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Portfolio perspectives
December 2022

Climate-aware return assumptions: an update

We believe the transition to lower carbon emissions will be a driver of higher macro volatility – and recent policy developments point to an accelerating transition. We spell out what this could mean for return assumptions and strategic portfolios.

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Summary

- We track the transition to lower carbon emissions like we track any other driver of investment risks and opportunities, such as monetary policy. Arguably, the outlook for monetary and fiscal policy will likely be more important for markets in coming years, yet we think developing a systematic approach is key to tracking the impact of the transition to stay on top of the likely future paths, calibrate their effects at the macro and company level, estimate whether those effects are reflected in market prices today – and then implement these insights into our strategic views and portfolios.
- We believe that requires taking a view on the impact of long-term asset prices via**: 1) the transition's impact on growth and inflation, affecting traditional risk premia on all assets; 2) company profitability and growth prospects across sectors, with some better positioned for a low-carbon economy than others, and; 3) asset repricing from changing societal preferences and the price investors are willing to pay for assets perceived as sustainable.** In February 2021 we outlined this in our capital market assumptions (CMAs) and strategic portfolios.
- **Potentially game-changing legislation and a drive for energy security will up the transition's pace**, we think**.** The U.S. Inflation Reduction Act and Europe's REPowerEU highlight how policy action could spur the transition. It's too early to assess if these will be enough to meet climate objectives, but we see the actions consistent with our view that the transition is likely to accelerate over time – with bumps along the way.
- The U.S. Inflation Reduction Act's nearly US$400 billion in tax incentives, rebates, grants and loans is likely to trigger greater investment in, and demand for, renewable energy infrastructure and technology. **The accelerating transition could potentially create growth opportunities that asset prices aren't fully reflecting yet, in our view.** We still see the transition contributing to macroeconomic volatility and supply-driven inflation over time given the sheer reallocation of resources likely required. The transition is among the long-term trends driving production constraints that we see keeping inflation persistently above pre-pandemic levels – a key theme of our investment outlook. Ultimately, we believe a gradual and orderly transition can help mitigate pressure points and be broadly better for investment outcomes than a disorderly one.
- **In this update, we see less of an earnings hit to the energy sector than previously assumed.** Why? Since the outbreak of the Ukraine war, the West's ambition to reduce reliance on Russian supplies and focus on energy security spurred higher spot and expected energy prices. There could be periods when carbon-intensive sectors and assets outperform others, notably when there are mismatches between supply and demand. These mismatches could be a feature of the transition if supply of high-carbon sources are reduced faster than low-carbon replacements are phased in. We recognize that the growth of global energy demands and the investment still needed to build capacity in green energy production mean that traditional energy supply will continue to play a role on any plausible transition path. So a portfolio that excludes exposure to these high-carbon sectors is unlikely to be as resilient to the expected bumps in the road during the transition, in our view.
- In our initial assessment of the impact on asset prices from changing preferences around sustainability, we proposed that as capital flowed into sustainable assets due to shifting investor preferences, such assets would reprice. **We see further asset repricing to come, with an increased potential return on sustainable assets in years to come**.
- Our assessment of the transition is one among several drivers of our investment views. These estimates are uncertain: we do not claim that the calibration we have is perfect or will not evolve further as we continue to learn more. Yet a systematic approach to gauging the portfolio impact of the transition can help add the granularity in portfolios we think will be needed to navigate the new regime of higher macro and market volatility. For instance, our climate update reinforces our preference for technology, healthcare and consumer discretionary sectors and we also see opportunities in companies with credible transition plans, including currently carbon-intensive companies.

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An accelerating transition

We track the transition to lower carbon emissions like we track any other driver of investment risks and opportunities, such as monetary policy. We assess the likely future paths, calibrate their effects at the macro and company level, estimate whether those effects are reflected in market prices today – and then implement these insights into our strategic views and portfolios. That's precisely why we added climate-related effects to the set of drivers of risk and return for our CMAs in 2021.

To recap our process for incorporating sustainability into portfolio construction: we think investors need to take a view on the likely path of the transition which will be determined by the interplay of three drivers: societal preferences, government policy and technology. These drivers are in constant motion. Right now, enacted policies and available technology aren't sufficient to achieve the goals of the Paris Agreement to limit global warming to "well below 2°Celsius, preferably to 1.5°C," compared with pre-industrial levels. See the chart below left. Yet we believe there that these drivers will ultimately combine to accelerate the transition from the path implied by current policy.

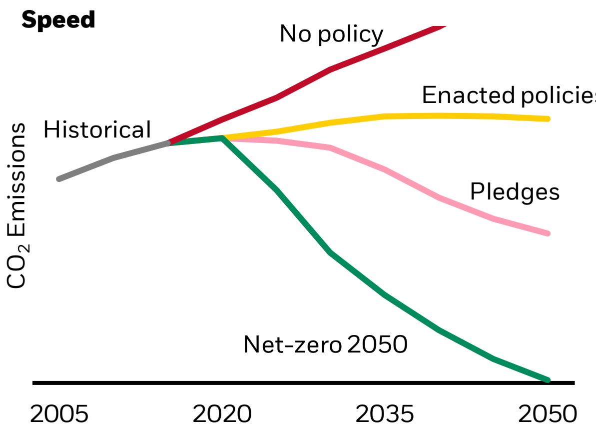
The transition to a lower-carbon economy entails a massive reallocation of resources. Economies will evolve as carbon emissions are cut, inevitably impacting portfolios, with winners and losers at the sector level. But as with the future path of central bank policy rates, the transition's path from here is uncertain and evolving. Overall, we see an accelerating transition – boosted by significant policy action in the U.S. and Europe this year.

Why an acceleration? The Russian invasion of Ukraine – and the West's consequent decision to wean itself off Russian oil and gas – has led to energy shortages and a prioritization of energy security. That has contributed to a sharp outperformance of the traditional energy sector this year – the MSCI World energy index is up 44% vs the 17% decline for the broader MSCI World, according to Refinitiv Data as of Dec 12, 2022. But looking longer term, Europe's drive for greater energy security has also prompted it to double down on efforts to build clean energy infrastructure. The clearest example of that is the European Commission's RePowerEU Plan. Further impetus is likely to come from higher energy prices. Tight fossil fuel markets, with sustained high prices, act like a carbon tax on consumers. That surge in prices has shifted the economics decisively in favor of cleaner energy sources. And in the U.S., **we see the Inflation Reduction Act cutting clean technology costs, creating incentives for private investment and spurring domestic manufacturing. It could also potentially accelerate state and local policy action**. See page 4.

We have updated our base case scenario to reflect this. This doesn't change our underlying story and the results of our analysis of the drivers that we tackle on subsequent pages. This shows how we need to – and will – continuously update our view on the transition to reflect the latest research and policy developments. At the heart of our estimate of the macro impact of the transition – the first of our three transmission channels – is the view that the transition to a decarbonized world involves a huge reallocation of resources. Oil and gas will still be needed to meet future energy demand under any plausible transition. If high-carbon production falls faster than low-carbon alternatives are phased in, shortages could result, driving up prices and disrupting economic activity. **We believe that the transition will contribute to higher inflation than we've seen in the past, and this year's developments – including the energy price shock – reinforce that view.**

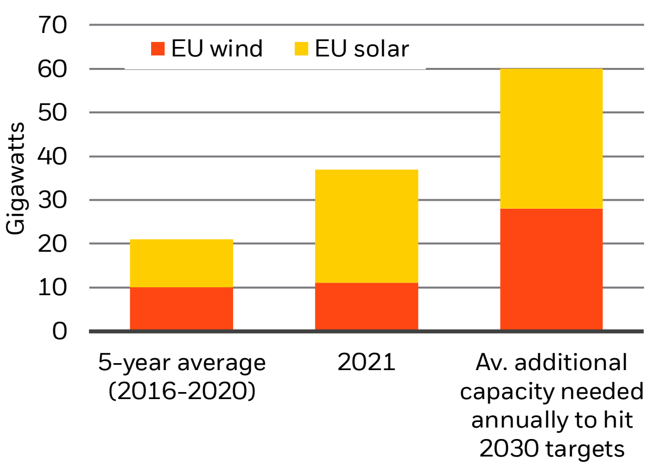
Possible acceleration ahead

Illustrative transition pathways, 2022



Falling short for now

Increase in Europe renewables capacity vs. targets



Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute, with data from Wood Mackenzie. October 2022. Notes: The diagram on the left serves as a general summary and should not be considered exhaustive nor construed as investment advice. It describes how quickly the economy could reach net zero as described by the United Nations and other organization. For illustrative purposes only. The chart on the right shows how much wind and solar power capacity (in gigawatts) was added, on average, each year from 2016-2020 and in 2021. The final bar shows Wood Mackenzie's estimates of how much additional capacity would need to be added, on average, each year to meet decarbonization targets set out in the European Union's Green Deal.

Policy steps up

The Inflation Reduction Act, and other recent infrastructure and science legislation in the U.S., could shape the transition to lower carbon emissions in the country and beyond. We see it as consistent with our view that the transition is likely to be accelerated over time but will be bumpy. The law's nearly US$400 billion in tax incentives, rebates, grants and loans is likely to trigger changes in transition-linked investment and demand for renewable energy infrastructure and technology. We see the legislation cutting clean technology costs, creating incentives for private investment and spurring domestic manufacturing. It could also potentially accelerate state and local policy action, such as California's climate and clean energy package, which adds US$54 billion of new spending on climate resilience.

Yet given that more than half of the incentives are uncapped — meaning the credits are available to as many that wish to take advantage — some analyses suggest the true impact could be more than double that. See the chart on the left below. We would note that because the act focuses on incentives and not mandates, the ultimate investment levels will depend on the extent to which two important barriers can be overcome: 1) the requirements for local content and scaling up the supply of materials, and 2) the need for reforms to support securing building sites in a timely way – both for power generation and transmission infrastructure.

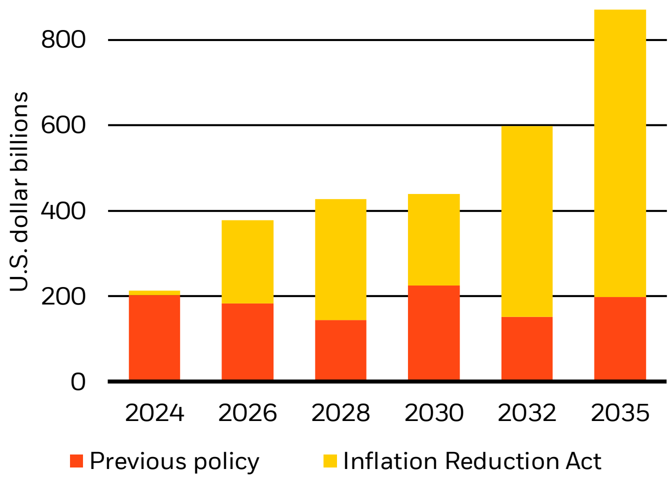
The incentives are available to foreign investors without a U.S. tax base, so we also see the potential for a large inflow of foreign capital to the U.S. Whatever the ultimate amount of investment, we expect it to come across a broad range of sectors as the incentives in the legislation are also diverse across many sectors. We see that stimulating demand for a wide variety of low-carbon technologies such as renewable energy, heat pumps in buildings and electrified transport. Yet the biggest investment is likely to be in wind and solar energy, based on REPEAT Project analysis. See the chart below right.

The U.S. policy shift will likely diversify the geographic footprint of the clean tech sector now dominated by China. We see it reducing U.S. reliance on China, especially for sourcing materials, batteries and solar panels. The legislation could also influence other countries to adopt similar policies. It comes as the European Union's drive for energy security spurred its REPowerEU plan for renewable energy investment. But the larger incentives in the Inflation Reduction Act are prompting competition concerns in the EU. Ursula von der Leyen, President of the European Commission, has called for an adjustment of EU rules to make it easier for public investment in clean energy. The recent state visit of French President Emmanuel Macron to Washington helped bring about some agreement on a path forward for the U.S. and EU.

We see the act causing sharp demand shifts in the economy, reinforcing supply constraints and bouts of higher inflation. The transition is one driver of the new regime of greater macro and market volatility. We believe this new regime means inflation will be more persistent longer term, and supports our preference for inflation-linked bonds and infrastructure debt.

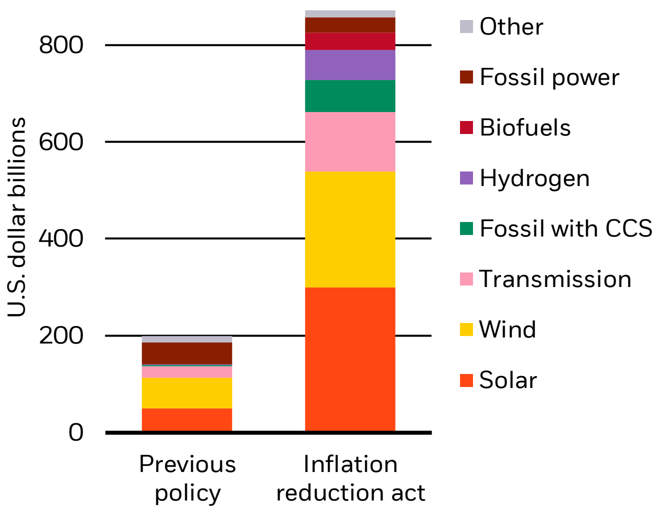
Public and private capital on the way

Estimated investment in U.S. energy supply, 2024-2035



Investment targets

Total investment from the Inflation Reduction Act by 2035



Source: BlackRock Investment Institute and REPEAT Project at repeatproject.org, November 2022. Notes: The charts show projections for capital investment – both public outlays and private investment – based on repeatproject.org's analysis of the bill's potential impacts. It does not include impacts on renewable energy components, batteries, electric vehicles or critical minerals. The analysis should be considered approximate and may be updated or refined by subsequent analysis. The "Other" category in the right-hand side chart includes CO2 transport and storage and nuclear. CCS refers to carbon capture and storage. See: https://www.iea.org/fuels-and-technologies/carbon-capture-utilisation-and-storage

An increasing driver of earnings

We expect shifting regulation and policy, changing societal preferences and new technology to influence consumption patterns – and impact the environment that all companies operate in. Companies must navigate this change – by deciding how to reduce emissions, if and how to adapt business models, where to invest and where to cut back. **Ultimately, we see the transition as an increasing driver of potential profitability and cashflows for companies, likely becoming more influential over time.** Strategic investors need to account for these changes, recognizing that earnings patterns for some industries and sectors could look notably different from the past.

In the fundamentals channel of our climate-aware CMAs, we assess how our base case of an accelerating transition will impact corporate earnings. This drives our expected earnings growth rates by sector – coupled with an assessment of how much of that is reflected in market prices - helps shape our expected returns for both equities and credit. Strategic asset allocation decisions require estimates of the big trends impacting sectors, but we don't think the sector impact will be evenly felt by companies in a given sector.

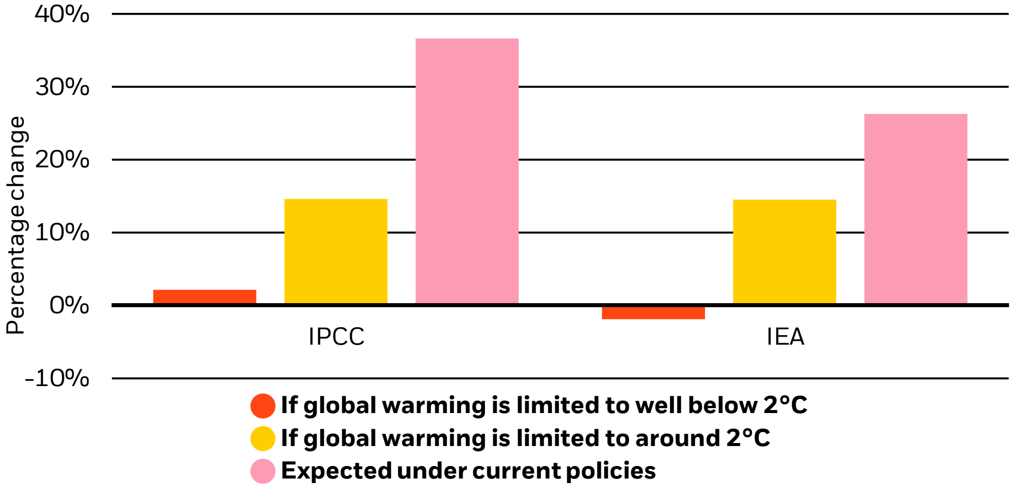
We assess the sensitivity of earnings to carbon prices. This can be thought of as capturing specific government policies – taxes or subsidies for lower-emission alternatives, technology developments that cut the cost of alternatives, or shifting consumer preferences. **We estimate the sensitivity of earnings to these by: 1) direct and indirect carbon emissions; 2) expected emission reductions on current plans, and; 3) the ability of companies to maintain market share if their relative production costs increases.** For higher emitting sectors – such as utilities, energy and industrials – we expect these shifts to be a drag on earnings relative to other sectors. **We still expect sectors, such as technology and healthcare, will feature companies better positioned to enable the transition due to their inherent low exposure to carbon emissions and potentially receive an earnings boost as a result.**

Our CMAs consider the alignment of sector revenues with the transition. **In this update, we see less of an earnings hit to the energy sector than previously assumed.** The current pace of the global renewable energy buildout still falls short of what is required to meet energy demand at current climate commitments – and so more energy will be needed over the next 30 years even as the transition accelerates - see the chart - partly as the West's ambitions to weans itself from Russian energy creates additional demand for non-Russian energy supply. That's one reason why carbon-intensive sectors and companies may potentially outperform others, especially during supply-demand mismatches of low-carbon alternatives.

We believe a portfolio that only gets exposure to the transition through low-carbon sectors and companies could miss important investment opportunities. A decarbonized economy will require the transformation of companies across all sectors, including those with a high carbon intensity today like utilities, transportation and materials. And those industries will need sizable investment to transform their operations: estimates from the International Energy Agency (IEA) suggest up to US$32 trillion by 2030 in a fast transition. That capex will in turn increase demand for the materials and inputs needed to retrofit and renew buildings, power and transportation systems. Investors can gain exposure to the transition through the assets of carbon-intensive companies with a credible transition plan or that act as enablers of the transition by supplying key materials, equipment and services. Commodities are a prime example: demand for some critical minerals could grow quickly as the transition progresses, according to the IEA.

Global energy demand still growing

Change in energy consumption, 2020-2050



Forward –looking estimates may not come to pass. Sources: BlackRock Investment Institute, Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA), September 2022. Notes: The chart shows IPCC and IEA scenarios for the average percentage change in global primary energy consumption between 2020 and 2050 at different transition speeds.

Repricing: more to come

Structural shifts are typically underappreciated by financial markets. One example is demographics – the baby boom generation's impact on the economy and financial markets played out through taste preferences and wealth flows over decades. This means asset prices can be slow to adjust to growth opportunities and risks, creating the potential of higher investment returns for investors who move early. We think the transition to lower carbon emissions could be similar.

We expect changing investor preferences in favor of sustainable assets could increase their value over time relative to assets perceived to be less sustainable. Why? More investable capital flowing toward sustainable assets as preferences shift. We see anecdotal and empirical evidence that this repricing is already at play and has room to run. In our February 2022 paper, we found that less carbon-intensive sectors like IT experienced positive repricing in 2020 – an effect that was negligible in the few years prior. We expect more repricing given shifting investor preferences and historical changes in risk premia for similar long-term transitions like demographic changes. The process of how valuations adjust is likely to be uneven, in our view. Transition-ready companies may not always generate the best financial returns for clients with a short time horizon.

Our long-term CMAs embed the view that ongoing shifts in investor preferences will likely push up the value of sustainable assets over time. These shifts in preferences mean that investors will likely demand greater compensation for holding less sustainable assets and lower compensation for holding more sustainable assets. That's why during the process of asset prices adjusting, we believe more sustainable assets will have a higher return than they would otherwise during the transition – and less sustainable assets will likely have lower returns.

Academic research from Berk and van Binsbergen (2022) ties the extent of the repricing to three observable drivers: 1) the fraction of wealth owned by investors incorporating sustainability in processes; 2) the fraction of non-sustainable firms in the economy; and 3) the return correlation between sustainable and non-sustainable assets. See the table to see how changes in these drivers affect the sustainability repricing dynamic and the appendix for more detail. Where our analysis extends the research from the paper above is to assume that we are not yet at a state where the repricing has played out, these variables will evolve between now and when the repricing is over. Rather than look to estimate an overall top-down impact – our previous approach - we take a view on these observable sub-measures and use the study above to derive the overall impact. We still arrive at the same conclusion: **We see more asset repricing, with an increased potential return on sustainable assets and a potential discount on others over time**.

How will these variables evolve? We believe that capital will keep flowing into sustainable assets. If wealth in the hands of investors favoring sustainable assets grows, we think it would increase the magnitude of the repricing (see the appendix and table to the right for the potential directional impact). The premium that investors will likely demand to hold less-sustainable assets will be greater the more plentiful they are and thus smaller when those assets are scarcer. See the second line of the table. If sustainable assets were perfectly correlated with the rest of the assets in the universe, there would be no return spread between them and the overall asset universe. The more they differ – the smaller the correlation – the greater the required premium. And we expect the risk exposures for sustainable assets to differentiate even further versus others as the transition accelerates. See the third line of table. We do not claim that the calibration we have is perfect or will not evolve further as we continue to learn more. These estimates are uncertain given the wide range of potential outcomes ahead. Yet by tying the overall effect to observable metrics, we can not only monitor these drivers of the repricing dynamic but also take a view on their evolution as the transition takes place. Our return expectations will continually evolve in a manner consistent with this underlying structure.

Drivers of sustainability repricing

Estimated effect of drivers

Driver of sustainability repricing over long run	Change to driver	Effect on magnitude of repricing
Fraction of wealth owned by investors incorporating sustainability in processes.	↑	↑
Fraction of non-sustainable firms in the economy	↓	↓
Return correlation between sustainable and non-sustainable assets	↓	↑

Source: BlackRock Investment Institute and Berk and van Binsbergen (2022), December 2022. Notes: The table is a graphical representation of how three factors affect the magnitude of the sustainability premium. This illustrative impact shown for each driver assumes the others are held constant. For instance, we estimate the impact on the total magnitude of the sustainability repricing we expect over a five-year period to be greater as the fraction of wealth owned by investors incorporating sustainability in processes rises, or lower as the fraction of non-sustainable firms in the economy falls.

Portfolio implications

Our latest strategic views – see the table below – incorporate our views on how the transition is likely to unfold. It isn't the primary driver of our return views – we incorporate the transition along with other drivers of investment risk and return. Yet the transition influences certain strategic investment views more directly than others.

Our overweight in inflation-linked bonds - one of our strongest conviction views – is one example**.** We believe the transition to lower carbon emissions will become a contributor to the new regime of higher macroeconomic and inflation volatility driven by production constraints – and which is not reflected in market pricing of inflation. We expect investors will demand a higher inflation risk premium because of this, reinforcing the overweight – one of our highest conviction views. Conversely, we are at our maximum underweight on developed market (DM) long-term government bonds.

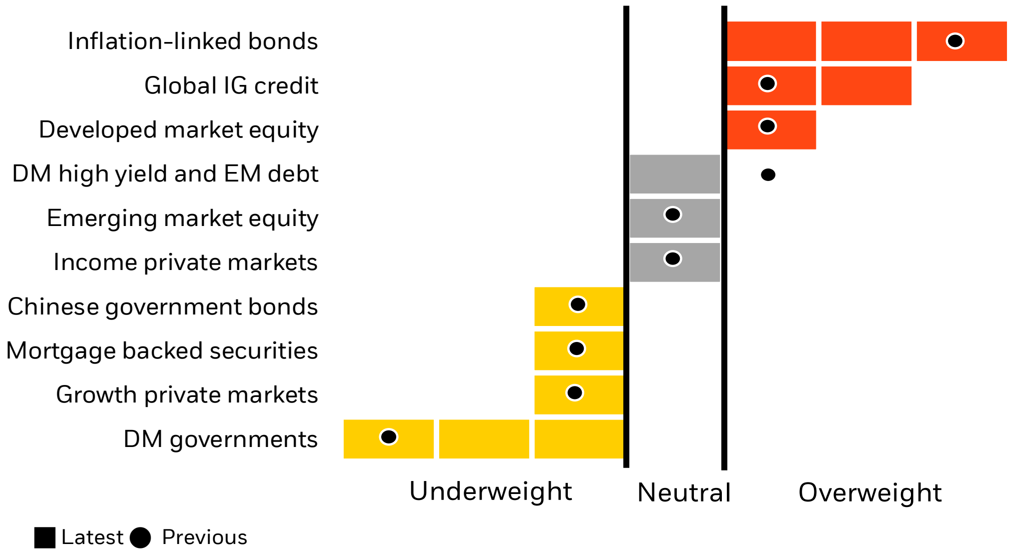
Our positive view on DM equities relative to emerging markets (EMs) is another example**.** We prefer low emission sectors such as technology, healthcare and consumer discretionary that have a heavier weighting in DM indices compared to EMs. We believe these sectors may benefit from the transition. EMs are more economically exposed to the transition because of weights in sectors such as energy, utilities, and industrials. Broadly, we think these sectors are more vulnerable to the massive reallocation of resources that the transition will entail.

Yet we also believe that within broad equity indexes, it's not just about holding companies with lower carbon intensity. Sectors that need the most investments are the ones that are carbon intensive. **Investing in the transition also means investing in carbon-intensive companies that have credible transition plans, or supply the materials, services, and equipment needed for the transition.** We think there could be continued demand and high prices for Western fossil fuels as the West weans itself off Russian gas**.**

Investors should also consider how to mitigate the impact on their portfolios from possible supply constraints during the process. If carbon-intensive production falls faster than lower-carbon alternatives are phased in, there could be periods of supply shortages and high prices for the carbon-intensive outputs that economies can't yet function without. Excluding carbon-intensive exposures could mean portfolios are less resilient to these supply shocks. Investments in carbon-intensive companies with credible transition plans could potentially give investors exposure to the transition and make portfolios more resilient to supply shocks such as the one this year following the Ukraine war that drove up traditional energy prices. **We believe exposures to other carbon-intensive companies can still be consistent with the transition.** Even with a rapid transition, investment in oil and gas production will still be needed to meet future energy demand. These exposures carry risk - fossil fuel demand could erode faster than expected. Investors need to balance those risks against the benefit of mitigating the effect of supply shocks on portfolios.

More conviction in our strategic views

Hypothetical U.S. dollar 10-year strategic tilts, December 2022



This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Source: BlackRock Investment Institute. Data as of 30 September 2022. Notes: The chart shows our asset views on a 10-year view from an unconstrained U.S. dollar perspective against a long-term equilibrium allocation. Global government bonds and EM equity allocations comprise respective China assets. Income private markets comprise infrastructure debt, direct lending, real estate mezzanine debt and U.S. core real estate. Growth private markets comprise global private equity buyouts and infrastructure equity. The allocation shown is hypothetical and does not represent a real portfolio. It is intended for information purposes only and does not constitute investment advice. Index proxies: Bloomberg US Government Inflation-Linked Bond Index, Bloomberg U.S. Investment Grade Credit index, MSCI World US$, Bloomberg Global Credit Index, JP Morgan EMBI Global Diversified Index, MSCI EM, BlackRock proxy, Bloomberg China Treasury + Policy Bank Total Return Index, BlackRock proxy, Bloomberg Global Aggregate Treasury index. We use BlackRock proxies for private market assets because of lack of sufficient data. These proxies represent the mix of risk factor exposures that we believe represents the economic sensitivity of the given asset class. The hypothetical portfolio may differ from those in other jurisdictions, is intended for information purposes only and does not constitute investment advice.

Appendix

Limitations

There is great uncertainty around how the transition to lower carbon emissions evolves given the wide range of potential outcomes ahead. We do not claim that the calibration we have is perfect or will not evolve further as we continue to learn more. The models are subject to significant limitations. For instance, they cannot account for the impact of evolving economic and market factors and/or varying investor constraints on the implementation of an actual investment. Expected returns for each asset class can be conditional on economic scenarios - in the event a particular scenario comes to pass, actual returns could be significantly higher or lower than forecasted.

Repricing channel methodology

We have revised our initial estimate of the *sustainability premium*, first introduced in February 2021. We still believe the structural shift toward sustainable investing is not yet fully priced. That means the return impact of this yet-to-be priced premium would imply that more sustainable assets would have higher returns than otherwise during the transition, with less sustainable assets having lower returns. We showed in **February 2022** that the repricing of sustainable assets we anticipated has been happening. We believe it has room to run – now more than previously thought.

We assume sectors with the highest carbon intensity – emissions relative to enterprise value - will experience rising cost of capital and those with the lowest intensity will see cost of capital fall. To arrive at an estimate of this repricing, we calibrated the change in cost of capital for all regional equity sectors and regional markets based on an estimate of the difference in cost of capital between the most and least carbon efficient companies once climate change impacts are fully priced in. We do so by measuring the z-score – how many standard deviations a value is from the mean - of a sector or region's carbon emission intensity and scaling the magnitude of the premium from the most carbon intense (z-score of -3) to least (z-score of +3). Our equity expected returns are estimated using an augmented dividend discount model, into which the change in cost of capital is incorporated to estimate the impact of the repricing channel.

Previously, we based the magnitude of the sustainability premium on qualitative evidence. Our revision of the initial estimate leverages insights from Berk and van Binsbergen (2022) and uses the MSCI All-Country World Index as the asset universe. The magnitude of the premium is derived as a function of the global equity risk premium, as well as a view on the fraction of wealth owned by investors incorporating sustainability (A), the fraction of non-sustainable firms in the economy (B), and the return correlation between sustainable and non-sustainable assets (C). In the Berk and van Binsbergen model, investors incorporating sustainability do not hold non-sustainable assets. This exclusion means investors who do hold such assets will likely require higher expected returns to hold them. All else equal, if wealth in the hands of investors incorporating sustainability grows or if the fraction of sustainable firms in the economy is lower, the effect on expected returns is larger, as more portfolio distortion must occur for markets to clear. Moreover, if the return correlation between sustainable and non-sustainable assets is lower, the benefits of diversification across these two types of assets is bigger. Since it is exactly these diversification benefits that non-sustainable investors forego when they absorb the excluded assets, the effect on expected returns is larger, all else equal. The relationships between the variables are captured through the equation below.

$$steady - state\ sustainability\ discount\ \approx\ equity\ risk\ premium * \frac{(A)}{1-(A)} * (B) * (1-(C)^2)$$

We measure each input with an estimate of what it will be in the steady-state when the impact is repriced. (A) is tied to a view on flows into sustainable assets, while (B) and (C) define "sustainable"/"non sustainable" assets with low/high levels of carbon emission intensity.

Fundamentals channel methodology

Climate change and the efforts to address it will impact the profitability and growth prospects of companies, so it should influence our long-term estimates of corporate earnings growth. We estimate the impact on the transition on corporate earnings at the sector level. To arrive at our estimates, we first assess the sensitivity of earnings to carbon pricing initiatives, which we expect to be a core tenet of climate mitigation policies. We assume an average global carbon tax of around $111 (weighted by GDP by PPP, in USD) in 20 years - consistent with our baseline scenario. The impact on each firm's earnings is calculated based on that particular firm's emissions (Direct Cost), the increase in its own energy costs (Indirect Cost), the expected passthrough of the tax cost via higher prices and expected abatement of emissions in response to rising carbon cost.

We also consider the alignment of equity sectors with our base case for the transition, as an indicator of how prepared they are for the transition and how their earnings opportunities could increase or decrease as the transition plays out. Our measure of alignment is based revenue eligibility for sustainable activities related to climate change mitigation as defined by EU taxonomy. We assume that the aggregate impact of the transition has a proportionate impact on aggregate earnings. This guides the upside to sector level earnings.

Appendix

Index proxies

Asset	Index
Equities	MSCI Developed - US Gross TR Index
	MSCI Developed - United Kingdom
	MSCI EMU Index
	MSCI Developed Europe ex UK Gross TR Ind
	MSCI Developed - Japan Gross TR Index -
	MSCI Daily TR Gross Developed Pacific Ex
	MSCI China A Inclusion NET Index
	MSCI Emerging - China in CNY
	MSCI Emerging Markets ex China (Net)
Fixed Income (Sovereign bonds and investment grade)	Bloomberg U.S. Treasury 1-10 Yr Index
	Bloomberg U.S. Treasury 10+ Yr Index
	Bloomberg Euro Treasury 1-15 Year Index
	Bloomberg Euro Treasury 1-15 Year Index
	Bloomberg Sterling Aggregate Gilts (1-10)
	Bloomberg Asian Pacific Japan Treasury
	Bloomberg China Treasury + Policy Bank Total Return Index
	Bloomberg U.S. Government Inflation-Linked Bond 1-10yr Index
	Bloomberg U.S. Tips Index 10Yr Plus - USD GROSS TR
	Bloomberg Euro Government Inflation-Linked 1-10 Years Index
	Bloomberg Inflation Linked Eurozone Inflation 10+Y
	Bloomberg MBS Index
	Bloomberg U.S. Credit Index
	FTSE Actuaries UK Index-Linked Gilts up to 5 Years Index
	FTSE Actuaries UK Index-Linked Gilts over 5 Years Index
	Bloomberg Euro Aggregate Corporate Index
	Bloomberg Sterling Aggregate Corporate Bond Index
Fixed income (High yield)	Bloomberg U.S. Credit Index
	Bloomberg Euro Aggregate Corporate Index
	JP Morgan EMBI Global Diversified Index
	JP Morgan GBI-EM Global Diversified Index
Income and growth private markets*	U.S. private equity
	Global direct lending
	Global Infrastructure equity
	U.S. core real estate
	Real estate mezzanine debt
	Hedge funds (global)
	U.S. infrastructure debt
	Developed markets infrastructure debt

* We use BlackRock proxies for selected private markets because of lack of sufficient data. These proxies represent the mix of risk factor exposures that we believe represents the economic sensitivity of the given asset class.

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