complexity. At Partners Group, we aim to build sustainable businesses and infrastructure platforms across the decarbonization giga-theme.

Thematic exposure

Partners Group was an early investor in **renewables**. Since 2001, we have built a global renewable portfolio containing >8.4 GWs of mostly contracted capacity. Our **natural gas** platforms offer a path to low-risk exposure towards emerging options like low-carbon gases and hydrogen. Within the **carbon management** industry, we focus on transportation and sequestration assets, which are underpinned by long-term 'take-or-pay' contracts, rather than the capture technology itself.

ESG best practices

Building long-lasting businesses requires **best-in-class ESG initiatives**. Our dedicated ESG & Sustainability team is actively involved both pre and post-investment; they work closely with the investment teams and portfolio management to screen opportunities and develop ESG-focused value creation initiatives. For example, with our recent investment in **GREN**, a district heating and cooling platform in the Baltics that mainly uses biomass fuel, our ESG & Sustainability team has been highly involved in ensuring there is a pipeline of properly sourced 'sustainable' biomass. This is a critical step in ensuring the platform has a positive decarbonization impact and required specific knowledge that was held by our ESG & Sustainability team.

Value creation

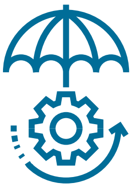
We employ three value creation strategies, with a demonstrated impact, across our infrastructure portfolio: **Building Core**, **Operational Value Creation**, and **Platform Expansion**.

In Building Core, we create value by de-risking the development and construction of core assets for those who are not willing to underwrite that risk. Operational Value Creation involves introducing entrepreneurial ownership and governance to operating businesses to increase their quality and performance, enable a transformation of the business, or to accelerate growth. While these are both valuable creation strategies, most of our infrastructure investments focus on Platform Expansion opportunities.

In-house value creation & research

Operating Directors and Entrepreneurial Governance (ODEG)

Portfolio & risk management capabilities



ESG

SECA

Swiss Private Equity & Corporate Finance Association
Schweizerische Vereinigung für Unternehmensfinanzierung
Association Suisse des Investisseurs en Capital et de Financement

Patrizia

Anlagen in Infrastrukturen aus Sicht einer Schweizer Pensionskasse

PATRIZIA

PATRIZIA Infrastructure ist seit 25 Jahren in Anlagen in Infrastrukturen für qualifizierte Investoren tätig. Sie verwaltet aktuell EUR 7 Mrd. in Spezialmandaten und Kollektivanlagen. Sie hat sich auf den attraktiven Markt für mittelgross kapitalisierte Infrastrukturen spezialisiert. Sie investiert erfolgreich in Infrastructure Equity und Debt sowie Listed Infrastructure. Das Team besteht aus rund 70 Spezialisten. Die Senior Managers verfügen einzeln über 15 bis 34 Jahre an relevanter Industrieerfahrung. Die Standorte sind London, Frankfurt am Main, Canberra und Sydney.

PATRIZIA wurde 1984 gegründet und ist eine international erfolgreiche Asset Managerin in Immobilien und Infrastruktur (Real Assets). Sie verwaltet derzeit EUR 56 Mrd. in offenen und geschlossenen Kollektivanlagen sowie Spezialmandaten für über 500 institutionelle Kunden aus allen Kontinenten. Sie deckt alle Rendite-Risiko-Segmente und Transaktionsarten inklusive Single Asset Deals ab. Sie ist weltweit mit rund 1´000 Mitarbeitern an 28 Standorten vertreten. Hauptsitz ist Augsburg in Bayern.

Vorwort

Ein Asset Manager muss die Anlageorganisation einer Pensionskasse als Ganzes verstehen

Um Schweizer Pensionskassen mit effizienten und zielkonformen Anlagen in Infrastrukturen versorgen zu können, muss ein Asset Manager alle Ebenen ihrer Anlageorganisation verstehen. Diese sind:

1. Regulatorische Behandlung und Differenzierung von Anlagen in Infrastrukturen
2. Anlagen in Infrastrukturen in ALM-Studien und der Anlagestrategie (SAA)
3. Anlagen in Infrastrukturen und Anlagetaktik (TAA)
4. Umsetzung und Management von Anlagen in Infrastrukturen (Fonds/Mandat)
5. Investment-Consulting/-Controlling, Informationsversorgung und Custody

Die Kompetenz auf die Manager-Verantwortung i.e.S. gemäss Punkt 4. zu begrenzen, greift zu kurz. Das Spektrum soll die Sorgfaltspflicht in der Anlagetätigkeit von Pensionskassen (u.a. Art. 50 Abs. 1-3 BVV 2) in ihrer ganzen Tragweite stützen:

- Vermögensanlagen sorgfältig auswählen, bewirtschaften und überwachen
- Gewährleistung der Sicherheit in der Erfüllung des Vorsorgezwecks unter Berücksichtigung der ganzen Bilanz sowie Struktur und erwarteten Entwicklung des Versichertenbestandes
- In der Vermögensanlage den Grundsatz der angemessenen Risikoverteilung einhalten

Die einzelnen Ebenen können hierin, aufgrund ihres Umfangs, nur umrissen werden. Kassenindividuelle Situationen werden nicht oder bedingt adressiert. Wir hoffen, Verantwortlichen dennoch wertvolle Lösungsansätze zu vermitteln, welche in der Folge situativ und im Detail weiter ausgeführt werden müssen.

Disziplin und Transparenz im Umgang mit Begriffen aus dem Angelsächsischen

Der in Deutsch hin und wieder, bewusst oder unbewusst, laxe Umgang mit Begriffen zu Anlagen in Infrastrukturen aus dem Angelsächsischen, birgt für Investoren die erhebliche Gefahr für Missverständnisse und eine nicht zutreffende Erwartungshaltung. Herausforderungen ergeben sich auch beim Versuch zur schlüssigen Differenzierung von Anlagen und Investitionsansätzen in Infrastrukturen (Rendite-Risiko-Segmente, Umsetzungsformen, usw.).

Es wurde in diesem Beitrag besonderes Augenmerk auf einen möglichst disziplinierten Umgang mit entsprechenden Begriffen und deren Übersetzung sowie eine konsistente Herleitung und Differenzierung geachtet, im Sinne einer schlüssigen Orientierungshilfe und ohne dogmatische Absicht.

1 Regulatorische Behandlung und Differenzierung von Anlagen in Infrastrukturen

1.1 Verordnung über die berufliche Alters-, Hinterlassenen- und Invalidenvorsorge (BVV 2)

Anlagen in Infrastrukturen wurden per 1. Okt. 2020, neu in Art. 53 Abs. 1 lit. d^{bis}, zur traditionellen Anlage umklassifiziert. Sie waren zuvor wie Private Equity, infolge ihres illiquiden Anlagecharakters, unter lit. e als Alternative Anlage definiert. Ein wesentlicher Anstoss zur Gesetzesänderung lag in der Motion 15.3905 von Nationalrat Thomas Weibel: «Infrastrukturanlagen für Pensionskassen attraktiver machen», um Sachwerte von gesamtgesellschaftlicher Relevanz, wie Energie-, Mobilitäts-, Versorgungs- und Gesundheitsinfrastruktur, mitunter in der Schweiz, zu fördern. Zudem müssen Bundesrat und Parlament zum Schluss gekommen sein, dass auch die im Ausland für essenzielle Infrastruktur typische Ertragsstabilität anders zu bewerten ist als die generelle Wertsteigerungs- und Exit-DNA von Private Equity. Ansonsten wäre nicht einzusehen, weshalb Private Equity in Firmen mit Sitz oder operativer Tätigkeit im Ausland noch immer alternativ ist.

Der Gesetzgeber und das Bundesamt für Sozialversicherung (BSV) waren sich einig, dass unter Anlagen in Infrastrukturen Equity und Debt gemeint sind. Das BSV hält zur Änderung von Artikel 53 und 55 BVV 2: Infrastrukturanlagen u.a. fest:

> *… Infrastrukturfirmen respektive Infrastrukturprojekte setzen Fremd- und mit Eigenkapital ein, wie dies bei vielen Unternehmen der Fall ist. Infrastrukturanlagen gemäss der neuen Kategorie können Investitionen sowohl ins Fremd- wie ins Eigenkapital dieser Firmen umfassen. Diese Investitionen müssen nicht kotiert / emittiert sein, sonst könnten sie auch unter den klassischen Kategorien von Artikel 53 Absatz 1 Buchstabe b respektive Buchstabe d subsummiert werden. Wie bei einer Aktie gemäss Artikel 53 Absatz 1 Buchstabe d bedeutet dies auch, dass der Einsatz von Fremdkapital auf der Ebene einer Infrastruktur-Firma nicht als Hebel gilt. Solche Anlagen (z.B. Beteiligungen an solchen Firmen / Projekten) sind demnach Infrastrukturanlagen gemäss Artikel 53 Absatz 1 Buchstabe d^{bis} BVV 2. …*

Ansonsten bleibt alles beim alten: Ein Hebel auf Stufe Anlagevehikel ist möglich, führt jedoch zur erneuten Klassifizierung als Alternative Anlage. Die Begründung einer Nachschusspflicht bleibt untersagt.

1.2 Differenzierungen und Abgrenzungen

1.2.1 Bestands- und Entwicklungsobjekte (Brownfield / Greenfield)

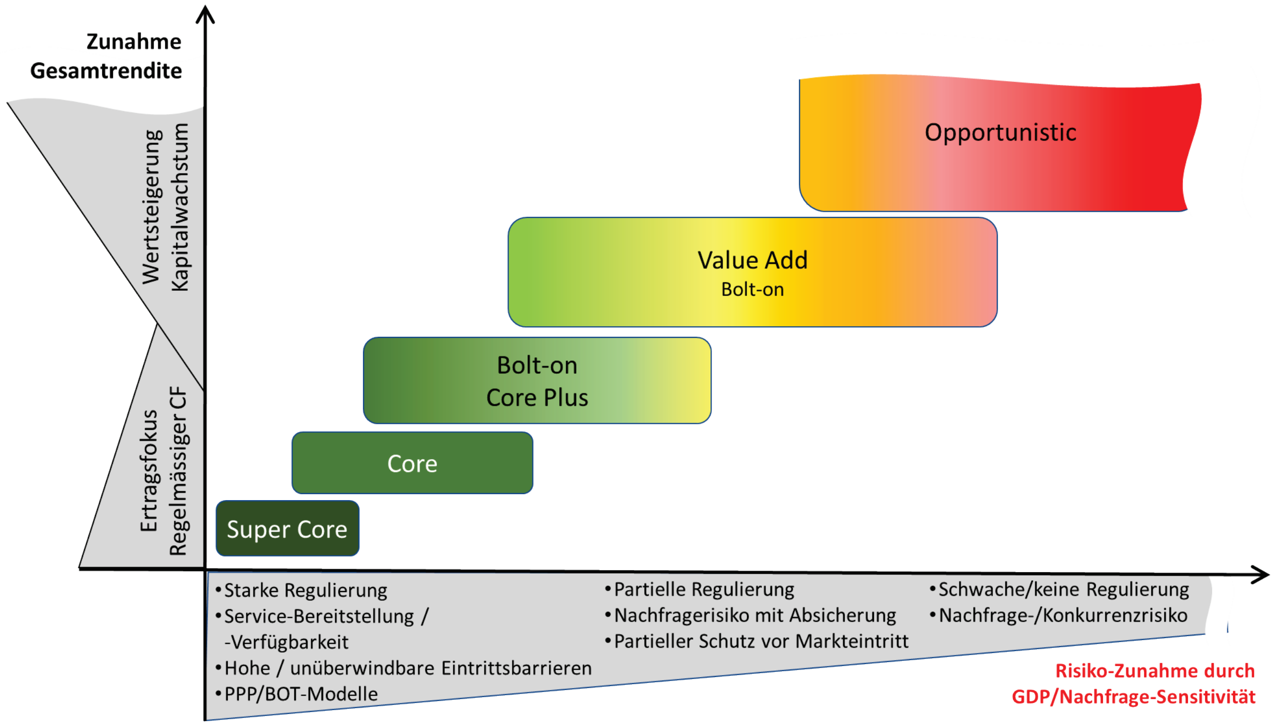
„Greenfield" steht bildhaft für Entwicklungsprojekte, d.h. Vorhaben „auf der grünen Wiese". „Brownfield" bezeichnet Bestandsobjekte. Auf den ersten Blick ist die Erwartung einer höheren Rendite für ein Entwicklungsrisiko nachvollziehbar. Aber „Entwicklungsrisiko" ist nicht gleich „Entwicklungsrisiko". Eine grundlegende Ablauflinie bilden „hard Facts" wie die Existenz einer rechtskräftigen Bewilligung zur Realisierung, aber auch „soft Facts" wie das Ausbleiben relevanter Einsprachen oder gesellschaftlicher Widerstände.

Zudem kann es situativ kosteneffizient sein, durch alternativen Risikotransfer, Garantie- und Erfüllungsrisken an Dritte wie Generalunternehmer, Investitionsgüterlieferanten, Versicherungen und öffentlich-rechtliche Einrichtungen zu überlagern (z.B. „Advanced Loss of Profit"-Versicherung zur Schadensminderung infolge Realisierungsverzögerung). Ein solcher Transfer veranschaulicht zusätzlich, wie bedeutsam die Rechtssicherheit von Behörden, das Länderrisiko, die gesellschaftliche Meinung und die Bonität von Stakeholdern in Infrastrukturen sein können.

1.2.2 Sektorale Segmentierung

Transport-Infrastrukturen	Grundversorgung	Soziale Infrastruktur	Übrige
Flughäfen	Energie-Erzeugung (konvent./erneuerbar)	Bildungseinrichtungen	Kommunikations-Infrastrukturen
Häfen	Energie-Übertragung/-Verteilung	Gesundheitseinrichtungen	Datenspeicherung
Eisenbahnen	Pipelines	Behördliche Einrichtungen	Schutzbauten (Elementarereignisse)
Strassen und Strassennetze	Energie-Speicherung	Soziale Einrichtungen	Anl. zum Schutz der Souveränität
Brücken und Tunnels	Wasser und Abwasser	Übrige soziale Infrastrukturen	Andere übrige Infrastrukturen
Öffentlicher Nahverkehr	Abfall und Recycling		
Übrige Transport-Infrastrukturen	Übrige Infrastrukturen zur Grundversorgung		

1.2.3 Rendite-Risiko-Segmentierung



Wichtiger Hinweis: Indikative, tendenzielle Illustration ohne quantitativ-exakte Verhältnismässigkeit zwischen den Elementen

Eine trennscharfe Differenzierung der Rendite-Risiko-Segmente ist nicht möglich. Schlüssige Orientierungshilfen sind:

- Prinzip des Service-Angebots: Verfügbarkeit/Bereitstellung vs. Marktgleichgewicht aus Angebot und Nachfrage
- Stärke der Regulierung und Naturell der Leistungsvereinbarung (z.B. öffentlich-rechtliche Konzessionierung)
- Vertragsdauer und Regelungsdichte der Leistungsvereinbarung (z.B. Regelung der Inflationsanpassung)
- Konkurrenzsituation
- Relevanz von Entwicklungs-, Bewilligungs-, Erfüllungs-, Konjunktur- und Nachfrage-Risiken (z.B. Rohstoffpreise)

1.2.4 Charakterisierung und Abgrenzung der Core-Segmente

„Super Core“, „Core“ und „Core Plus / Bolt-on“ Infrastrukturen besitzen folgende Eigenschaften:

- Service-Angebot nach dem Verfügbarkeits-/Bereitstellungs- oder mehrheitlich garantierten Abnahmeprinzip. Es besteht weniger Sensitivität gegenüber der Nachfrage und Konjunktur bis hin zur unelastischen Nachfrage.
- Rechtssichere Regulierung/Konzessionierung, in Extremis auch mit Heimfallregelung (PPP/BOT-Modelle).
- Langfristig geregelte, zuverlässig kalkulierbare Vereinbarung (Inflation, u.a.). Kehrseite eines stark regulierten Vertrags ist, dass i.d.R. auch der Spielraum für eine rein betriebswirtschaftliche Gewinnoptimierung limitiert ist (z.B. Wasserzoll).
- Hohe bis unüberwindbare Markteintrittsbarrieren für Dritte. (z.B. Replikat der / Parallelobjekt zur bereits bestehenden Infrastruktur baulich nicht möglich und/oder ökonomisch nicht sinnvoll).
- Stark unterproportionale oder umfassend abgesicherte Entwicklungs-, Bewilligungs- und Erfüllungsrisiken.

„Bolt-on“-Investments sind kleinere, wirtschaftlich gut absorbierbare Akquisitionen, welche das Wachstum auf bewährter Service-Grundlage gezielt fördern sollen. Sie dienen z.B. einer regionalen Erweiterung, bewahren aber den Core-Charakter.

1.2.5 Sachlich-kritische Anmerkung zu Wachstumsstrategien in Infrastruktur

Wertsteigerung ist Infrastructure Equity/Mezzanine nicht gleichermassen inhärent wie Private Equity:

- Im typischen Core-Segment steht die stabile Ertragserzielung und deren Bewahrung im Fokus, im Core Plus-Segment zusätzlich die kontrollierte Skalierung und das geschickte Nutzen von Synergien, bei eigentlich gleichem Risikoprofil.
- Die Wertsteigerung verdichtet sich in Value add, graduell zu Lasten eines zeitgleich stabilen Ertrags. Es ist offensichtlich, dass dies durch geringere oder veränderte Regulierung bzw. Regelungsdichte einer Vereinbarung erleichtert wird.
- Das opportunistische Segment umfasst Infrastrukturen, die im Wert deutlich oder gänzlich vermindert sind (z.B. „Stranded Assets“) und mit a.o. Massnahmen / Investitionen (z.B. Umnutzung) eine neue Wertigkeit erhalten sollen.
- Bei der Projektentwicklung (Greenfield) ist, in Anlehnung an die Ausführungen zum möglichen Risiko-Transfer, Umsicht bezüglich Zuordnung geboten. Sie können, müssen aber nicht zwingend opportunistisch sein.
- Auch die Wachstumstrategien können darauf abzielen, eine nachhaltig ertragsstabile Infrastruktur (Core-Segment) hervorzubringen. Darunter fallen auch Repositionierungsobjekte mit erheblichem Nachhol- oder Änderungsbedarf.

Auch die Exit-Strategie besitzt im typischen Core-Segment nicht zwingend dieselbe unmittelbare Bedeutung wie in Private Equity oder den höheren Rendite-Risiko-Segmenten. Die als zielkonform beurteilte Haltedauer kann deshalb länger sein.

Begriffe wie „Platform-buidling opportunity“ oder „Growth platforms“ nehmen Bezug auf transformative Mega-Trends wie Dekarbonisierung, Energiewende und Digitalisierung. Es geht dabei um folgende Strategien:

- Identifikation und Konzentration der Investitionstätigkeit auf explizite Wachstumsfelder der einschätzbaren Zukunft (z.B. Solar- und Windenergie, Smart City Development, u.a.).
- Wachstum auf Objektebene, indem über die Zeit geeignete Zusatz- und Erweiterungsinvestments getätigt werden, um den zukünftigen Anforderungen generell oder besser zu entsprechen.

Hier wird eine Profil-Annäherung an Private Equity erkennbar, sodass auch in Infrastruktur ein Return on Equity nicht einfach blauäugig als gegeben angenommen werden darf. Megatrend in z.B. Nachhaltigkeit hin oder her, auch aus aktueller Perspektive vielversprechende Lösungsansätze können Opfer ihrer selbst werden, wenn geänderte Naturschutzauflagen, Gesetzesänderungen und Einsprachen oder massiver Widerstand aus der betroffenen Bevölkerung die Realisierung verzögern, erschweren oder verunmöglichen. Zudem gilt es mit Weitsicht zu erwägen, ob sich nicht eine ganze Technologie als nur Übergangslösung entpuppt, indem sie absehbar durch eine deutlich vorteilhaftere schlichtweg substituiert wird.

Ergo, wer mit Anlagen in Private Equity und Venture Capital schon immer „auf Kriegsfuss stand“, sollte dies bei Anlagen in Infrastructure Equity und Mezzanine, trotz aller Fokussierung auf Ertragsstabilität, berücksichtigen. Wer schon immer Beides für sinnvoll und effizient hielt, sollte folgende Fragen zur Anlagekompetenz und -disziplin in Erinnerung behalten:

- Ist auch der Asset Manager in Anlagen in Infrastrukturen ein Garant für explizite Selektivität; d.h. hat er die DNA des „Rosinenpickens“ aus einer effektiven Reichweite an Opportunitäten, die dem Private Market Investing inhärent ist?
- Ist ein Manager der „Private Equity-Zunft“ firmenkulturell unabhängig und diszipliniert genug, um in Core-Segmenten den stabilen Ertrag zu sichern, oder verfällt er allzu leicht der unmittelbaren Wertsteigerung und Exit-Orientierung?

1.2.6 Aktives Asset Management muss im Naturell des Managers sein

Fokussierung auf Ertragsstabilität hin oder her, auch in den Core-Segmenten von Anlagen in Infrastrukturen ist eine ausgesprochen aktive Anlagekompetenz unabdingbar. Diese Anforderung ist auch im Vergleich zu Private Equity/Debt nicht geringer und ursächlich durch folgende Faktoren begründet:

- Hohe Kapitalintensität und implizit lange Planungshorizonte bzw. Kapitalbindung der Investitionen
- Komplexität, Konfliktpotenzial und Vielschichtigkeit der Interaktionen mit zahlreichen Anspruchsgruppen
- Oft gesamtgesellschaftliche Relevanz sowie grosse Bedeutung von Länderrisiken und Stabilität der Rechtsordnung
- Fallweise regulatorische, strukturelle, technologische, ökonomische und/oder ökologische Komplexität

Auch private Kapitalmärkte sind infolge von Regularien und Branchenstandards kein rechtsfreier Raum, aber für das breite Publikum weniger informationseffizient als die öffentlichen. Zudem findet keine öffentliche Preisbildung statt. Damit ist klar, dass nur der aktive Investitionsansatz hinreichend ist, um eine angemessene Chance auf einen effizienten Anlageerfolg zu erlangen. Repräsentative Indizes sind teilweise nicht verfügbar oder nicht replizierbar, weil die enthaltenen Fonds geschlossen oder zugangsbeschränkt sind. Ein passives Anlageverhalten ist in Unlisted Infrastructure Equity und Debt keine Option.

1.3 Finanzierungsarten in Infrastruktur

1.3.1 Infrastruktur- Fremdkapitalfinanzierungen (Infrastructure Funded Debt)

Wir orientieren unseren Gattungsbegriff an der Definition der Professoren Brealey und Myers in ihrer „Finanzbibel", „The Principles of Corporate Finance", für unternehmerische Fremdkapitalfinanzierungsarten mit einer Laufzeit von über einem Jahr als „Funded Debt". Diesen differenzieren sie anschl. nach Art der Rückzahlung, Seniorität, usw. Der in Infrastructure Finance sehr gebräuchliche, nicht näher spezifizierte, Begriff „Infrastructure Debt" ist, nach unserer Auffassung, derart eng mit der nicht öffentlichen, d.h. Direktvergabe von Krediten an Holding- oder Operativgesellschaften von Infrastrukturen verbunden, dass mit dessen Verwendung in erster Linie Unlisted Infrastructure Debt angenommen werden darf. Öffentlich begebene Infrastrukturanleihen mit häufig fester Verzinsung, bezeichnen wir, in Analogie zur gängigen Übersetzung der in Art. 53 Abs. 1 lit. b BVV2 kategorisierten Anleihensobligationen mit „Bonds", als „Infrastructure Bonds".

Kriterien	Gattungsbegriff Infrastruktur-Fremdkapitalfinanzierungen (Infrastructure Funded Debt)				
Finanzierungs-unterart	**Infrastrukturanleihen** (Infrastructure Bonds)	**Projektfinanzierung** (Infrastructure Project Finance)	**Vorrangige Infrastrukturkredite** (Infrastructure Senior / Crossover Debt)	**Nachrangige Infrastrukturkredite** (Infrastructure Junior Debt)	**Infrastruktur-Mezzanine** (Infrastructure Mezzanine) [1)]
Rangordnung	Vorrangig (Senior)	Vorrangig (Senior)	Vorrangig (Senior)	Nachrangig (Junior)	Nachrangig (Junior)
Objekt-Zyklus	Bestandsobjekt (Brownfield)	Entwicklungsobjekt (Greenfield)	Bestands- oder Entwicklungsobjekt (Brown-/Greenfield)	Bestandsobjekt (Brownfield)	Bestands- oder Entwicklungsobjekt (Brown-/Greenfield)
Kapitalmarkt	Öffentlicher Kapitalmarkt (Public Bonds)	Nicht öffentliche Direktinvestition (Private Debt)	Nicht öffentliche Direktinvestition (Private Debt)	Nicht öffentliche Direktinvestition (Private Debt)	Nicht öffentliche Direktinvestition (Private Debt)
Markt-/Handels-Liquidität	Hoch	Eingeschränkt über Sekundärmarkt oder Andienung	Eingeschränkt über Sekundärmarkt oder Andienung	Eingeschränkt über Sekundärmarkt oder Andienung	Eingeschränkt über Sekundärmarkt oder Andienung
Rating-Methode	Öffentlich verfügbares Rating	Internes Rating-Äquivalent	Internes Rating-Äquivalent	Internes Rating-Äquivalent	Internes Rating-Äquivalent
Rating-Segment	BBB und höher	BBB / BBB-	BB+ / BB	BB-Segment	CCC+ und tiefer
Zinsmethode	Fix	fix oder variabel	fix oder variabel	Fix oder variabel	fix oder variabel, plus endfällige Aufbesserung
Kreditrisiko-Aufschlag in BPs (lfr./per März 2022)	50-100	150-225	250-325	400-600	600-800

Fokus von PATRIZIA Infrastructure auf variabel verzinsliches Junior Infrastructure Debt.

Hinweis: Abbildung mehrheitlicher Merkmale. Die Tabelle kann Spezialsituationen nicht angemessen erfassen. (Gebräuchlicher Begriff in Englisch).

1) Mezzanine ist formaljuristisch Fremdkapital. Die Gesamtrendite besitzt einen höheren Risikokapitalcharakter, weil während der Laufzeit i.d.R. noch nicht risikogerecht verzinst und endfällig durch operativ abhängigen Zuschlag aufgebessert, mitunter auch in Form von Anteilen. In einem solchen Regime können fällige Zinsen fallweise auch gestundet werden, ohne gegen Kreditauflagen zu verstossen bzw. einen Default auszulösen.

1.3.2 Infrastruktur- Eigenkapitalfinanzierungen (Infrastructure Equity Financing)

Der Gattungsbegriff „Infrastructure Equity Financing“ umfasst die nicht öffentliche Direktinvestition in das Eigenkapital von Infrastruktur-Holding- oder Operativ-Gesellschaften (Unlisted Infrastructure Equity) und die Investition in börsenkotierte Infrastrukturaktien (Listed Infrastructure). Im Zweifelsfall ist der nicht weiter spezifizierte Begriff als Unlisted Infrastructure Equity zu verstehen, weil die explizite Spezifizierung von Infrastrukturaktien mit „Listed“ gängige Usanz ist.

Bei Unlisted Infrastructure Equity kann, nebst der Differenzierung nach Rendite-Risiko-Segmenten (Core-Segmente, usw.), eine Unterscheidung in grosse vs. mittelgrosse Infrastrukturen hilfreich sein. Damit ist nicht eine stabilere Bilanzstruktur der Grossen gemeint, sondern eine Segmentierung in unterschiedliche Transaktions- und Unternehmensgrössen.

Kriterien	**Gattungsbegriff Infrastruktur-Eigenkapitalfinanzierungen (Infrastructure Equity Financing)**			
Finanzierungs-unterart	**Infrastruktur-Direktinvestition – gross kapitalisierte Objekte** (Unlisted Infrastructure Equity - Large Caps)	**Infrastruktur-Direktinvestition – mittelgross kapitalisierte Objekte** (Unlisted Infrastructure Equity - Mid Caps)	**Börsenkotierte Infrastrukturaktien** (Listed Infrastructure) **Aktiver** Anlagestil	**Börsenkotierte Infrastrukturaktien** (Listed Infrastructure) **Passiver** Anlagestil
Objekt-Zyklus	• Bestandsobjekt • Entwicklung (Greenfield / Brownfield)	• Bestandsobjekt • Entwicklung (Greenfield / Brownfield)	Infrastrukturunternehmen (Diverse Stadien und Geschäftsmodelle)	Infrastrukturunternehmen (Diverse Stadien und Geschäftsmodelle)
Kapitalmarkt	Nicht öffentlich zugänglich (Private Market / Unlisted)	Nicht öffentlich zugänglich (Private Market / Unlisted)	Publikums-Aktienmarkt (Public Equity / Listed)	Publikums-Aktienmarkt (Public Equity / Listed)
Ø Deal Size: a) Finanzierung b) Unternehmen	a) über 300 Mio. (USD, EUR) b) über 1 Mrd. (USD, EUR)	a) bis 300 Mio. (USD, EUR) b) bis 1 Mrd. (USD, EUR)	Von Fondsgrösse, Stil, Diversifikation und Börsenkapitalisierung des Unternehmens abhängig	Von Fondsgrösse, Stil, Diversifikation und Börsenkapitalisierung des Unternehmens abhängig
Markt-/Handels-Liquidität	Eingeschränkt über Sekundärmarkt oder Andienung	Eingeschränkt über Sekundärmarkt oder Andienung	hoch	hoch
Rendite-Potenzial / -Vorgabe	Netto-IRR auf Investorenebene: • Super Core / Core: 6-8% p.a. • Core Plus: 9-11% p.a.	Netto-IRR auf Investorenebene: • Super Core / Core: 7-10% p.a. • Core Plus: 11-13% p.a.	semi-aktiv / index-nah: • FTSE Dev. Core Infra Index • S&P Global Infra Index agnostisch zu Aktien: stilabhängig, z.B. Inflation plus absolute Überrendite	Repräsentative Benchmarks zur Replikation: • FTSE Dev. Core Infra Index • S&P Global Infra Index
PATRIZIA Track Record	n.V.	über mehr als 18 J. zum 30.6.22: in EUR 12.9% Gross IRR	Per 31.01.2023 [1]: PATRIZIA LCCIF [2]: 6.8%	n.V.
Volatilität	n.V. (wegen Trägheit in der Bewertung und Entwicklung tiefer geschätzt als bei Listed)	n.V. (wegen Trägheit in der Bewertung und Entwicklung tiefer geschätzt als bei Listed)	Per 31.01.2023 [1]: • PATRIZIA LCCIF [2]: 10.6% • MSCI World: 15.1%	Per 31.01.2023 [1]: • FTSE Dev. Core Infra: 13.0% • S&P Global Infra: 14.7% • MSCI World: 15.1%
Beta zum MSCI World	n.V., aber agnostisch zum öffentlichen Aktienmarkt	n.V., aber agnostisch zum öffentlichen Aktienmarkt	Per 31.01.2023 [1]: • PATRIZIA LCCIF [2]: 0.51	Per 31.01.2023 [1]: • FTSE Dev. Core Infra: 0.66 • S&P Global Infra: 0.78

Fokus von PATRIZIA Infrastructure auf OECD/European Mid Market Infrastructure Equity und aktives Listed Infrastructure (Low Carbon).

Hinweis: Abbildung mehrheitlicher Merkmale. Die Tabelle kann Spezialsituationen nicht angemessen erfassen. (Gebräuchlicher Begriff in Englisch).

1) Seit Auflage des PATRIZIA LCCIF Ende Mai 2016, in CHF gesichert

2) PATRIZIA Low Carbon Core Infrastructure Fund

1.3.3 Regulatorische Kategorisierung von marktliquiden Anlagen in Infrastrukturen

Aus der BSV-Formulierung: „*…Diese Investitionen müssen nicht kotiert / emittiert sein, sonst könnten sie auch unter den klassischen Kategorien von Artikel 53 Absatz 1 Buchstabe b respektive Buchstabe d subsummiert werden.*“ resultiert, dass:

- Infrastrukturanleihen (Infrastructure Bonds) den traditionellen Forderungen (Art. 53 Abs. 1 lit. b BVV 2) und …
- kotierte Infrastrukturaktien den Aktien (Art. 53 Abs. 1 lit. d) zugeordnet werden könnten. Dies entspräche sowieso der gängigen Meinung unter Investment-Consultants, welche Listed Infrastructure, infolge Publikumshandel und ungeachtet eines Infrastrukturbezugs, typische Aktien-Charakteristik unterstellen. Dies mag in Verkennung der zu Aktien agnostischen Stilarten stimmen, zeigt aber in einem typisch aktiven Anlagethema wie Infrastruktur, dass die Effizienzfrage nicht ohne Analyse der Umsetzungsebene schlüssig zu klären ist.

2 Anlagen in Infrastrukturen in ALM-Studien und der Anlagestrategie (SAA)

Wie hoch ist die Effizienzsteigerung durch Einbau bzw. Aufstockung von Anlagen in Infrastrukturen in der SAA? PATRIZIA versucht, die Frage in möglichst realistischer Bezugnahme auf den Schweizer Pensionskassenmarkt zu beantworten.

2.1 Repräsentativer Blick in die Vergangenheit

Die Analyse soll ein möglichst repräsentatives Gesamtmarktportfolio der Schweizer Pensionskassen, unter Erhöhung von Anlagen in Infrastrukturen, simulieren. Sie verwendet dazu repräsentative Zeitreihen von April 2008 bis Dez. 2021. Diese Periode ergibt sich durch die Zeitreihe für Infrastructure Equity aus Preqin, welche PATRIZIA für repräsentativ beurteilt und bis dann zurückreicht. Sie beinhaltet diverse wesentliche Kapitalmarktphasen und -brüche, wie die Finanz-, Euro- und Corona-Krise sowie die expansive Geldpolitik inkl. Negativzinsen in diversen Ländern.

Die Simulation ist ein Blick in die Vergangenheit und keine Prognoserechnung, besitzt aber den Vorteil, dass langfristige, repräsentative Leistungsdaten nicht durch eine bestimmte Prognosemethode beeinflusst sind. Das Ergebnis zeigt die Effizienz von Anlagen in Infrastrukturen für Schweizer Pensionskassen über die längere Vergangenheit, mehr oder weniger seit dem erstmals breiter bemerkbaren Auftreten als Anlagethema bei Schweizer Pensionskassen um 2006. Es ist keine zuverlässige Einschätzung der zukünftigen Entwicklung, jedoch wertvoller Ausgangspunkt für die strategische Optimierung.

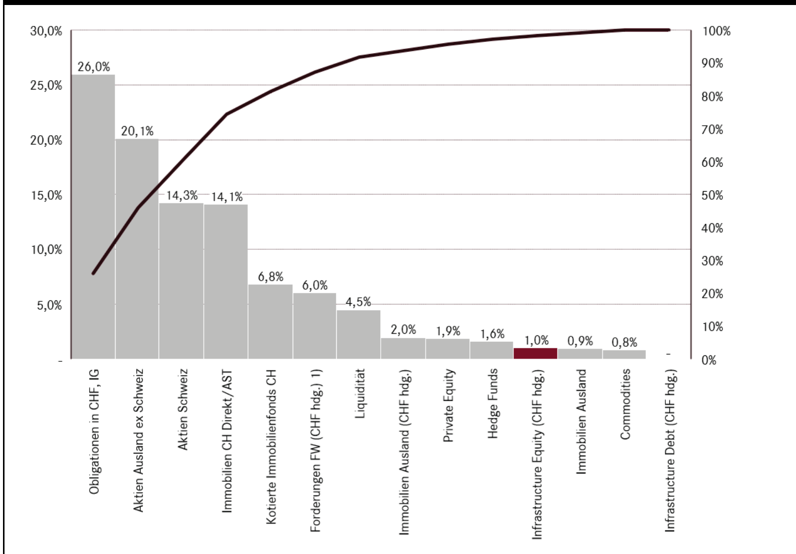
2.2 Ausgangslage

2.2.1 Erwägungen für eine realistische Ausgangs-Allokation

Die, gemäss Credit Suisse-Pensionskassenindex aktuelle Allokation (CAA) von Schweizer Pensionskassen per 31.12.2021, wurde als repräsentative Ausgangslage angenommen. Diese weicht in Teilen von der strategischen Allokation (SAA), z.B. infolge zurückliegend positiver Aktienmärkte, ab. Eine vergleichbar repräsentative Gesamtmarkterhebung zur SAA erweist sich aber als nicht verfügbar. Der 31.12.2021 wurde als Stichtag gewählt, weil die Allokation einerseits anlagekategorisch aktuell ist und andererseits die a.o. Verwerfungen in den Obligationen und Aktien in 2022 ausschliesst, d.h. ein mehr oder weniger „normalisiertes“ Bild zeigt. Die CAA per 31.12.2021 darf aus unserer Sicht als vernünftig approximative Abbildung der zugrundeliegenden SAA eingeschätzt werden. Die enthaltene 1.0%-Allokation in Infrastruktur wurde als ausschliesslich Infrastructure Equity angenommen, weil Infrastructure Debt bis dato weder verbreitet noch angemessen bekannt ist. Die per Stichtag offenen Kapitalzusagen wurden nicht berücksichtigt, was die bereits avisierte Ziel-Allokation unterschätzt. Dies beeinträchtigt die Simulation in ihrer Aussage trotzdem nicht, weil sie gleichgerichtet ist.

2.2.2 Ausgangs-Allokation

Gesamtmarkt-Portfolio (CAA) per 31.12.2021 gemäss Credit Suisse-PK-Index



Leistungsdaten (seit April 2008)	
Historische Rendite	6.7% p.a.
Volatilität	5.8% p.a.
Rendite zu Risiko-Verhältnis	1.16
Beta zu Aktien (MSCI World ex CH)	0.32
Max. Drawdown im schlechtesten Quartal	-7.5%
CVAR (5%, Quartalsbasis)	6.7%

1) Forderungen FW (CHF hedged): Obligationen FW (4.43%), Wandelanleihen FW (0.26%), ILS (Alternativ/0.73%) und Senior Loans (Alternativ/0.62%). Das Aggregat wird durch den Bloomberg Global Aggregate Bond-Index (CHF hedged) repräsentiert. Die Massnahme dient der effizienteren Abbildung der Reallokationsmassnahme unter den zinsbezogenen Anlagen und beeinträchtigt die Aussagekraft nicht.

- Hypotheken wurden den Obligationen CHF/IG, der im Index ausgewiesene Restanteil (0.36%) wurde der Liquidität hinzugeschlagen.

2.2.3 Hinterlegtes Benchmark-Portfolio

Anlage-Kategorie	Anlageklasse	Applizierte Benchmark
Bargeld	Liquidität	ICE LIBOR CHF 3 Month
Forderungen	Obligationen CHF Investment Grade	Swiss Bond Index (AAA-BBB) Total Return
	Forderungen FW (aggregiert) 1)	Bloomberg Global Aggregate Bond Index (Hedged CHF)
Risikopapiere (traditionell, v.a. Aktien)	Aktien Schweiz	Swiss Market Total Return Index
	Aktien Ausland exkl. Schweiz	MSCI World ex Switzerland Net Total Return
Alternative Anlagen	Hedge Funds	HFRC Global Hedge Fund
	Private Equity	Preqin Private Equity Funds Index
	Commodities	HFRI Macro Commodity Index
Anlagen in Infrastrukturen (traditionell/Unlisted)	Infrastructure Equity	Preqin Infrastructure Funds Index (Hedged CHF)
	Var. verz. Junior Infrastructure Debt	PATRIZIA Infrastructure Debt Partners (Hedged CHF)
Immobilien	Immobilien CH Direktanlagen / AST	KGAST Swiss Real Estate Index
	Kotierte Immobilienfonds CH	SXI Real Estate Funds Total Return Index
	Immobilien Ausland (CHF Hedged)	MSCI Pan-European PFI Funds Quarterly Property Index (Unfrozen) (Hedged CHF)
	Immobilien Ausland (CHF Unhedged)	MSCI Pan-European PFI Funds Quarterly Property Index (Unfrozen) (Unhedged CHF)

1) Siehe Hinweis zur Ausgangs-Allokation

Es wurde auf die Hinterlegung von für Schweizer Pensionskassen repräsentativen Indizes geachtet. Kritische Leser mögen einwenden, die zur Berücksichtigung von Infrastructure Debt verwendete Zeitreihe „PATRIZIA Infrastructure Debt Partners" sei keine repräsentative, weil proprietäre Zeitreihe. Dies stimmt als Grundaussage. Weil aber PATRIZIA ein praktisch ausschliesslicher Verfechter von variabel verzinstem Junior Infrastructure Debt ist und kein repräsentativer, sortenreiner Index zu dieser Fremdfinanzierungsunterart verfügbar ist, bestanden nur die Optionen des Verzichts auf eine Berücksichtigung in der Simulation oder der Verwendung des entsprechenden PATRIZIA Track records. Die nächstbesten alternativen Abbildungen, mittels Index für hochverzinsliche Anleihen (High Yield Bonds) oder Leveraged Loans, sind bereits zu stark verzerrend. Das Corporate Risk und die mitunter feste Verzinsung passen diametral nicht zum effektiven Umsetzungsansatz. Die Volatilität würde wegen öffentlicher Handelbarkeit deutlich über- und die risikobereinigten Kreditrisikoaufschläge für Junior signifikant unterschätzt. Zudem divergieren auch die Korrelationseigenschaften zu stark.

2.3 Erwägungen für eine realistische Ziel-Allokation

2.3.1 Regulatorische Rahmenbedingung zur Anlagenerweiterung

Der Gesetzgeber legt in Art. 55 lit. f eine ordentliche Obergrenze für Anlagen in Infrastrukturen von 10% fest. Wie üblich könnte fallweise auch dieses Limit, in Erfüllung von Art. 50 Abs. 4 (schlüssige Begründung zur Anlagenerweiterung) i.V.m. Art. 49a BVV 2 (gestützt auf ein führungstaugliches Anlagereglement), erweitert werden. In einer Gesamtmarktbetrachtung wäre eine solche a.o. Verhaltensannahme aber unrealistisch. Die Zielallokation sollte somit 10% nicht überschreiten.

2.3.2 Aufsichtsrechtliche Beurteilung einer Anlagenerweiterung unter taktischen Allokationsgesichtspunkten

Die kantonalen Aufsichten sind für die Genehmigung von Anlagereglementen (inkl. gültiger SAA) zuständig. Sie qualifizieren nachvollziehbarerweise eine stipulierte taktische Obergrenze als legitimierten Allokationsspielraum und als für die Beurteilung einer schlüssigen Anlagenerweiterung relevant. Es ist somit anzunehmen, dass das Gros der Pensionskassen eine SAA in Anlagen in Infrastrukturen festlegt, welche einen angemessenen Wertschwankungspuffer zur ordentlichen Obergrenze respektiert. Es wurde deshalb eine maximal realistische Gesamtmarkt-Ziel-Allokation von 7.5% angenommen.

2.3.3 Erwägungen für eine schlüssige Reallokation und effiziente Substitution

Infrastructure Equity wird im Kern als nicht öffentlich handelbare, internationale (OECD) und ertragsstabile Investitionen ins Risikokapital von Infrastrukturen verstanden. Dieser konservative Risikokapital-Charakter kann als effiziente Diversifikationschance für breit diversifizierte Aktien Welt bzw. als Ergänzung zu Value oder Dividend Equity begriffen werden.

Infrastructure Debt wird nur in der von PATRIZIA als effizient beurteilten Form von variabel verzinstem Junior Infrastructure Debt (Core-Segmente) vorgesehen. Es kann mitunter als effizienter, inflations- und zinsänderungsgeschützter Ersatz für festverzinsliche Obligationen FW, Wandelanleihen FW, Senior Secured Loans und/oder Insurance Linked Securities/Bonds verstanden werden.

Die Aufteilung zwischen Infrastructure Equity und Junior Debt wurde, infolge des aktuell divergierenden Bekanntheitsgrads, auf 2/3 zu 1/3 festgelegt. Situativ wäre auch jede andere Aufteilung denkbar, massgeblich in Abhängigkeit der Netto Cash Flow-Situation einer Pensionskasse, weil Infrastructure Junior Debt eine ausschliessliche Ertragsstrategie ist und Laufzeiten bzw. Kapitalbindung verhältnismässig kürzer sind. Damit kommt es in der Simulation zu folgenden Reallokationen:

Allokation	Forderungen FW 1)	Aktien Welt ex CH	Infrastructure Equity	Var. verz. Infrastructure Junior Debt
Ausgangsportfolio	6.0%	20.1%	1.0%	0.0%
Ziel-Allokation	3.5%	16.1%	5.0%	2.5%
Reallokationen	**-2.5%**	**-4.0%**	**+4.0%**	**+2.5%**

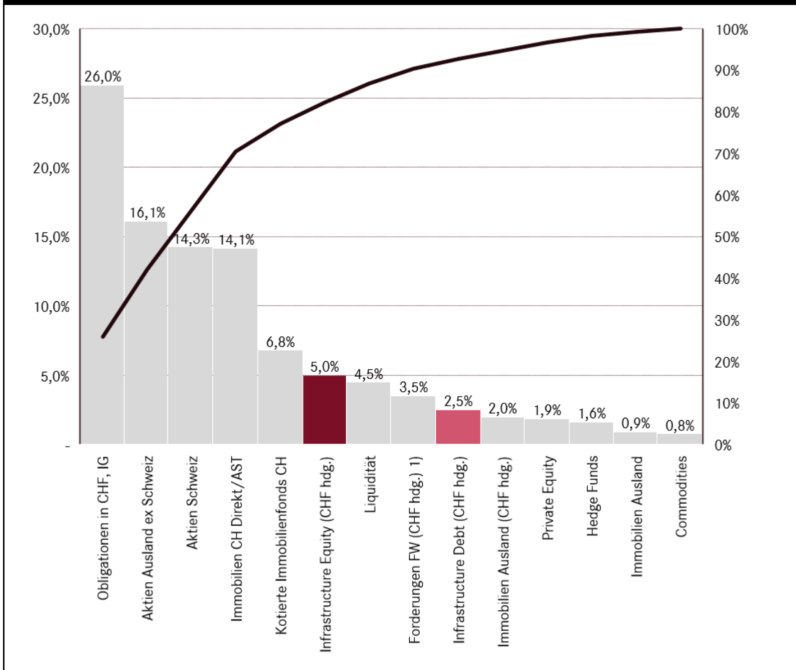
1) Siehe Hinweis zur Ausgangs-Allokation

2.3.4 Behandlung der Währungsabsicherung

Der CHF war historisch und langfristig auch gegenüber dem EUR und USD stark. Es herrscht deshalb die Meinung vor, das Eingehen von Fremdwährungsrisiken sei für einen in CHF verpflichteten Investor (z.B. Schweizer Pensionskasse), besonders bei ertragsfokussierten, weniger volatilen Anlagen, nicht effizient und müsse abgesichert werden. PATRIZIA teilt diese Auffassung und berücksichtigt in der Simulation in CHF abgesicherte Zeitreihen für die Anlagen in Infrastrukturen.

2.4 Simulierte Ziel-Allokation

Simulierte Gesamtmarkt-Zielallokation



Leistungsdaten (seit April 2008)	
Historische Rendite	6.9% p.a.
Volatilität	5.2% p.a.
Rendite zu Risiko-Verhältnis	1.34
Beta zu Aktien (MSCI World ex CH)	0.28
Max. Drawdown im schlechtesten Quartal	-6.5%
CVAR (5%, Quartalsbasis)	5.8%

1) Siehe Hinweis zur Ausgangs-Allokation

2.5 Fazit zum Blick in die längere Vergangenheit unter Erhöhung von Anlagen in Infrastrukturen

Hätte man, auf der Basis des Gesamtmarkt-Portfolios von Schweizer Pensionskassen gemäss Credit Suisse-Pensionskassen-Index per Ende 2021, seit April 2008 und bis Dez. 2021 sowie abgesichert in CHF:

1. 5.0% anstelle von nur 1.0% in Infrastructure Equity bei 4.0% weniger Aktien Ausland und …
2. 2.5% variabel verzinstes Infrastructure Junior Debt bei 2.5% weniger Obligationen FW, Wandelanleihen FW, Senior Loans und/oder Insurance Linked Securities/Bonds alloziert, …

so wären …:

1. die Volatilität p.a. um 0.6%, der max. Drawdown im schlechtesten Quartal um 1.0%, der 5%-CVAR (Quartal) um 0.9% und das Beta zum MSCI World um 0.04 tiefer ausgefallen und …
2. die erzielte Rendite mit 6.9% p.a., trotz signifikanter Risikoreduktion, jährlich um +0.2% höher ausgefallen.

Dies hätte Anforderungen an Wertschwankungsreserven und Risikobudget reduziert sowie den Deckungsgrad unterstützt.

3 Anlagen in Infrastrukturen und Anlagetaktik (TAA)

3.1 Taktische Bandbreiten und taktischer Führungsrhythmus

Die Festlegung taktischer Bandbreiten (TAA) erfolgt erfahrungsgemäss unter mehr oder weniger präziser Berücksichtigung der langfristigen, annualisierten Schwankungsbreite einer Anlageklasse. In Absenz eines Constant Rebalancing-Ansatzes und mit Blick auf den üblichen Führungsrhythmus einer Pensionskasse, darf angenommen werden, dass die Erwägungen zur anlagetaktischen Positionierung in grundsätzlich unterjährigen Perioden, z.B. pro Quartal oder max. Halbjahr, erfolgen.

Eine Bandbreitenverletzung ist bei erstmöglicher Gelegenheit (z.B. Monatsberichterstattung) festzustellen und üblicherweise innerhalb von max. 6 Monaten zu korrigieren. Dieser Zeithorizont ist vernünftig, um sowohl Fire Sales als auch übereilte Aufstockungen zu vermeiden. Eine taktische Verletzung könnte aber auch über einen insgesamt noch längeren Zeitraum regelkonform Bestand haben, sofern sie periodengerecht und nachvollziehbar wiedererwogen wird und bei Persistenz über ein Geschäftsjahresende hinaus, im Rahmen der Jahresberichterstattung, unter Berufung auf die Anlagenerweiterung (Art. 50 Abs. 4 BVV 2), schlüssig begründet werden kann.

3.2 Der „Basiseffekt“ als taktische Herausforderung zur Bewahrung der Reallokationsfähigkeit

Nicht öffentlich handelbare, NAV-basierte Anlagen wie Private Equity, Infrastruktur, Anlagestiftungen in Immobilien Schweiz u.a., sind in ihrer Bewertung deutlich träger als marktliquide Anlagen, insbesondere als Aktien und Obligationen. Dennoch besteht, infolge impliziter Bewertungsfaktoren wie z.B. Zinsen, Diskontierungsraten und dafür herangezogene Vergleichswerte am Aktienmarkt (Multiples, Beta, u.a.), ein Bezug zu den Publikumsmärkten. Deren Veränderungen wirken sich, abhängig vom Bewertungszyklus, i.d.R. mit 1, 3 oder 6 Monaten Verzögerung auch auf nicht liquide Anlagen aus. Obschon seit Jahren über die Messung der Volatilität in Private Equity und dergleichen gestritten wird, darf durch den Zeitverzug und über die längere Betrachtung vernünftigerweise angenommen werden, dass bei NAV-basierten Anlagen die Volatilität, im Vergleich zu solchen an den öffentlich zugänglichen Märkten, zumindest teilweise ausbalanciert wird.

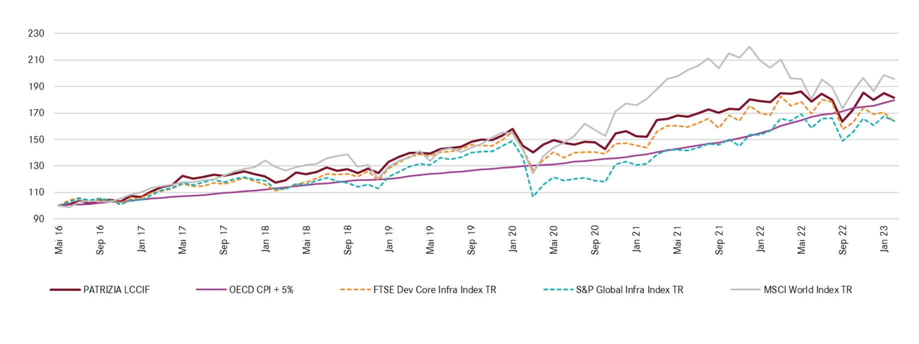
Diese Trägheit in der Bewertung kann vor allem bei Verwerfungen an den öffentlichen Kapitalmärkten zu einer starken Übergewichtung bis gar Verletzung der oberen Bandbreite einer nicht liquiden Anlage führen – landläufig bezeichnet als „Basiseffekt“ – (auf breiterer Front vermutet in 2022 infolge stark negativer Leistung der Aktien und Obligationen). Eine solche Verwerfung kann ein vorauslaufender Indikator für noch anstehende Korrekturen auf nicht liquiden Anlagen sein. Letztere folgen aber einem überlangen Anlagehorizont und sind auch so zu beurteilen. Wieso eine solche Anlage aus kurzfristigen taktischen Gründen verkaufen, wenn sie über den ganzen Anlagehorizont noch immer positiv beurteilt werden kann – und ein zeitnaher Verkauf womöglich zur Unzeit erfolgen müsste? Eine Einschränkung der Reallokationsfähigkeit könnte stattdessen aus übergeordneten, opportunistischen Erwägungen nachteilig sein, indem weniger Spielraum für Zukäufe gerade stark abgewerteter, öffentlich zugänglicher Anlagen besteht. Dies allerdings auch nur unter der Annahme, dass deren Recovery, über einen kongruenten Anlagehorizont betrachtet, als insgesamt noch effizienter eingeschätzt werden muss als die primär bewertungsmethodenbedingte Überallokation in der weniger liquiden Anlage.

3.3 Wir brechen situativ für Listed Infrastructure eine Lanze

Die landläufige Beratermeinung zur Aktiencharakteristik von Listed Infrastructure und dessen möglicher Kategorisierung bei den Aktien, wurden bereits erwähnt. Ebenso der Hinweis, diese Einschätzung sei unter Einbezug der Umsetzungsebene zu relativieren. Es ist in der Anlagenorganisation ohnehin empfehlenswert, die unterjährige, umsetzungsbezogene Berichterstattung von der Rechenschaftsablage bzw. Jahresberichterstattung zu differenzieren. Dies lässt sich anschaulich am Beispiel traditioneller Aktien (Long only-Strategie) und dem Einsatz von Long/Short Equity Hedge Funds zu deren Effizienzsteigerung (aktienähnliche Rendite bei weniger Volatilität) aufzeigen. Es wäre unterjährig sinnvoll, die Leistung der traditionellen Aktien und Long/Short Equity Hedge Funds sowohl separat als auch aggregiert auszuweisen, auch wenn die Hedge Funds in der Jahresberichterstattung definitiv unter den Alternativen Anlagen zu rapportieren sind. Damit wird eine praktisch duale Reporting-Struktur (Asset Management / Rechenschaftsablage) erforderlich, was allerdings auch noch nicht flächendeckend bei Custodians und Reporting-Verantwortlichen angekommen ist.

PATRIZIA Infrastructure kann mit dem Ende Mai 2016 konstituierten „Low Carbon Core Infrastructure Fund (LCCIF)“ auf schlüssige Weise belegen, dass strenge Selektion von Infrastrukturaktien, welche einen stark reduzierten CO2-Fussabdruck nachweisen und konservative Aktienkennzahlen erfüllen müssen, zu einem effektiv agnostischen Verhalten gegenüber dem Aktienmarkt MSCI World und Infrastrukturaktien-Indizes geführt hat. Der Fonds besitzt deshalb auch keine Aktienmarkt-Vorgabe, sondern OECD CPI + 5.0% p.a. in USD, rollierend über 5 Jahre:

Performance-Verlauf seit Auflage bis 28. Feb. 2023



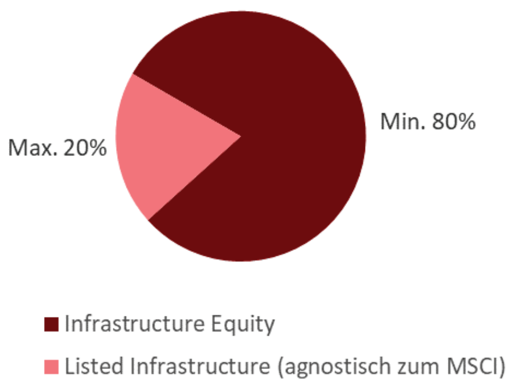
Leistungsdaten	
LCCIF:	
Netto-Rendite (CHF hdg.)	6.4% p.a.
Volatilität (CHF hdg.)	11.0% p.a.
Downside Volatilität (CHF hdg.)	8.0% p.a.
Beta zum MSCI World (CHF hdg.)	0.55
Netto-Rendite (USD hdg.)	9.3% p.a.
Volatilität (USD hdg.)	11.1% p.a.
Downside Volatilität (USD hdg.)	8.0% p.a.
Beta zum MSCI World (USD hdg.)	0.56
Vorgabe:	
OECD CPI + 5.0% p.a. (in USD)	9.1% p.a.

Grafik: Seit Auflage Ende Mai 2016, denominiert und abgesichert in USD, für den LCCIF netto nach Gebühren.

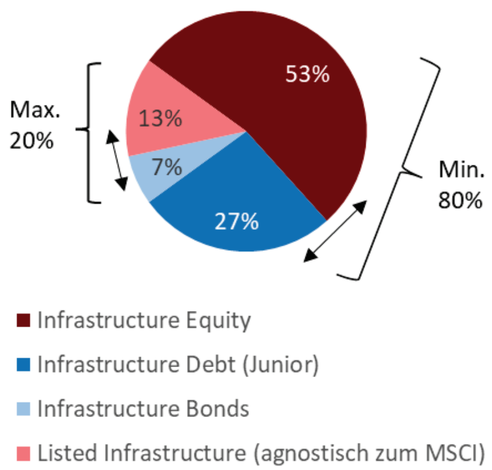
Auf dieser Grundlage und unter anlagetaktischen Gesichtspunkten, könnte man erwägen, der Gesamtumsetzung von Anlagen in Infrastrukturen einen unterproportionalen Anteil an effektiv zu Aktien agnostischem, zielkonformem Listed Infrastructure beizumischen. Dies könnte für diejenigen Pensionskassen eine Alternative sein, die eine ausschliesslich illiquide Umsetzung nicht eingehen können oder wollen, auch zur Bewahrung einer situativ verbesserten Reallokationsfähigkeit im Zuge von Verwerfungen in den marktliquiden Anlagen (Basiseffekt). Das heisst, diese könnten mindestens partiell umschichten, wenn sie wollten, müssen aber nicht. Es muss darauf hingewiesen werden, dass auch ein zu Aktien agnostischer Ansatz in Listed Infrastructure, in negativen Aktienmärkten Rückschläge erleiden kann. Aus bisheriger Perspektive jedoch mit einer durchaus realistischen Chance, dass diese deutlich geringer ausfallen und sich zuverlässig erholen.

Wie könnte ein „unterproportionaler“ Anteil quantifiziert werden? Unter Zuhilfenahme des vor allem unter Investment-Consultants verbreiteten „Core-Satellite“-Begriffs, was vom Pareto-Prinzip abgeleitet ist. Geht man davon aus, dass Listed Infrastructure der marktliquide Satellit zu Unlisted Infrastructure Equity ist, so könnten Infrastrukturobligationen die marktliquide Beimischung zu Infrastructure Debt sein. Appliziert auf die bereits erwähnte, für maximal realistisch angenommene Gesamtmarkt-Allokation von entweder 7.5% Infrastructure Equity bzw. 5.0% Infrastructure Equity und 2.5% Junior Infrastructure Debt, resultiert:

Core Unlisted / Satellite Listed Infrastructure Equity



Core Unlisted / Satellite Liquid Infrastructure Diversified



4 Umsetzung und Management von Anlagen in Infrastrukturen (Mandat/Fonds)

4.1 Diversifikation im Allgemeinen

Art. 50 Abs. 3 BVV 2 verlangt die Einhaltung einer „angemessenen“ Risikoverteilung in der Vermögensanlage, was weder zu wenig noch zu breit diversifiziert meint. Das aktive Erfolgsrezept ist «Selektivität», das eigentliche Gegenteil von möglichst breit investieren. D.h. viel zur Auswahl haben, streng aussieben und verbleibendes sorgfältig prüfen. Auch Regionen- und Segmentvorgaben dürfen nicht «das Kind mit dem Bade ausschütten». Der Bottom-up-Ansatz ist der Selektivität inhärent und erfordert angemessene Flexibilität, um gleichzeitig extreme Allokationen und Renditeverwässerung zu verhindern.

4.2 Marktgängigkeit von Anteilen an Anlagen in Infrastrukturen

4.2.1 Illiquidität der unterliegenden Investitionen

Private Markets sollen bewusst vor dem tendenziell stark reaktiven Anlageverhalten einer breiten Öffentlichkeit geschützt werden. Daraus folgt, dass weder die Zugänglichkeit für ein breites Publikum noch ein liquider Anteilshandel durch dasselbe im Vordergrund stehen. Die Absicht eines langfristig verlässlichen Anlageverhaltens folgt dem Umstand, einen stabilen Ertrag und/oder eine zuverlässige Wertsteigerung über die längere Frist erzielen zu wollen bzw. zu müssen, weil es kurzfristig gar nicht möglich ist. Die Investition in den unterliegenden Sachwert ist illiquide. Die Anlage soll weder durch Volatilität infolge Anteilshandel noch einen Kapitalrückzug zur Unzeit beeinträchtigt werden. Idealerweise erfüllt eine Anlageform diese Anforderung, indem sie die Ausgabe und Rücknahme von Anteilen zumindest weitgehend beschränkt.

4.2.2 Primärer und sekundärer Kapitalmarkt

Die meisten primären Kapitalmärkte sind durch die breite Öffentlichkeit zugänglich. Die Qualifizierung des Investors ist infolgedessen auch kein grundsätzliches Ausschlusskriterium zur Teilnahme. Diese Märkte sind im Grundsatz umfassend geregelt und beaufsichtigt. Die Preisbildung ist öffentlich einsehbar und der Handel mit Anteilen (z.B. Aktien) liquide. Solche Märkte gelten als informationseffizient und damit die Chancen, sich durch Nutzung von Ineffizienz einen Vorteil zu verschaffen, als gering. Mögliche Einschränkungen in der Handelsliquidität ergeben sich z.B. bei unechten Publikumsgesellschaften, vinkulierten Namenaktien, Kapitalmarkt-Nischen von vergleichsweise kleiner Grösse oder einem in Extremis, behördlich und zeitlich begrenzt ausgesetzten Handel, um das öffentliche Interesse zu schützen.

Der sekundäre Kapitalmarkt ist Inbegriff für den Handel mit Anteilen an Fonds/bestehenden Portfolios und Investitionen in Private Markets. Dieser ist für das breite Publikum nicht zugänglich und nicht in gleichem Masse beaufsichtigt und geregelt. Dennoch sind auch sie durch Regulierungen und Branchenstandards kein rechtsfreier Raum und seit Langem unter qualifizierten Investoren etabliert. Die Handelssituationen besitzen einen höheren Individualisierungsgrad und die Preisbildung ist nicht öffentlich einsehbar. Sie müssen somit als weniger informationseffizient angenommen werden, womit die Chancen, sich durch Nutzung von Ineffizienz einen Vorteil zu verschaffen, durchaus vorhanden sind.

4.3 Investitionsformen

Die Umsetzungsformen sind mehrdimensional unterschiedlich. Wir differenzieren sie anhand der folgenden Merkmale:

- Geschlossene oder bedingt offene Anlageform (Closed ended Fund / Evergreen Fund)
- Anlageverantwortung durch einen oder mehrere Vermögensverwalter (Single Manager / Multi Manager)
- Konzentration auf einen Anlagestil oder Diversifikation über mehrere Stilarten (Single Strategy / Multi Strategy)
- Kollektive Anlage oder individuelle Form für einen einzelnen Investor

Auf eine detaillierte Beschreibung von kundenindividuellen Spezialmandaten wird hierin verzichtet. Es ist offensichtlich, dass sie einem Investor die grösstmögliche Freiheit in der Ausgestaltung seiner Umsetzung einräumen, bis hin zur erweiterten Mitsprache über Anlageentscheide. Spezialmandate sind üblicherweise an grössere Anlagevolumina gebunden.

4.3.1 Geschlossene Anlageform (Closed ended Fund)

Die Absenz einer Rücknahmeverpflichtung und eines Primärhandels von Anteilen an geschlossenen Fonds entspricht dem Naturell der unterliegend illiquiden Anlagen. Der Anlageerfolg soll nicht durch Liquiditätsforderungen der beteiligten Investoren zur Unzeit gefährdet werden. Der Ansatz schützt die Investoreninteressen und ist per se nicht nachteilig, es sei denn, die Situation des Investors passe aus individuellen Gründen gerade nicht dazu (z.B. absehbare Teil-Liquidation). Geschlossene Fonds haben eine endliche Laufzeit, bestehend aus einer mehrjährigen Investitions- mit anschliessender Realisierungsphase. Der Handel mit Anteilen gilt marktbezogen als nicht geregelt und wenig liquide. Anteile müssen, wenn vertraglich bedingt, zuerst den Mitinvestoren angeboten und ansonsten über den Sekundärmarkt verkauft werden. Der Manager ist nicht verpflichtet, aber oft bemüht, eine Umplatzierung im Rahmen seiner Möglichkeiten zu unterstützen. Nachvollziehbarerweise können zudem vertragsbedingte Vereinbarungen Ablehnungsgründe vorsehen, um das Profil und die Interessen der Investoren im Fonds zu schützen.

4.3.2 Bedingt offene Anlageform (Evergreen Fund)

Bei Evergreen-Funds, so ohne Weiteres, von einer offenen Form zu sprechen, greift für uns zu kurz. Mit offen, im Sinne von jederzeit praktisch unlimitiert investier- und divestierbar, sind Fonds zu bezeichnen, die unterliegend in öffentlich handelbare Anlagen investieren und deren Konditionen eine verlässliche Möglichkeit für den kurzfristen Ein- und Ausstieg, bis hin zum Gesamtausstieg, vorsehen. Das ist auch bei Evergreen Funds so nicht der Fall und ansonsten stark risikobehaftet, weil die versprochene Liquidität der Anlageform von derjenigen der unterliegenden Anlagen zu stark divergiert. Bei überschiessender Liquiditäts-Nachfrage müssten Anlagen unter Zeitdruck liquidiert werden. Evergreen Funds sind demzufolge präziser als bedingt offene oder allenfalls „semi-liquide“ Anlageform zu bezeichnen. Sie sind idealerweise gegen übermässige Potenzialverwässerung und einen zu grossen, investorenseitigen Veräusserungwillen geschützt. Kapitalzusagen können in einer Warteschlange vorübergehend gestaut werden, bis die Investitionstätigkeit auch den Abruf derselben erforderlich macht. Anderseits ist die Anteilsrückgabe i.d.R. durch sogenannte „Gates“ (Nettoumschlag pro Zeitperiode) begrenzt, wodurch ein überschiessender Anteil auf eine oder mehrere Folgeperioden fortgeschrieben werden muss. Auch der Evergreen-Manager versucht, die zeitgleiche Des- und Investitionsnachfrage auszugleichen. Der springende Punkt der bedingten Liquidität ist aber, dass sie wahrscheinlich nicht oder nur teilweise verfügbar ist, wenn mehrere Investoren gleichzeitig „zum Rückzug blasen“. Gerade bei Evergreen Funds mit Multi Manager-Ansatz (bedingt offener Fund of Fund) kann sich zudem das Kapitalabrufs- und Desinvestitionsverhalten als deutlich träger erweisen, als ursprünglich erwartet. Der Grund liegt in der komplexen und vergleichsweise trägen Steuerung von Kapitalströmen über alle unterliegend investierten Single Funds hinweg.

4.3.3 Exposure-Planung und Steuerung von Kapitalzusagen

Geschlossene Fonds werden über ihre begrenzte Laufzeit zurückgeführt. Es muss, zur Aufrechterhaltung eines Investitionsgrades, sporadisch in neu lancierte Fonds nachinvestiert werden – vergleichbar mit dem Nachlegen von Holz bei einer Kaminfeuerung. Bei bisher zielkonformer Leistung, nicht selten in einen vergleichbaren Nachfolgefonds des gleichen Managers – oder, um beim Feuerungsbeispiel zu bleiben: Warum beim Nachlegen die Holzsorte wechseln, wenn sie bislang zu einem guten Kaminfeuer geführt hat? Manager sind nach dem Fortführungsprinzip ihrer eigenen Tätigkeit daran interessiert, strategievergleichbare Fonds in Generationen aufzulegen. Der Folge-Fonds wird namentlich oft mit der nächsthöheren römischen Zahl differenziert. Fonds-Generationen beinhalten für den Manager einen impliziten Leistungsanreiz, weil die nachfolgende Lancierung vom bisherigen Erfolg beeinflusst ist. Die Bildung einer konsekutiv erfolgreichen Fonds-Generation, d.h. erfolgreiche Leistung ohne Unterbruch über einen möglichst langen Zeitraum hinweg, bildet ohnehin das übergeordnete Ziel, um damit Einwände, wie „einmal ist Zufall und zweimal Glück“ zu entkräften. Bei der Beurteilung einer kürzeren Fonds-Generation sollte differenziert werden, ob der Manager den Investitionsansatz bereits vorgängig in anderer Form (z.B. kundenindividuelle Spezialmandate) erfolgreich umgesetzt hat oder nicht.

Bei Evergreen Funds entfällt die Planung für sporadische Nachfolgeinvestitionen, weil Realisierungen in der Verantwortung des Managers reinvestiert werden. Dieser Effizienzgewinn mindert die sorgfältige Überwachung dennoch kaum. Auch sie ist regelmässig und perspektivisch zu realisieren, um allfällige Zielabweichungen möglichst frühzeitig zu erkennen. Dies auch deshalb, weil das Ausstiegsverhalten von Mitinvestoren von der Fondsentwicklung erheblich beeinflusst sein kann. In der Tendenz erweisen sich Evergreen Funds als eher grossvolumig mit mehreren Milliarden an Assets under Management. Sie sind v.a. in der Umsetzungsform als Single Manager prädestiniert, z.B. Skaleneffekte auf den Kosten zu erzielen. Ihr Fokus liegt auf eher grösser kapitalisierten Investitionen. Für eine Fokussierung auf spezialisiertere Nischen ist die Anlageform nur bedingt geeignet und in deratigen Fällen auch kaum verfügbar.

4.3.4 Single Manager-Umsetzung

Die Single Manager-Umsetzung beschränkt sich auf die Verantwortlichkeit in der Vermögensanlage durch einen einzelnen Manager. Der aktive Manager besitzt ein individuelles, sog. „unsystematisches“ Risiko, das Anlageziel zu verfehlen; es kann, entgegen dem systematischen bzw. Marktrisiko, wegdiversifiziert werden. Dieses Risiko ist Gegenstand einer eingehenden Sorgfaltsprüfung vor Mandatserteilung. Die aktive Kompetenz beinhaltet aber auch die Chance auf überdurchschnittlichen Anlageerfolg. Dass seine Kompetenz durch keine weiteren Manager diversifiziert ist, kann Fluch oder Segen sein. Läuft man Gefahr, seine bislang erwiesene und weiterhin erwartete Mehrleistung durch Diversifikation spürbar zu verwässern, würde man ihn auf alleiniger Basis akzeptieren und vice versa. Das Single Manager-Risiko kann aus Investorensicht eigen- oder drittverantwortlich diversifiziert werden. Eigenverantwortlich bedeutet, dass eine Pensionskasse in ihrer Gesamtumsetzung in mehrere, sich effizient diversifizierende Single Manager-Funds investiert (z.B. 2 oder 3). Eine solche Umsetzungsstrategie bedingt i.d.R. ein bestimmtes Anlagevolumen, weil Single Manager-Funds üblicherweise minimale Kapitalzusagen von 10 Mio. aufrufen. Fallweise sind begründbare Ausnahmen oder ein zusätzlicher Feeder Fund mit reduzierter Anforderung möglich. Drittverantwortlich bedeutet, dass die Pensionskasse einen Multi Manager mandatiert.

4.3.5 Multi Manager-Umsetzung

Die Umsetzungsform ist besser bekannt als Fund of Fund. Der Manager investiert in seiner Verantwortung in mehrere Single Funds, um das unsystematische Single Manager-Risiko zu diversifizieren. Er übernimmt damit eine strategisch-taktische Verantwortung, indem er die einzelnen Fonds zeitdynamisch selektioniert und gewichtet. Für die direkte Umsetzung in die unterliegenden Anlagen ist er nicht verantwortlich. Diese überliegende Funktion verursacht eine zusätzliche Gebührenebene, welche fallweise effizient sein kann oder nicht. Konsequenterweise sei darauf hingewiesen, dass auch ein aktiver Multi Manager ein unsystematisches Manager-Risiko besitzt. Auch er kann das Anlageziel durch ungeeignete Selektion und/oder Gewichtung verfehlen. Eine darüber hinausgehende Diversifikation ist jedoch kaum mehr effizient.

4.3.6 Single Strategy-Umsetzung

Die Single Strategie-Umsetzung konzentriert sich auf einen Investitionsansatz. Auch sie kann angemessen diversifiziert sein, wenn der Manager Investitionen zwar nach dem gleichen Ansatz und in vergleichbarer Grösse, aber effizient sektoral und regional streut. Auch jeder aktive Investitionsansatz verkörpert ein unsystematisches Risiko. Dabei ist die Analyse der Stil-Treue über die Zeit wichtig, das rechtzeitige Erkennen allfälliger „Style drifts“, wobei diese fallweise notwendig, effizient und damit angemessen oder aber unangemessen sein können. Bestimmte Investitionsansätze oder Transaktionsarten sind stärker von Marktphasen abhängig als andere (z.B. Investitionen am Sekundärmarkt). Dies bedeutet, dass sie nicht nachhaltig, aber zwischenzeitlich weniger attraktiv sind. Aufgrund des in Private Markets langen Anlagehorizonts, ist investorenseitig beim Market-Timing ohnehin Vorsicht geboten. Vorausgesetzt, Manager und Ansatz bleiben auch perspektivisch leistungsfähig, löst sich das Problem der effizienten Diversifikation auf der Zeitachse gerade bei geschlossenen und damit Generationen-Fonds auf natürliche Weise, indem Investoren faktisch gezwungen sind, sporadisch in neu aufgelegte Fonds zu investieren (Diversifikation über Auflagejahre [sog. Vintage years]). Sie erinnern sich an das Bsp. mit der Kaminfeuerung? Trotz bislang und perspektivisch guter Holzsorte, die keinen Wechsel aufdrängt, erwischen sie beim Nachlegen dickere und dünnere Stücke, mit entsprechender Leistungsschwankung – und dennoch erreichen Sie das Ziel einer weitgehend konstant guten Feuerung über den ganzen Abend.

4.3.7 Multi Strategy-Umsetzung

Die Umsetzung diversifiziert über verschiedene Investitionsansätze. Auch ein Multi Strategie-Manager übernimmt eine anlagestrategisch-taktische Verantwortung, indem er die verschiedenen Ansätze über die Laufzeit selektioniert und gewichtet. Spezielles Augenmerk ist auf mögliche Stil-Überlappungen oder -Konzentrationen zu richten, welche idealerweise im Rahmen der laufenden Überwachung (Investment-Controlling) zu entdecken sind. Eine weitere Herausforderung besteht in der mehr oder weniger realistischen Abgrenzung von Single und Multi Strategy-Umsetzungen in der Praxis. Wir favorisieren dabei den folgenden Ansatz:

- Infrastructure Debt und Equity sind unterschiedliche Finanzierungsarten und begründen unterschiedliche Ansätze.
- Brownfield und Greenfield haben im Grundsatz ein anderes Risikoprofil und begründen einen unterschiedlichen Ansatz. Die Beimischung von Greenfield zu Brownfield kann aber schlüssig sein.
- Ein Single Strategy-Ansatz sollte, spätestens nach der Aufbauphase, folgende Allokationsvorgaben kollektiv erfüllen:
  - Rendite-Risiko: Brownfield-Core-Segmente oder -Value add, oder generell Opportunistic mind. 60%
  - Gleiche Finanzierungsunterart (Senior, Junior oder Mezzanine Debt/ Large oder Mid Cap Equity) mind. 60%

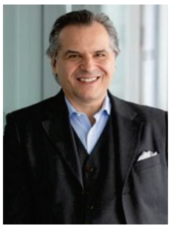
4.3.8 Übersicht und pragmatische Wertung der Umsetzungsformen

	Single Manager Fund		Multi Manager Fund (Fund of Fund)	
Fonds-Liquidität	**Single Strategy**	**Multi Strategy**	**Single Strategy**	**Multi Strategy**
Geschlossen / feste Laufzeit (Closed ended Fund)	Single Manager-Single Strategy Fund mit fester Laufzeit	Single Manager-Multi Strategy Fund mit fester Laufzeit	Multi Manager-Single Strategy Fund mit fester Laufzeit	Multi Manager-Multi Strategy Fund mit fester Laufzeit
Bedingt offen (Evergreen Fund)	Single Manager-Single Strategy-Evergreen Fund	Single Manager-Multi Strategy-Evergreen Fund	Multi Manager-Single Strategy-Evergreen-Fund	Multi Manager-Multi Strategy-Evergreen Fund

Die theoretisch 8 kollektiven Kombinationen wurden nach ihrer praktischen Eignung pragmatisch bewertet. Die Bewertung basiert auf folgender Überzeugung bzw. folgendem Denkansatz:

- Falls ein Single Manager, dann bevorzugt einer, der überwiegend auf ein Rendite-Risiko-Segment und eine Finanzierungsunterart (Single Strategy) spezialisiert und fokussiert ist (z.B. Allokationsvorgaben: OECD Brownfield Core-Segmente Infrastructure Mid Market Equity >= 65%, Greenfield < 35%).
- Ein Single Manager-Multi Strategy Fund muss schlüssig darlegen können, weshalb auch über die Dauer eine Diversifikation über effektiv verschiedene Rendite-Risiko-Segmente und/oder Finanzierungsunterarten im selben Fonds bzw. in Drittverantwortung effektiv effizienter ist.
- Ein Multi Manager-Single Strategy Fund ist zusätzlich zu hinterfragen. Obschon in der Realität zahlreiche Single Manager-Single Strategy Funds namentlich „unter gleicher Flagge schippern“ (Core Infrastructure Debt oder Core Infrastructure Equity Fund), divergieren die Ansätze bei genauer Betrachtung oft. Bei effektiv vergleichbaren Ansätzen müssten die Risiken von Überlappungen und übermässiger Potenzialverwässerung erwogen werden. Im anderen Fall müsste der Manager schlüssig darlegen, warum ein dennoch effizienter, strategiefokussierter Fonds vorliegt.

Fazit zu Spezialisierung vs. Diversifikation: Wenn spezialisiert, dann effektiv fokussiert. Wenn diversifiziert, dann über effizient diversifizierende Investitionsansätze. Man beachte, dass Letzteres nicht mit dem Anspruch, eine zu breite und potenzialverwässernde Risikoverteilung zu verhindern, kollidiert – es meint nicht zu wenig und nicht zu breit diversifiziert. Pensionskassen können kosteneffizient selber diversifizieren oder die Risikoverteilung an einen Multi-Manager delegieren.



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Auf dem Weg zu Net Zero – Sektortrends bei Infrastrukturinvestitionen

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Auf dem Weg zu Net Zero – Sektortrends bei Infrastrukturinvestitionen

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Mit dem „Green Deal", den die Europäische Union 2019 vorstellte, wurden neue Massstäbe in Bezug auf die Zielsetzung zur Vermeidung klimaschädlicher Aktivitäten gesetzt. Gemäss Schätzungen der Europäischen Kommission könnten in Europa bis 2030 Investitionen in Höhe von mehr als EUR 1 Bio. notwendig sein, wovon über 50% in saubere Verkehrslösungen und erneuerbare Energien fliessen müssten[1]. In der Schweiz dürften nur für die Energieversorgung bis 2050 Investitionen von CHF 100 bis 200 Mia. erforderlich sein. Im Durchschnitt fällt damit jedes Jahr ein gigantisches Volumen an Investitionsbeträgen an. Das Ziel, bis 2050 der erste klimaneutrale Kontinent der Welt zu werden, ist finanziell äusserst ambitioniert. Ein solcher Umbau ist nur möglich, wenn Projekte geografisch, technisch, vertraglich und finanziell so strukturiert werden, dass über viele Jahre stabile Erträge für die Eigen- und Fremdkapitalgeber anfallen. Während die globale Vorreiterrolle als „first-mover" Risiken birgt, sind die Aussichten auf entstehende Wachstumsimpulse durch eine grüne Revolution in der aktuellen Lage der Weltwirtschaft wichtiger denn je. Nicht zuletzt verdeutlicht der Krieg in der Ukraine, dass die Energiewende weiter beschleunigt werden muss – denn der Anreiz, nun besonders schnell auf grüne Energien umzusteigen, steigt aufgrund der Abhängigkeit und den steigenden Preisen für konventionelle Energieträger.

Der Fokus auf nachhaltige Investitionen, die den Green-Deal unterstützen, eröffnen neue, dynamische Investitionsmöglichkeiten bei Infrastrukturanlagen.

Mit den ambitionierten Kohleausstiegszielen und einer starken politischen Position im Kampf gegen den Klimawandel hat Europa eine führende Rolle bei der globalen Energiewende eingenommen. Um den enormen Investitionsbedarf zu stemmen, bietet dies vor allem für private Investoren in Infrastrukturanlagen eine Chance, dabei zu helfen, die Dekarbonisierungsziele zu erreichen. Asset Manager im Bereich Infrastruktur fokussieren vermehrt auf Investitionen in umweltfreundliche Technologien, um damit auch dem zunehmenden Bedürfnis der Investoren (LP's) Rechnung zu tragen, einen Beitrag zum Erreichen der Klimaneutralität in Europa beizusteuern. Jüngste Studien zeigen, dass für das Erreichen von Netto-Null-Emissionen in Europa Investitionen in Höhe von etwa $28 Bio. erforderlich sind, wobei 50% davon direkt in Infrastrukturprojekte fliessen müssen[2]. Um klimaneutral zu werden ist es gegenwärtig und zukünftig unabdingbar, neben der Energiewende auch die Modernisierung bestehender Infrastruktur, vor allem im Verkehr, voranzutreiben und weiter neue Kapazität (z.B. breites Netzwerk an öffentlichen Ladestationen für Fahrzeuge) zu schaffen. Im Folgenden werden die Chancen und die Schwierigkeiten bei diesem Unterfangen für die von Infrastrukturanlagen relevanten Sektoren beleuchtet.

Erneuerbare Energien legen den Grundstein

Die Dekarbonisierung im Energiesektor bedeutet den Ausbau der installierten Kapazität an erneuerbaren Energiequellen bei gleichzeitiger Stilllegung konventioneller Energieproduktion. Gemäss Statnett soll der Anteil an erneuerbaren Energien im Energiemix europäischer Länder von 27% im Jahr 2016 auf 64% im Jahr 2040[3] gesteigert werden. Schweden hat noch ambitioniertere Ziele und hat sich verpflichtet, bis 2040 die gesamte Energieproduktion auf erneuerbare Energiequellen umzustellen. Möglich macht dies der anhaltende Ausbau an erneuerbarer Energiekapazität aus Windanlagen und der Photovoltaik. Die Energieproduktion dieser erneuerbaren Energiequellen schwankt aufgrund der Wetterverhältnisse jedoch stark und kann daher in Bezug auf die Stabilität nicht mit herkömmlichen Produktionsquellen wie der Kernkraft mithalten. Daher benötigt es mit dem Zuwachs an erneuerbarer Energiekapazität auch eine

[1] Net-Zero Europe, McKinsey Global Institute, 2020
[2] Net Zero by 2050, IAE, 2021
[3] Long-term Market Analysis of the Nordic Region and Europe 2016-2040 – Stattnet, 2016

fundamentale Veränderung im Europäischen Energiesystem. Konkret geht es dabei um die Flexibilisierung des Netzes durch die Erhöhung der Energiespeicherkapazitäten sowie intelligentem Lastenmanagement. Allerdings müsste allein bis 2030 der jährliche Ausbau der Stromkapazität gegenüber dem Jahr 2020 verdreifacht werden.

Der Ausbau bestehender und neuer Energieinfrastruktur erfordert umfangreiche Investitionen, die, wie bereits erwähnt, zunehmend von privaten Infrastrukturinvestoren gestemmt werden müssen. Gerade beim Ausbau erneuerbaren Energien können institutionelle Anleger auf eine bewährte Anlageklasse zurückgreifen, die langfristig attraktive und stabile risikoadjustierte Renditen bietet. Mit der Weiterentwicklung der angewandten Technologien sind die Stromgestehungskosten in den vergangenen 10 Jahren stark gesunken und die Abhängigkeit von Subventionen hat sich stark reduziert, wodurch auch gewisse regulatorische Risiken geringer geworden sind. Das Marktpreisrisiko lässt sich heute immer mehr durch sogenannte Power Purchase Agreements (PPAs) oder Stromabnahmeverträge mit stabilen Gegenparteien (z.B. grosse Unternehmen) als Abnehmer reduzieren. PPAs geben dem Anleger dementsprechend auch Flexibilität bei der Gestaltung ihres Risikoprofils. Da sich der PPA-Markt für Unternehmen in Europa weiterentwickelt und das Interesse daran für Versorgungsunternehmen weiter zunimmt, stellen hochwertige langfristige Stromabnahmeverträge die attraktivste Lösung zur Absicherung langfristiger Strompreisschwankungen dar.

Für den Anleger sollten besonders die Risiken auf Projektebene im Vordergrund stehen. Erneuerbare Energien weisen je nach Investitions- respektive Entwicklungs-, Bau- und Betriebsphase ein unterschiedliches Risiko/Rendite-Profil auf. Die Entwicklungsphase, welche die technische Planung des Projekts, das Einholen der Genehmigungen und die Unterzeichnung von Industrie- und Finanzierungsverträgen umfasst, hat das Potenzial für die höchsten Renditen. Das Hauptrisiko besteht jedoch darin, dass das Projekt nicht fortgesetzt werden kann, d.h. dass die Anlage nicht erstellt wird. Nach Abschluss der Entwicklungsphase erfolgt der Bau, respektive die Erstellung der Anlage. Sie enthält noch Restrisiken, insbesondere während der Bauarbeiten, die sich verzögern oder zusätzliche Kosten verursachen können. Diese Risiken können direkt durch den Käufer getragen oder auch an den Generalunternehmer ausgelagert werden.

Gerade beim Ausbau erneuerbaren Energien können institutionelle Anleger auf eine bewährte Anlageklasse zurückgreifen, die langfristig attraktive und stabile risikoadjustierte Renditen bietet.

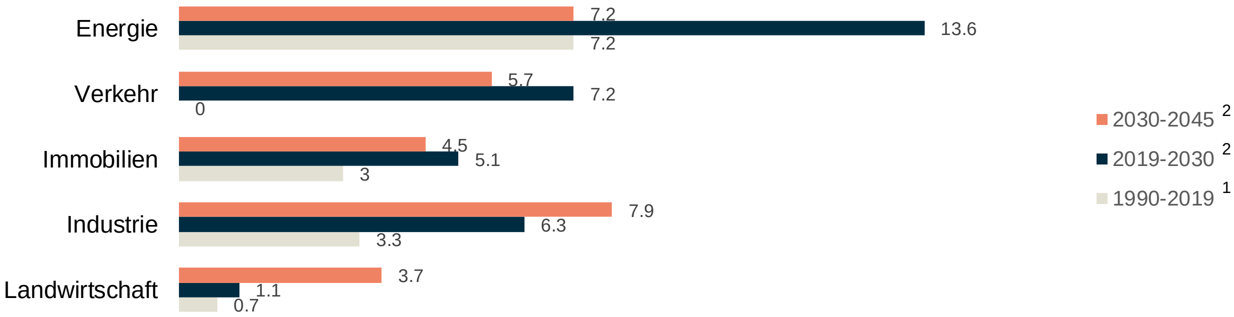
Während die Richtung sowie die Ziele der Europäischen Union klar sind, bestehen jedoch weiterhin Hürden in den einzelnen Mitgliedsländern, die Investitionen gerade bei erneuerbaren Energien vor Herausforderungen stellen. Das zeigt sich zum Beispiel in der Schweiz, wo die Bewilligungsverfahren für neue Windkapazität mit beschwerlichen Wartefristen und erheblichem bürokratischen Aufwand verbunden sind. So ging beispielsweise vor der Bauphase des Windpark Gottardo im letzten Jahr ein Planungs- und Genehmigungsprozess von 16 Jahren vorweg. Für eine Beschleunigung des Ausbaus der Energiekapazität benötigt es effiziente Rahmenbedingen, u.a. beim Genehmigungsverfahren, sowie bessere Rechtssicherheit für private Investoren.

Umstellung auf saubere Verkehrslösungen

Für die moderne Gesellschaft ist Mobilität ein Gewinn. Einer der zentralen Verursacher von CO2 ist jedoch der Verkehrssektor – in Europa ist er (einschliesslich des Internationalen Luft- und Seeverkehrs) für 20% der gesamten Treibhausgas-Emissionen verantwortlich. Im Verkehrssektor werden ca. 95% der

Emissionen durch strassengebundenen Verkehr verursacht. Die restlichen 5% verteilen sich auf die Luftfahrt, den Schienenverkehr und andere Verkehrsmittel.
Der Weg zur Netto-Null-Emissionen-Gesellschaft birgt grosse Chancen und Herausforderungen. Viele Bemühungen zur Reduktion des CO2-Ausstosses reichen jedoch in den meisten Sektoren bis heute noch nicht aus. Abbildung 1 zeigt, dass die Anstrengungen, die im nächsten Jahrzehnt unternommen werden müssen, in den meisten Bereichen gegenüber dem Durchschnitt der Jahre 1990 bis 2020 deutlich erhöht werden müssen, um die ambitionierten Klimaziele zu erreichen.

Abbildung 1: Durchschnittliche jährliche Reduzierung der Emissionen nach Sektoren
in Mt CO2-Äquivalente



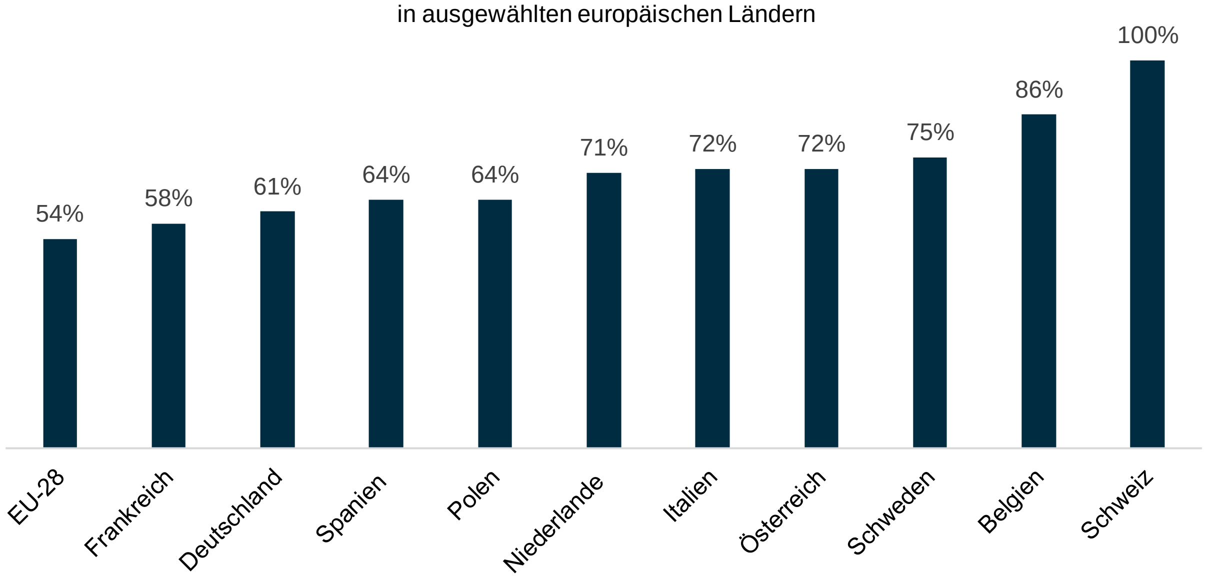
1.) Im Vergleich zu 2019
2.) Ziele 2030 und 2045 entsprechend der Klimaziele der EU

Quelle: Europäische Kommission; McKinsey

Wie in anderen europäischen Ländern ist auch in der Schweiz der Verkehr der grösste Energieverbraucher. 36% der Endenergie wurde 2017 im Verkehrssektor verbraucht[4]. Neben der Energiewende muss daher auch die Verkehrswende weiter an Priorität gewinnen. Das betrifft die Politik und die Investoren im Bereich nachhaltiger Infrastruktur, die bisher vor allem auf die erneuerbaren Energien gesetzt hat. Verkehrsverlagerung auf die Schiene ist dabei ein Kernelement zukunftsfähiger Mobilität, denn die Eisenbahn ist das umweltfreundlichste Massenverkehrsmittel. Wenn also mehr Verkehr auf die Schiene verlagert wird, sinken Emissionen und Ressourcenverbrauch. Im Mittelpunkt steht hier der flächendeckende Einsatz nachhaltiger Antriebstechnologien (primär Elektroantrieb) im Personen- und Güterverkehr.
Die Verlagerung des Güterverkehrs auf die Schiene kann Emissionen weiter senken, da Güterzüge ca. 80% weniger CO2 pro tkm ausstossen als Lkws[5]. Zurzeit werden in Deutschland rund 20% der Güter mit der Bahn transportiert, in den Nachbarländern Österreich und Schweiz liegt der Anteil anderthalb- bis zweimal höher. Um eine Verlagerung zu ermöglichen, bedarf es zusätzlicher Kapazitäten bei der Infrastruktur, besonders an den Knotenpunkten, sowie einer höheren Zuverlässigkeit des Transportsystems Schiene. Dabei spielt die Elektrifizierung der Schiene eine wesentliche Rolle, was wiederum eine erhebliche Modernisierung der gesamten Wertschöpfungskette, vom Schienennetz bis hin zu den Lokomotiven, nötig macht. Abbildung 2 verdeutlicht das Aufholpotential in der EU in Bezug auf die Elektrifizierung des Schienennetzes.

[4] Bundesamt für Energie BFE, Schweizerische Gesamtenergiestatistik, 2017
[5] https://www.allianz-pro-schiene.de/themen/gueterverkehr/

Abbildung 2: Anteil elektrifizierter Strecken im staatlichen Eisenbahnnetz
in ausgewählten europäischen Ländern



Quelle: Allianz pro Schiene, 2018

Die Verlagerung des Personenverkehrs auf die Schiene bietet weiteres Potenzial zur CO2- Reduzierung. Die Bahn verursacht weit weniger CO2-Emissionen als ein Personenwagen. Um dieses Potenzial ausschöpfen zu können, ist allerdings die Wettbewerbsfähigkeit und relative Attraktivität (z.B. Angebot an Fahrten, Reisedauer, Zugang zu anderen öffentlichen Verkehrsmitteln) des Schienenverkehrs entscheidend.

Auf dem Weg zu Net-Zero werden neue Technologien im Verkehrswesen nicht nur im Zusammenhang mit der Schiene im Mittelpunkt stehen. Als Investor im Bereich der Aviatik, wissen wir um die Herausforderung, skalierbare Dekarbonisierungsmassnahmen in der Luftfahrt einzuführen. Die Nutzung alternativer, synthetischer Brennstoffe bietet ein grosses Handlungsfeld mit grossem Potential. Aktuell sind die wichtigsten Ansätze, um CO2-Emissionen im Flugverkehr zu senken, Massnahmen zur Reduzierung des Treibstoffverbrauchs, d.h. den Einsatz von effizienteren Triebwerken, die Gewichtsreduzierung sowie die Flugwegoptimierung. Zusätzlich geht der Fokus in der Branche auf alternative Kraftstoffe, die bereits heute für eine bis zu 50%ige Beimischung zu fossilem Kerosin zertifiziert sind[6]. Nachhaltige Kraftstoffe sind jedoch noch wenig verfügbar und deutlich teurer als fossiles Kerosin. Vollsynthetische Kraftstoffe auf Basis von grünem Wasserstoff und CO2 benötigen zudem grosse Mengen erneuerbarer Energien: Rund 5% des jährlichen Bedarfs einer grossen Airline erfordern die Energieproduktion eines Solarfelds, das der doppelten Landfläche Manhattans entspricht[7]. In Zukunft könnten disruptive Technologien, zum Beispiel Wasserstoffantriebe, für saubere Antriebe eingesetzt werden. Diese stehen jedoch derzeit noch am Beginn ihrer Entwicklung und können erst in einigen Jahrzehnten als leistungsstarke Brennstoffzellen oder Flüssigwasserstofftanks im Flugzeug installiert werden. Da sich konventionelle Infrastrukturprojekte über ihre Visibilität der Ertragsquellen und erprobte Geschäftsmodelle auszeichnen, stellt sich für Infrastrukturinvestoren die Frage, inwieweit man sich den technologischen Risiken aussetzen will und kann.

[6] IATA
[7] McKinsey WEF Clean Skies Report

Infrastruktur Portfolios im Wandel

Der Fokus auf nachhaltige Investitionen, die den Green-Deal unterstützen, eröffnen neue, dynamische Investitionsmöglichkeiten bei Infrastrukturanlagen. Investoren eröffnet sich die Gelegenheit, vermehrt in diese zu investieren und das bestehende Infrastrukturportfolio zu ergänzen. Auch wenn sich die zunehmende Erzeugung erneuerbarer Energie deutlich positiv auf die Zukunft Europas auswirkt – speziell in Bezug auf niedrigere CO2-Emissionen – so stellt aber dieses Wachstum eine ernsthafte Herausforderung an das europäische Stromversorgungsnetz. Die Investoren sollten hinterfragen, inwiefern sie emissionsreiche Altanlasten oder sogenannte «legacy assets», in ihren Portfolios haben. Schätzungen zufolge wird sich der Wert von gewissen Infrastrukturanlagen, die durch den Übergang zu Netto-Null-Emissionen verloren gehen, auf EUR 215 Mia. belaufen (u.a. alleine EUR 45 Mia. im Erdölraffinerie-Sektor)[8]. Sogenannte «Stranded Assets», d.h. jene Vermögenswerte, deren wirtschaftliche Bedeutung endet oder erheblich geschmälert wird, können für einige Infrastrukturinvestoren im Zuge der Energiewende noch zu Wertberichtigungen führen. In Grossbritannien beispielsweise werden Kohlekraftwerke spätestens 2025 vom Netz genommen. Während Kohle in einigen EU-Ländern nach wie vor eine wichtige Quelle für die Stromerzeugung ist, wird die Europäische Union aufgrund ihrer Verpflichtung, die Netto-Null-Emissionsziele zu erreichen, rasch neue, saubere Energiequellen einsetzen müssen. Ein weiterer Bereich ist die Öl- und Gasinfrastruktur. Weltweit gibt es zahlreiche Fragen, die sich vor allem Infrastrukturinvestoren stellen müssen - zum Beispiel: Wann werden Fahrzeuge mit Verbrennungsmotor verboten werden? Wie schnell werden die Verbraucher auf Elektroautos umsteigen? Oder wie schnell können die Industrieländer auf erneuerbare Energien umsteigen? Auch die Einnahmen, die einst aus begehrten Infrastrukturanlagen geflossen sind, wie z. B. die für bestimmte Mautstrassen, könnten zukünftig weniger vorhersehbar sein, weil es in den nächsten Jahrzehnten weniger Verkehr geben könnte.

Über Reichmuth Infrastruktur

Reichmuth Infrastruktur, als Teil der Privatbankengruppe Reichmuth & Co, fokussiert sich seit 2012 als spezialisierter paneuropäischer Asset Manager auf Infrastrukturinvestitionen in den Bereichen Energie, Transportwesen und Entsorgung. Damit bietet Reichmuth Infrastruktur institutionellen Anlegern Zugang zu nachhaltigen Anlagelösungen mit langfristig attraktiven Renditen. Reichmuth Infrastruktur verwaltet CHF 1.5 Mia. über mehrere Investmentfonds und segregierte Mandate. Das interdisziplinäre Team aus 18 Investment, Asset und Client Relations Managern verfügt über langjährige Erfahrungen, ein breites Branchennetzwerk und etablierte Partnerschaften mit Industrieunternehmen.

Marc Moser
Head of
Infrastructure Client
Relations

[8] Net-Zero Europe, McKinsey Global Institute, 2020

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Association Suisse des Investisseurs en Capital et de Financement

Schroders Capital

Why private capital should fuel the accelerating energy transition

Schroders capital

Schroders Capital mit einem verwalteten Vermögen von rund 88 Mrd. USD* ist die Private Markets Sparte von Schroders, der globalen Vermögensverwaltungsgruppe. Schroders Capital bietet Zugang zu einem umfassenden Angebot an Risiko-Rendite- sowie Nachhaltigkeits- und Impact-Profilen unter einem Dach und mit globaler Reichweite. Unsere Strategien sind als einzelne Komponenten konzipiert, auf die über Fonds zugegriffen werden kann, oder als Teil von massgeschneiderten Portfoliolösungen, die wir für bestimmte Ziele entwickeln. Unser Angebot erstreckt sich über die vier Geschäftsbereiche Private Equity, Real Estate, Private Debt & Credit Alternatives sowie Infrastructure, mit den beiden übergreifenden Kompetenzbereichen 'Solutions' und 'Sustainability & Impact'. So können wir Investments zu massgeschneiderten Lösungen für institutionelle und private Kunden kombinieren und Zugang zu einer unübertroffenen Bandbreite an nachhaltigen und impact-orientierten Investitionsmöglichkeiten bieten. Das Team strebt nachhaltige Renditen durch einen strikten Ansatz und im Einklang mit einer Kultur an, die sich durch Leistung, Zusammenarbeit und Integrität auszeichnet.

*per 30. Juni 2022

Marketing material
for professional investors and advisers only

In focus

Why private capital should fuel the accelerating energy transition

September 2022

Investing in renewables is not just good for the planet, it offers long-duration assets with secure, inflation-linked income. But there are nuances.

Richard Nourse
Managing Partner, Schroders Greencoat

Energy security has been dragged into the spotlight by Russia's invasion of Ukraine. How does this impact the energy transition?

It seems certain that the build-out of renewable energy projects in the UK and across Europe is set to accelerate, as countries move to replace Russian gas with reliable, cheap domestic renewables. But the story is more nuanced than that. In the UK, legally binding 2050 net zero targets have meant that this replacement was inevitable. However, the invasion has created a new urgency. Measures that were set to be implemented later in the journey are being advanced considerably.

So, what does the UK's energy future look like?

The UK's Committee on Climate Change (CCC) has long foreseen that electricity would be the first step in decarbonizing the economy. This has begun with the near-total removal of coal from the grid and the widespread deployment of wind and solar, with biomass also making a contribution. The carbon intensity of UK electricity has dropped from around 500g of CO_2 for every kWh of electricity generated to less than 200g today, and is forecast to be under 50g by the early 2030s. Most of this reduction will come from increased penetration of wind – largely offshore – and solar.

Energy supply is only one side of the equation. How will decarbonization affect electricity demand?

While decarbonization of electricity is underway over the next decade, the CCC expects demand to remain largely flat and the cost of decarbonizing ground transport (largely cars) and space heating to decline. This would likely be achieved through technological advances in EVs and heat pumps.

In the mid-2030s, as these switches start to roll out widely, demand for electricity will rise accordingly, doubling by 2050. By this time, electricity will supply most of the UK's energy needs, displacing gas and oil. The CCC forecasts that clean hydrogen will be needed to decarbonize hard-to-treat parts of the economy, with hydrogen electrolysis driving yet further electricity demand. It is less certain how that doubling in electricity demand will be met. Renewables will play a large part, but the government is also placing bets on new nuclear and CCUS (carbon capture, usage, and storage).

You say the story is nuanced. Can you provide more detail on how challenges in power generation will differ around the world?

Each country committed to net zero is seeking to square the new "trilemma" of achieving net zero, maintaining energy security, and transitioning in a way that is affordable for its people and its industry.

Different areas will follow different routes, depending on their energy usage, their sun and wind resource, and geographic specifics. In Spain, a kilowatt hour of solar electricity is about half the price of production in the UK because, as holiday-makers know, Spain receives twice as much sun. It also has large open spaces and an excellent wind resource, so will likely have lots more onshore wind.

In New Mexico in the US, peak energy demand is in summer afternoons, making solar and batteries a clear choice. On the Gulf Coast in Texas, morning and evening ocean winds make it an ideal location for low-cost hydrogen production. France will rely on nuclear for the foreseeable future.

Overall, which generation technologies will have the most impact?

For most countries, the answer will be wind and solar in the near-term and, in some, nuclear later on. The UK government's recent commitment to 24GW of nuclear power doesn't currently have a clear target date, with Sizewell the only short-term option – mid-2030s – after Hinkley comes online toward the end of this decade. And yes, there might be some new technologies invented by then, but without wind and solar, we cannot expect to reach net zero targets within the relevant timescales.

The US climate envoy John Kerry talks about "backslide" risk. Can you tell us about that?

Mr Kerry said there is risk that moving away from Russian gas may cause a "back-slide" to coal in some countries. For example, the phase-out of coal in Germany will now take rather longer, because the replacement of relatively cheap Russian gas by more expensive LNG from Qatar or the US will be mitigated by domestically sourced coal being used for longer.

Another example is Japan, which is densely populated due to its mountainous terrain, resistant to nuclear energy since the 2011 Fukushima disaster, and unsuitable for solar or wind energy. In addition to coal, Japan will likely have to enter into long-term LNG supply agreements, which would further delay the net zero transition, to which Japan is only a recent convert.

Why should investors consider renewables?

The financial benefits of renewables infrastructure in the current environment are clear. Comments like those from Bank of England Governor Andrew Bailey on the central bank's inability to prevent inflation from reaching 10% have not been heard by a generation of investors. It's unnerving, but it means that long-duration assets with secure, inflation-linked income – such as renewables – will be in high demand, providing reliable hedges to liabilities, as well as holding their value.

Renewables are obviously sustainable, but where do they fit with wider ESG goals?

Investing is about more than financials now. We're still early on in what will be a long journey to create a green financial system in the UK, Europe, and beyond. In the UK, for example, the government's Roadmap to Sustainable Investment set out three phases: informing, acting, and shifting. As an economy we're still mostly in phase one, which is to deliver 'decision-useful' information on sustainability to asset allocators. We expect the next stages to drive further capital into green investments.

Beyond the generation of clean electrons, Schroders Greencoat is extremely rigorous in its ESG processes and ensures social a nd governance aspects are held to the highest standards. Our ESG assessment is 'full spectrum' and incorporates biodiversity, diversity & inclusion, social challenges, cyber security, supply chain transparency, workplace safety… the list goes on, and we are proud of its length!

Important Information

Schroders Capital

Is there persistence in private equity returns?

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*per 30. Juni 2022

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IN FOCUS

Is there persistence in private equity returns?

September 2022



James Ellison
Head of Private Assets Data Insights

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Data Scientist

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Head of Strategic Research

New research by Schroders Capital suggests that past performance could be more instructive for some parts of the private equity market than others.

Our new research finds that 36% of private equity funds that were in the top quartile for one vintage were also top quartile for the general partner's (GP's) next. 64% were in one of the top two quartiles. And only 16% dropped to the bottom.

This is according to our analysis of 3,512 private equity funds raised since 1980 (only GPs with at least two funds are included, and only funds with at least seven years are included, as performance of younger funds is still fluctuating and not definitive).

Performance disclaimers repeatedly tell us that past performance is not a guide to the future and may not be repeated. And that is true. But is there a nuance to consider between public and private equity funds on this front?

Our analysis suggests that the past performance of private equity funds may provide some useful information to help think about how they might perform in future.

This is a very different picture to what we see with public equity funds. A recent study found that there was a greater chance that a public equity fund in the top quartile for one five year period dropped to the bottom for the next, than maintained its standing.

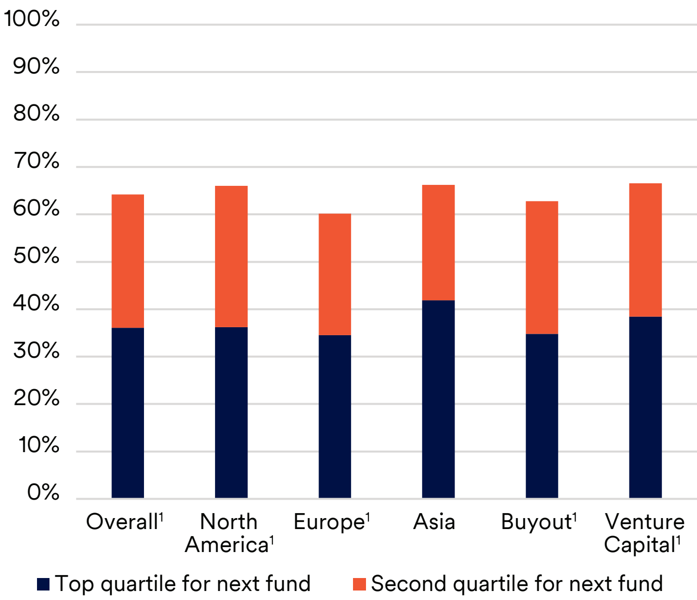
It's a similar story with the worst performing private equity funds. GPs with a fund ranked in the bottom quartile tend to have their next in the bottom quartile too. Relatively few jump to the top.

Digging down a level, our research shows this holds strongly for funds investing in both North America and Europe, and for both buyouts and venture capital. Importantly, this persistency is statistically significant (see Description of our analysis, at the end, for more details).

It also holds for funds investing in Asia, but not to the same degree of statistical significance – partly influenced by there being fewer funds in this category, which limits the conviction with which we can draw firm conclusions.

Figure 1: There is evidence of performance persistence in private equity funds

Percentage of private equity funds (by number) that were top quartile for one vintage and also top or second quartile for the GP's next



Past performance is not a guide to the future and should not be relied upon.
Source: Preqin Ltd, Schroders, 2022.
Note: Based on analysis of 3,512 private equity funds in the Preqin database since 1980. Only GPs with at least two funds are included, and only funds at least seven years old are included. Performance quartile calculated based on the internal rate of return (IRR) and multiple of invested capital (MOIC) returned to investors, net of fees. 1Persistence is statistically significant based on a Chi-squared test at the 1% level. Asia is significant at the 5% level. Test assesses how likely it is that the performance of a GP's fund has an association with its next fund.

Schroders capital

Large funds have been less able to maintain good performance than small and medium-sized ones

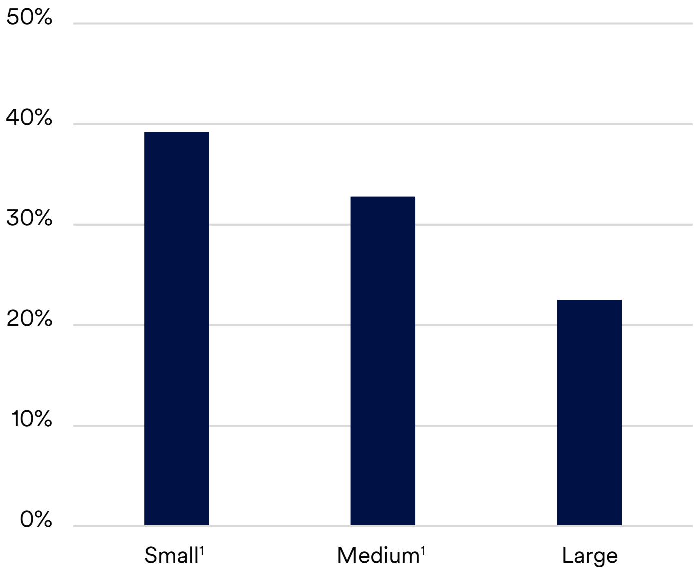
When we analysed funds by size, the results were striking. Good performance persistence is greatest among small funds, strong and significant among medium-sized funds, but weak among large ones.

Bad performance, however, is persistent across all sizes. i.e. a manager with a bottom quartile fund is likely to remain bottom quartile with their next fund.

This is an important result for private equity investors, especially given that many allocate to large funds run by large managers. Poring over their past performance may be less worthwhile than you realise – the performance disclaimer was right all along. But it can be more useful when looking at the long tail of small and medium-sized funds which make up the bulk of the industry (in terms of number of funds).

Figure 2: Good performance has persisted in small and medium sized funds, but not large

Percentage of private equity funds (by number) that were top quartile for one vintage and also top quartile for the GP's next



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Source: Preqin Ltd, Schroders, 2022.
Note: Based on analysis of 3,512 private equity funds in the Preqin database since 1980. Only GPs with at least two funds are included, and only funds at least seven years old are included. Performance quartile calculated based on the internal rate of return (IRR) and multiple of invested capital (MOIC) returned to investors. Funds smaller than $500m have been classed as small, $500m-$2,000m as medium, bigger than $2,000m as large.
[1]Persistence is statistically significant based on a Chi-squared test at the 1% level. Test assesses how likely it is that the performance of a GP's fund has an association with its next fund.

Conclusion

Our analysis provides evidence of performance persistence in private equity – in all major areas apart from large funds. Top performers have been more likely to perform well in their next fund. Poor performers have been more likely to continue toiling.

You should never make an investment decision based on past performance alone. But this suggests investors may not want to ignore it either.

Description of our analysis:
The data used in this study comes from the Preqin Performance database for Private Capital. This is subject to a degree of selection bias as voluntary contributions by fund managers are unlikely for poorly performing funds. However, Preqin seeks to limit this by using a range of other approaches, including the Freedom of Information Act (FOIA) and systematic processing of regulatory filings, press releases, news and websites.

There are 9,834 funds in the Preqin database. To be included in our analysis, funds must be either 'Closed' (fundraising is closed) or 'Liquidated'. Only funds older than seven years are analysed. This is to avoid analysing funds whose performance is still fluctuating and not definitive. Only funds with vintage year after 1980 are analysed. Either the net IRR or the net MOIC of each fund must be available (ideally both). Funds comprised of a single asset and GPs with less than two funds are not considered. Applying these filters reduces the number of funds in our universe to 3,512.

Our universe is influenced by survivorship bias as the probability of a GP launching a second fund will be dependent on sufficiently good performance from its first fund. As we are only looking at GPs with at least two funds, the funds in our universe are likely to be higher quality then the universe overall.

Funds are allocated to performance quartiles based on the combination of their IRR and MOIC ranking, compared with benchmark peers (regions, strategies, fund sizes or all together). For funds which have reached the end of their life, this is based on realised returns. For funds which are still going, it will be partly based on unrealised returns, which are based on estimated values.

We form contingency tables and run chi-squared tests to test for statistical significance for different slices of the data (regions, strategies, fund sizes or all together). The null hypothesis is that the performance of a fund has no association with the performance of the next fund. P-values are calculated as a measure of statistical significance.

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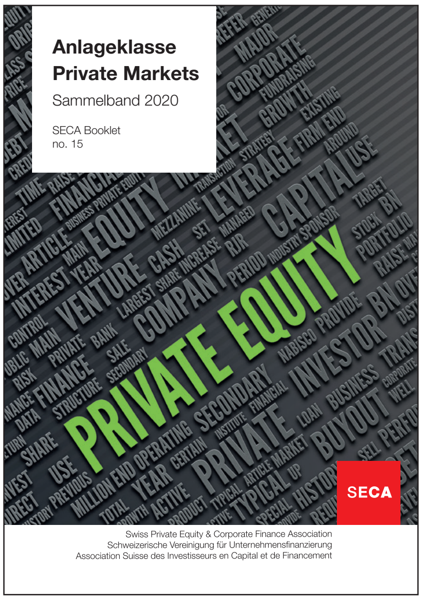

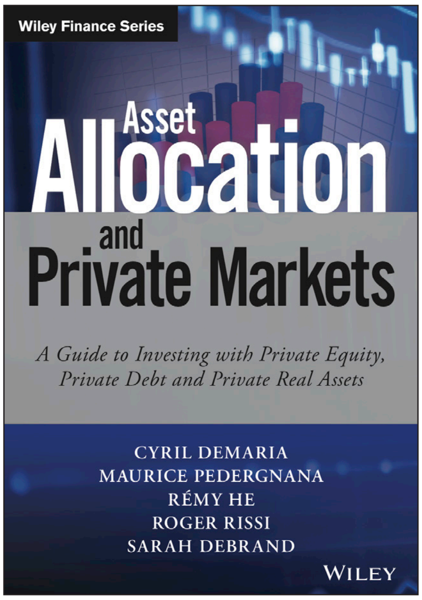

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