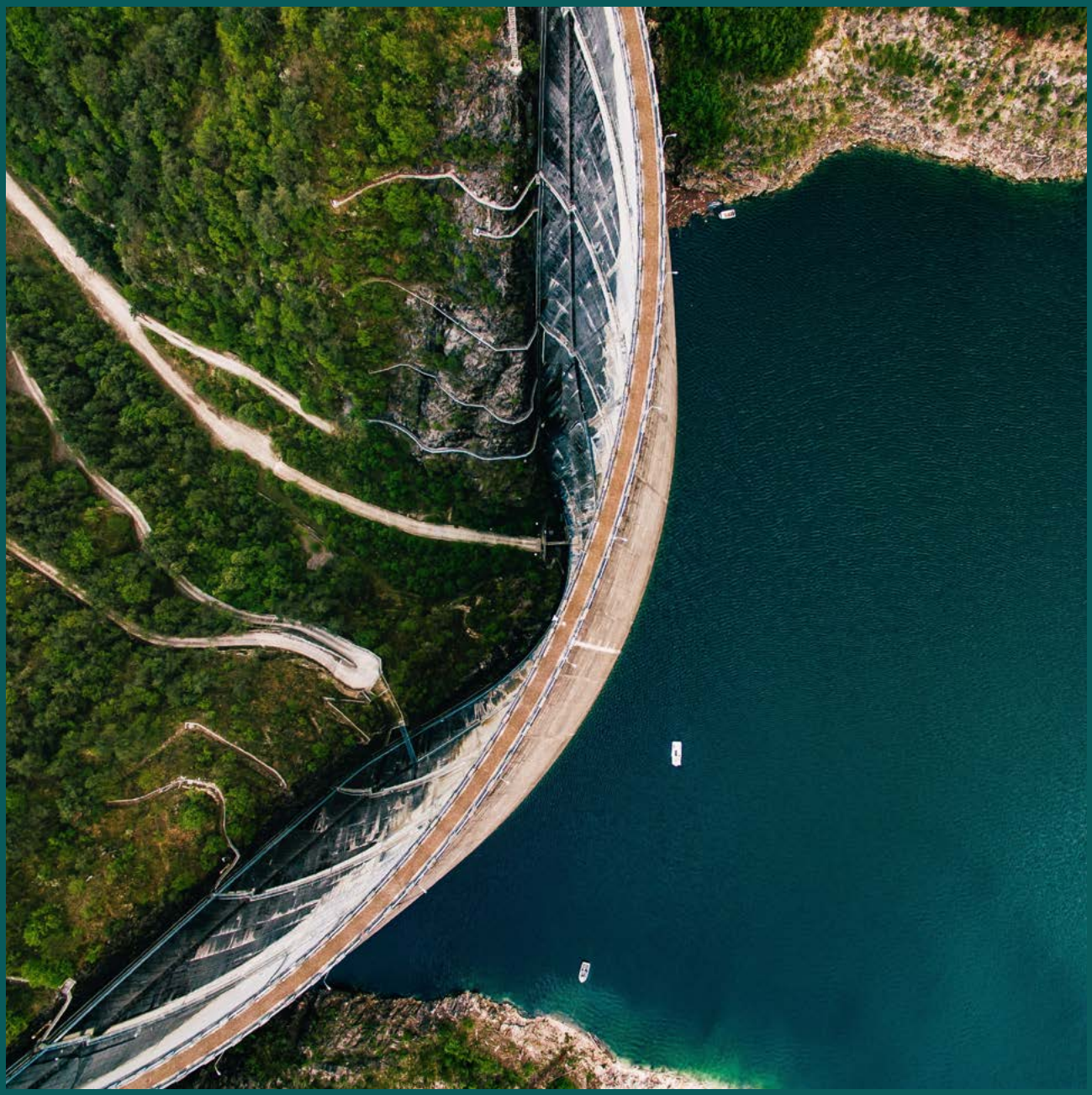
Baillie Gifford™

The Climate Scenarios Project

Part 2: macro indicators and market outcomes

September 2024



All investment strategies have the potential for profit and loss, capital is at risk.

Risk factors

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All information is sourced from Baillie Gifford & Co and is current unless otherwise stated.

The images used in this report are for illustrative purposes only.

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We collaborated on this project with Independent Economics, a London-based consultancy and advisory firm, on the development and exploration of our bespoke Disorderly Transition shock scenarios. The Independent Economics team provided independent challenge to our assumptions throughout and ultimately enabled us to design and own the climate scenario modelling process from start to finish and reap much wider benefits than would have been the case if we were simply to have chosen an 'off the shelf' climate modelling solution.

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Investment Manager

Scott is an investment manager in the Multi Asset Team. He joined Baillie Gifford in 2015. Prior to joining the firm, he worked as a Solutions Strategist for Schroders in London, led a multi-manager team for BEA Union in Hong Kong, and was a senior investment consultant at Towers Watson. Scott is a Fellow of the Institute and Faculty of Actuaries, and graduated BSc (Hons) in Actuarial Mathematics and Statistics from Heriot-Watt University in 1999.

James Carver

Investment Manager

James is an investment manager in the Global Bond Team, with a focus on macro research. He joined Baillie Gifford in 2018. He began his career with Deutsche Asset Management and spent 10 years working across emerging market debt, global macro and asset allocation before moving to Scottish Widows to run their Absolute Return Bond Fund. James gained an MSc (Hons) in Earth Sciences from the University of Oxford in 2001 and later completed an MBA at the University of Edinburgh.

Laura Thomson

Senior ESG Analyst

Laura joined Baillie Gifford in 2018 as an analyst in the central ESG resource and her time is now spent between Multi Asset and the central Climate & Environment function. Prior to joining Baillie Gifford, Laura worked in the built environment as an Environment and Sustainability Advisor for an international construction and engineering company. She also spent time on corporate climate and water-related disclosures in the Supply Chain Programme of international not-for-profit, CDP. Laura graduated BA (Hons) in French Studies from the University of Sheffield in 2010 and graduated MSc in Management from the University of Edinburgh in 2011.

Caroline Cook

Head of Climate Change

As Head of Climate Change, Caroline works across the firm to integrate our understanding of energy, climate and environmental issues into our investment practice. As these interlinked transitions compound, her aim is to improve outcomes for all our clients. She joined Baillie Gifford in January 2020, having spent the prior four years leading cross-sector energy transition research within Deutsche Bank's equity research business. Prior to that she focused on the oil and gas sector, both as an independent consultant and as co-head of Deutsche Bank's number one rated Global and European oils team. Caroline graduated from Cambridge with an MA in Modern History in 1989.

Contents

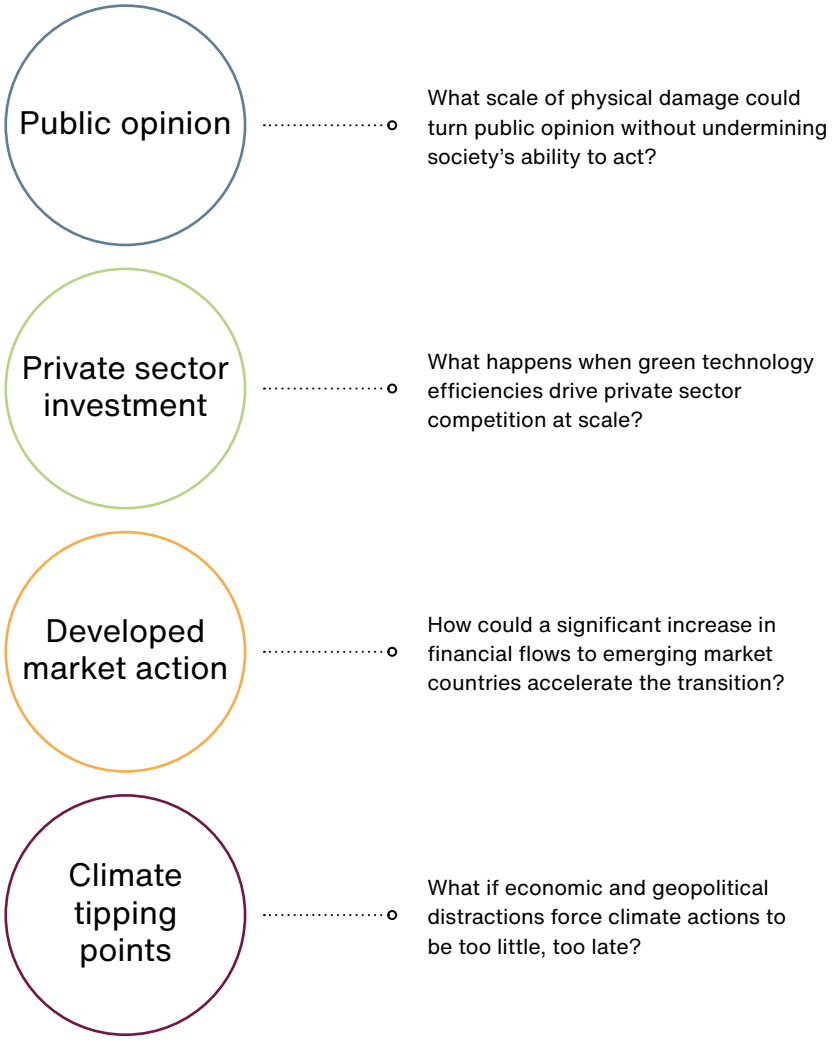
Introduction

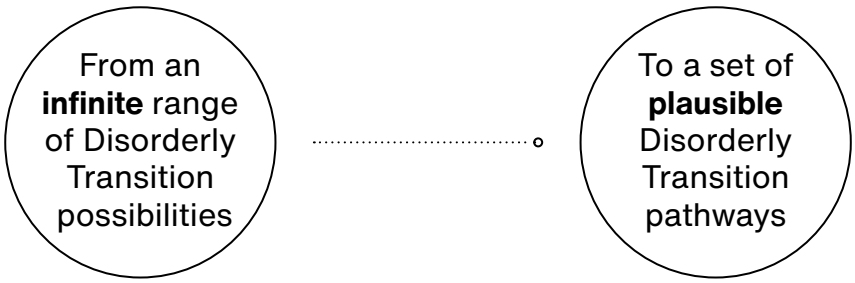
Baillie Gifford regards the climate and energy transitions as material investment factors. As stewards of our clients' capital, we must be prepared to anticipate and respond to the wide range of risks and opportunities our portfolios may be exposed to.

Part One of Baillie Gifford's Climate Scenarios Project aimed to help our investors answer complex questions about the energy and climate transitions across a wide range of dimensions – social, political, technological and financial. We used a qualitative narrative approach – focusing on more than just numbers – to explore possible climate futures. This **Part Two** report continues this effort by Baillie Gifford's Multi Asset Team, in collaboration with our Climate Team and external thought leaders.

We have been working through various potential levers that could catalyse and drive transformative or disruptive changes at speed and scale across global economies. In Part One, we defined three broad climate outcomes: an Orderly Transition, where global temperatures are contained; a Hot House World, where society fails to contain temperatures; and a Disorderly transition where global temperatures initially follow a Hot House World trajectory, but are eventually contained as political and economic resistance is overcome. In Part Two, we distill the *infinite* range of Disorderly Transition possibilities that *could* unfold to a carefully curated set of pathways representing a range of *plausible* yet distinct futures.

The key questions we explored are:





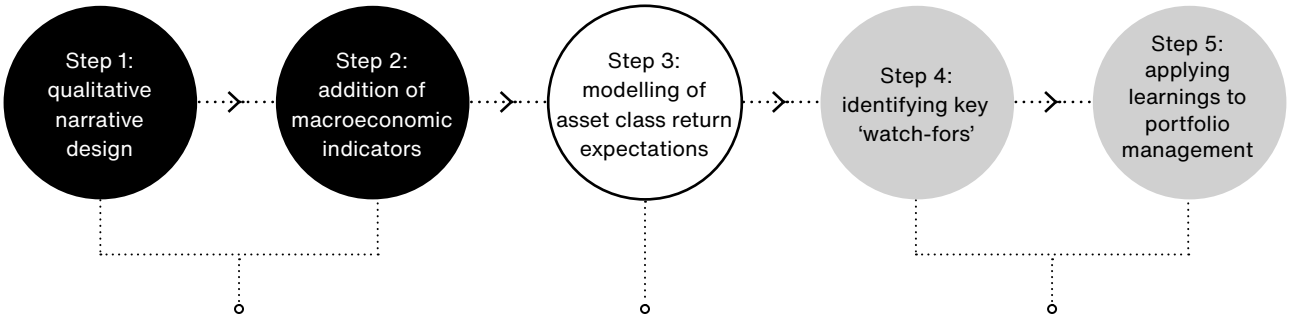
With our research questions in mind, our unique Disorderly Transition scenarios include three that lead to successful outcomes (defined as limiting temperature increases this century to less than 2C) and one that proves too late to change course.

The pathways summarise – and are colour-coded throughout the report – as:

Scenario 1	Physical climate risk (damage to productive capital)
Scenario 2	Positive technology momentum
Scenario 3	Significant scaling up of climate finance
Scenario 4	Recession and 'too little, too late'

This report starts by detailing the process we undertook, then provides an overview of the four transition scenarios we developed, sharing the economic assumptions and adjusted return forecasts for each. Illustrative portfolio investment opportunities, risks and 'watch-fors' are also highlighted for each scenario, and we conclude with reflections on the project. We hope you find reading the report interesting and we would welcome any questions or feedback it may inspire.

Our ‘glass box’ process



Steps 1 and 2: Qualitative narrative design and the addition of macroeconomic indicators

A group with expertise drawn from Baillie Gifford’s Multi Asset investment strategy, Global Bond and Climate teams worked closely with Independent Economics, an economics consultancy, to develop a set of qualitative climate transition narratives. This approach removed any potential ‘black box’ scenario – where it isn’t clear to others how we’ve reached our conclusions – by challenging us to translate the qualitative storylines into key macroeconomic indicators pre and post climate ‘shock’. At the global and regional levels, these indicators include GDP, inflation and productivity, among others.

Step 3: Modelling of asset class return expectations

Baillie Gifford’s Multi Asset investment team then integrated the scenarios into their semi-annual top-down *Long-Term Return Expectations* (LTRE) analysis with the support from specialist internal asset class groups (equity, credit, government debt, real assets, and alternatives). Multi Asset was a natural home for this macroeconomic integration given the strategy’s investment approach and existing processes. This step involved modelling consequences for the global economy across a broad range of asset classes and adjusting the base case 10-year return forecasts for each scenario.

Steps 4 and 5: Identifying key ‘watch-fors’ and application to portfolio management

By identifying key ‘watch-fors’ or signposts within the scenario narratives, we seek to better understand the key levers in society, politics, finance and industry that could catalyse and drive change. The goal here is to support our interpretation of the real-world direction of travel in different geographies and industries over time as we focus on delivering attractive portfolio returns for our clients today and into the future.

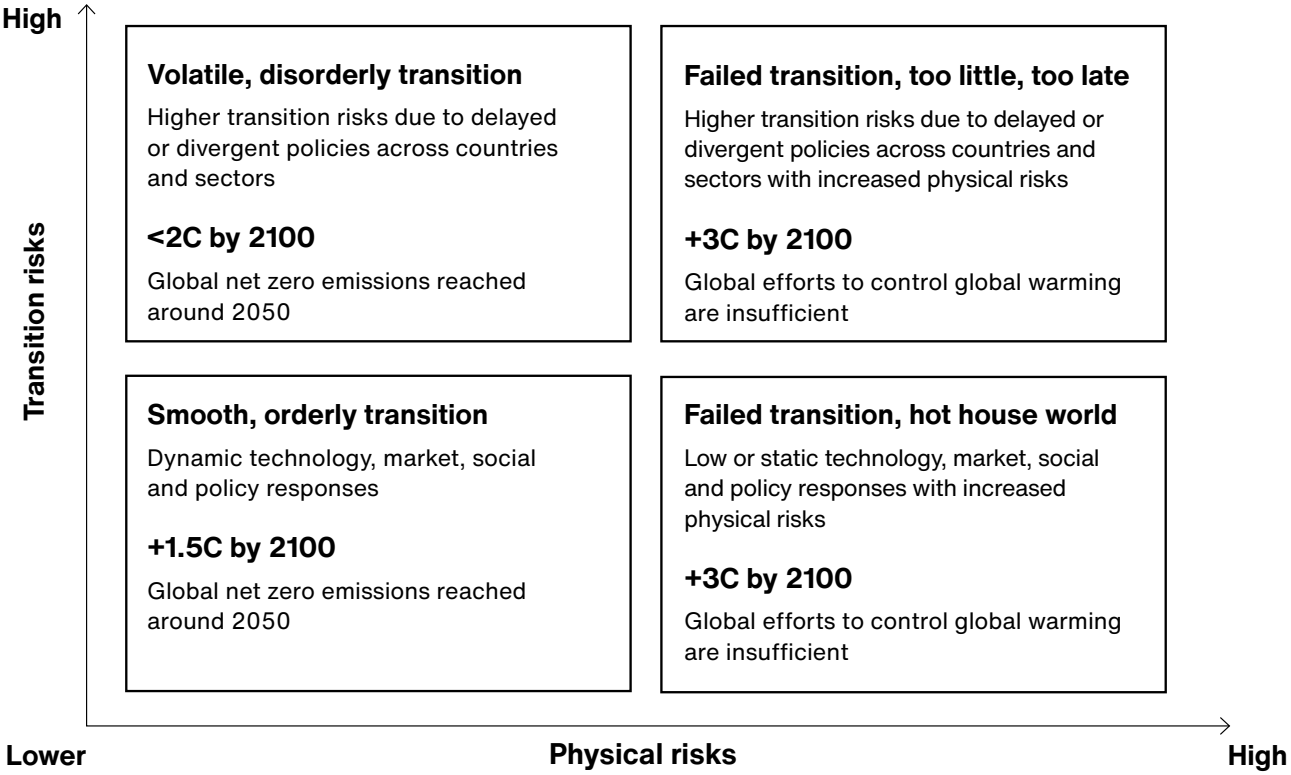
An **infinite** range of Disorderly Transition possibilities

In **Part One** of our Climate Scenarios Project we explored three possible climate futures. Taking the regulatory guidance of groups such as the UK Financial Conduct Authority and Department for Work and Pensions as a starting point, we developed system-wide narratives for a climate-failure case (a Hot House World), a rapid shift to deliver climate success (an Orderly Transition), and a volatile but ultimately successful pathway (a Disorderly Transition), as detailed in the chart below. For each, we considered the interaction of technology, policy, society and the environment over the short, medium and longer term. Summaries of each can be found in the Appendix and in greater detail on our **website**.

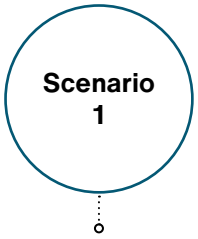
The underlying archetype of a Disorderly (but ultimately successful) Transition is that the world initially follows an emissions trajectory on course for a Hot House World driven by incumbent lobbies and political-economy resistance to the transition. Contradictory policies and capital deployment provide incremental opportunities for new green sectors but still allow profits to accumulate for high-carbon incumbents. At some point, the pathway changes course. It is "shocked" into a new trajectory that then delivers rapid emissions reduction and climate success.

Post-shock, the transition is more rushed and requires more radical change and innovation than its Orderly counterpart. It demands rapid scaling of new technologies and the scrapping of functional high-carbon assets. The transition is expensive because the world has not optimised for either energy system – fossil fuel or clean energy. Actual or shadow (estimated) carbon prices are higher and more disruptive than they would have been if introduced earlier and more gradually. Inflation, too, is higher and more volatile as opportunities for an early energy transition are missed.

There are an almost infinite range of Disorderly pathways, but we suspect only a small range of effective but successful shocks that allow the system to move from likely failure to plausible success. In our original narratives, we considered a period of accumulating physical damage that led to an abrupt global policy shift in favour of a low carbon transition. In this **Part Two** paper, we dive deeper into this possibility, while also exploring two other positive catalysts – and one ultimately negative.



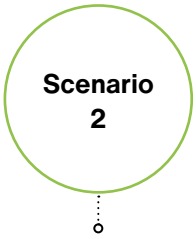
A set of **plausible** Disorderly Transition pathways



Physical climate risk (damage to productive capital)

Disorderly Transition; physical shock back to a <2C pathway.

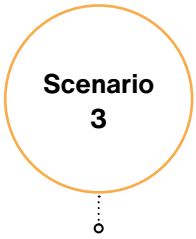
This scenario's purpose is to show the longrun adjustment path to delayed but strong governmental reaction, prompted by physical climate damage and subsequent societal pressure.



Positive technology momentum

Disorderly Transition; positive technology shock back to a <2C pathway.

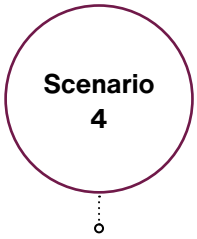
This scenario's aim is to show a step-change in green technology investment, adoption and efficiency, which prompts increased private-sector competition and cost reductions, leading to more aggressive policy change.



Significant scaling up of climate finance

Disorderly Transition; climate finance shock back to a <2C pathway.

This scenario's purpose is to show how global cooperation, combined with social pressure within and across countries, could drive constructive global climate agreements and accelerate financing flows from developed markets to emerging market countries. This is our most 'orderly' of the disorderly scenarios in which competitionturns to coordination.



Recession and 'too little, too late'

Failed Transition; 'too little, too late' leaving temperatures on course for 3C pathway.

This scenario aims to show the potential characteristics of a 'business as usual plus structural recession' outcome; unlike the other Disorderly scenarios, action in this scenario is insufficient and results in a Failed Transition. It is also the most socially unjust of the examples.

The purpose of the project was to become more informed about the likely macroeconomic trajectories, rather than a generic central estimate which the broad Disorderly Transition base case represents. Exploring specific plausible scenarios against the end June 2024 base case allows for a richer discussion and analysis.

What is a ‘shock’?

Our climate transition pathways detail different plausible **shocks or catalysts that are large enough to inspire sufficient action** across policy, geopolitics, technology, markets and wider society to get the Disorderly Transition pathway back on track. They result ultimately in a global average temperature increase of less than 2C by the end of the century, and not a Failed Transition as would otherwise be the case. These shocks range from physical climate damages to positive technological momentum and a significant upscaling of climate finance.

Some pathways may look initially like a Disorderly Transition, but efforts could ultimately prove ‘too little, too late’ to prevent a Hot House World; timing is critical. For this reason, we also include a ‘too little, too late’ scenario that results in a 3C global average temperature increase by the end of the century as a comparative Failed Transition example.

What is a ‘watch-for’?

In a successful Disorderly Transition, the system must be shocked to get the pathway back on track to limit the global average temperature increase to less than 2C. ‘Watch-fors’ in our scenario narratives can act as **indicators or trends that we may monitor to confirm, challenge and check our assumptions over time**. ‘Watch-fors’ support our assessment of the extent to which a scenario may be playing out in the real world.

They act as signposts, standing to force or reinforce change in the direction envisaged in the scenario narrative, either in a reinforcing manner (ie a development consistent with the direction of travel) or in an opposing manner (ie risks to the scenario playing out).

The differentiated pathways we have designed intentionally isolate individual shocks, focusing on the broad dynamic nature and virtuous circles or downward spirals, contained within each. This allows use of the watch-fors from the scenario narratives to support our ongoing monitoring of which trajectory is playing out and where it is likely to go.

Of course, in the real world, even when policy, technology, geopolitics, society or financial markets are part way down one path, up until a certain point, a big enough shock – or shocks – could shift them onto another pathway.

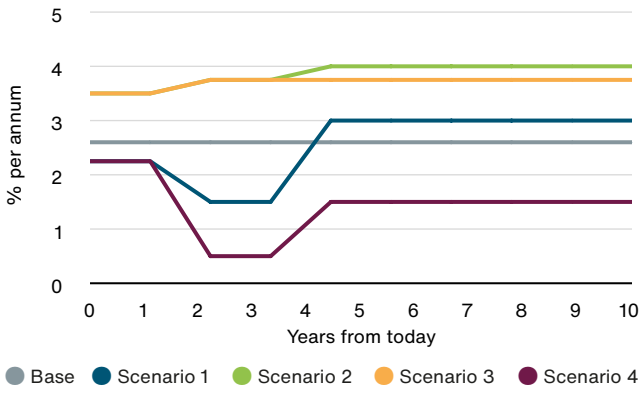
Macroeconomic indicators – base case overview

In our base case, the slowdown following the post-pandemic boom continues, with labour markets normalising and inflation falling back to target. This facilitates interest rate cuts and a soft landing, where recession is avoided, after central banks have raised rates sufficiently to avoid high levels of inflation.

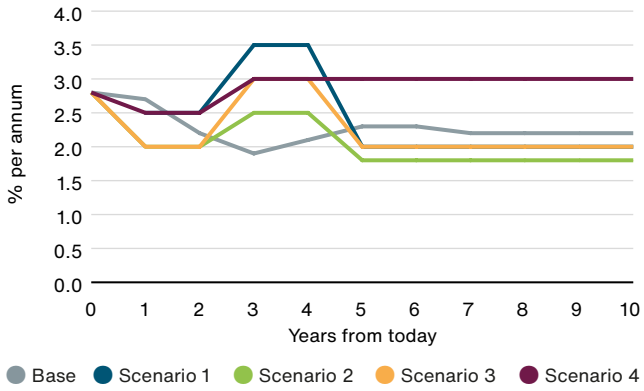
Although physical climate shocks are apparent, sporadically affecting supply chains, impacts on growth and inflation are not overly damaging. Governments largely continue to shift spending towards adaptation and mitigation climate change policies, while private sector innovation and investment also increase somewhat. The broad mix of actions is uneven and delayed but does eventually deliver a climate transition on track to contain the global average temperature increase to 2C by the end of the century. Global GDP grows at 2.5 per cent on average over the next decade.

The charts to the right show the base case and the other illustrative climate scenarios depicted graphically through a few key economic variables. Our base case does not specifically track any one of the bespoke climate scenarios, rather it is one where government debt rises steadily, growth is uninspiring and central banks need to maintain relatively low interest rates. The most positive scenario (**Scenario 2: Positive technology momentum**) is one in which the private sector leads climate investment and innovation, boosting growth and productivity such that government debt falls steadily. The Failed Transition (Scenario 4: Recession and 'too little, too late') is the most negative, resulting in very weak global growth, higher government debt and a nasty mix of higher inflation, relatively low interest rates and major physical climate shocks.

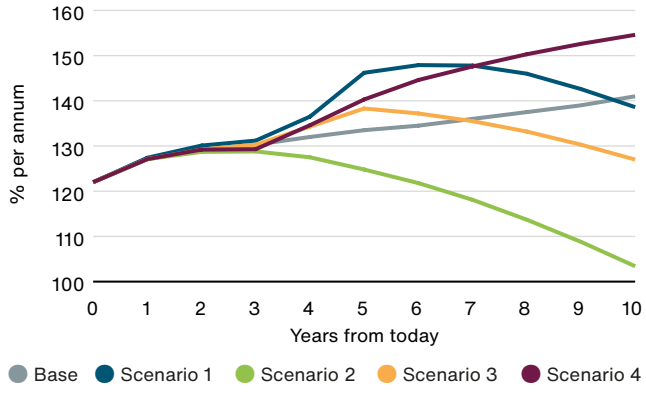
Global GDP growth



US inflation



US debt/GDP



Macroeconomic indicators – scenario similarities and differences

	Disorderly Transition scenarios			Failed Transition scenario
	Scenario 1: Physical climate risk (damage to productive capital)	**Scenario 2: Positive technology momentum**	**Scenario 3: Significant scaling up of climate finance**	**Scenario 4: Recession and 'too little, too late'**
The run-up to shock (approximately 2 years pre-shock)				
World GDP growth	Sub-trend	Trend-like	Trend-like	Sub-trend
World productivity	Remains low <1.5%	Rises to 2.3%	Rises to 2.3%	Remains low <1.5%
US inflation	Stops disinflation, slightly above target inflation	Disinflation helps inflation back to target	Inflation back to target	Stops disinflation, slightly above target inflation
Real interest rate[1]	Falls to 1.5%	Falls to 1.75%	Falls to 1.75%	Falls to 1.25%
The shock				
Market flows	Re-pricing of 'brown' (unsustainable) v 'green' (sustainable) assets; transition materials benefit	Low inflation, strong growth positive for most assets excluding 'brown'	Real asset flows from developed to emerging markets; re-pricing of 'brown' v 'green' assets, transition materials benefit	Capital losses across most assets as growth weakens and populism rises; government bond volatility rises
Post-shock (rest of the decade)				
World GDP growth	Following government bailouts back to 3.25%	Productive investment boost to 3.75%	Productive investment boost to 3.75%; more so in emerging markets	Weak at 1.5% – supply and capacity constraints; stimulus attempts fail
World productivity	Improves to 2.85%	Strongest at 3.4%	Stronger to 3.2%	Weakest at 1.6%
US inflation	Back to target following mid-shock spike on rebuilding demand	Slightly lower than target as technology disinflation strengthens	Back to target	Above target inflation ≈3%
Real interest rate	Lower at 1.5%	Higher at 2.25%	Highest at 3%	Lowest at 1%

[1] The Federal Reserve funding rate less expected inflation.

'Brown' assets: Those vulnerable to obsolescence or becoming stranded in a rapidly evolving landscape

The following section contains a more detailed overview of each of the four scenarios, addressing the following:

- What is the 'shock', and which of our research questions is it seeking to address?
- What are the key drivers?
- How does the macroenvironment look?
- What are the key challenges to overcome?
- What saves the day?
- What is the state of affairs in 2050?
- An overview of the qualitative narrative – virtuous circles or downward spirals?
- What are the key 'watch-fors'?
- Where are the investment opportunities?
- Where are the investment risks?

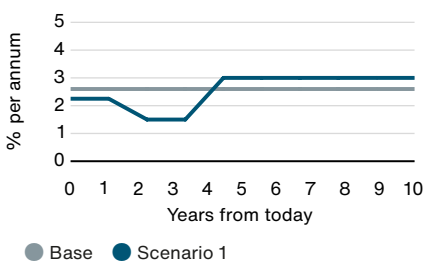
Scenario 1 overview

Public opinion

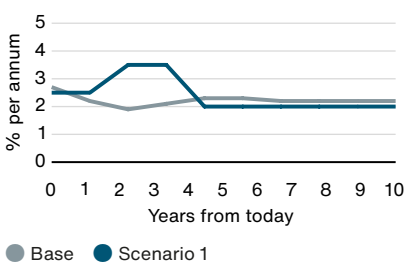
Physical climate risk (damage to productive capital)

The research question	**What scale of physical damage could turn public opinion without undermining society's ability to act?**
The shock	A 'freak' Miami flood, perhaps combined with fires in California, floods in the Midwest or severe hurricanes on the Eastern Seaboard; the insurance sector in the US is on the brink of collapse after a series of physical climate crises.
What are the key drivers?	The realisation within society at large of the escalating problems leads to pressure on government from voters and powerful corporates; broad international agreement when the biggest emitters align and cooperate, crucially including China and the US, which sparks political cooperation and success; private sector investment gathers pace (economies of scale and competition-driven change).
How does the macroenvironment look?	Physical shocks affect supply chains, creating stickier inflation and weakening growth. Against this supply-side inflation, central banks are initially cautious in cutting interest rates. As governments react to the shock and pursue policies that seek to adapt and mitigate against climate change, growth recovers, albeit with considerable fiscal spending, which causes debt levels to rise sharply. As growth recovers, interest rates rise, but real interest rates remain relatively low, however higher than our base case due to high levels of government debt and spending.

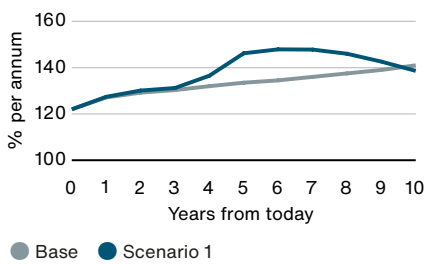
Global GDP growth



US inflation

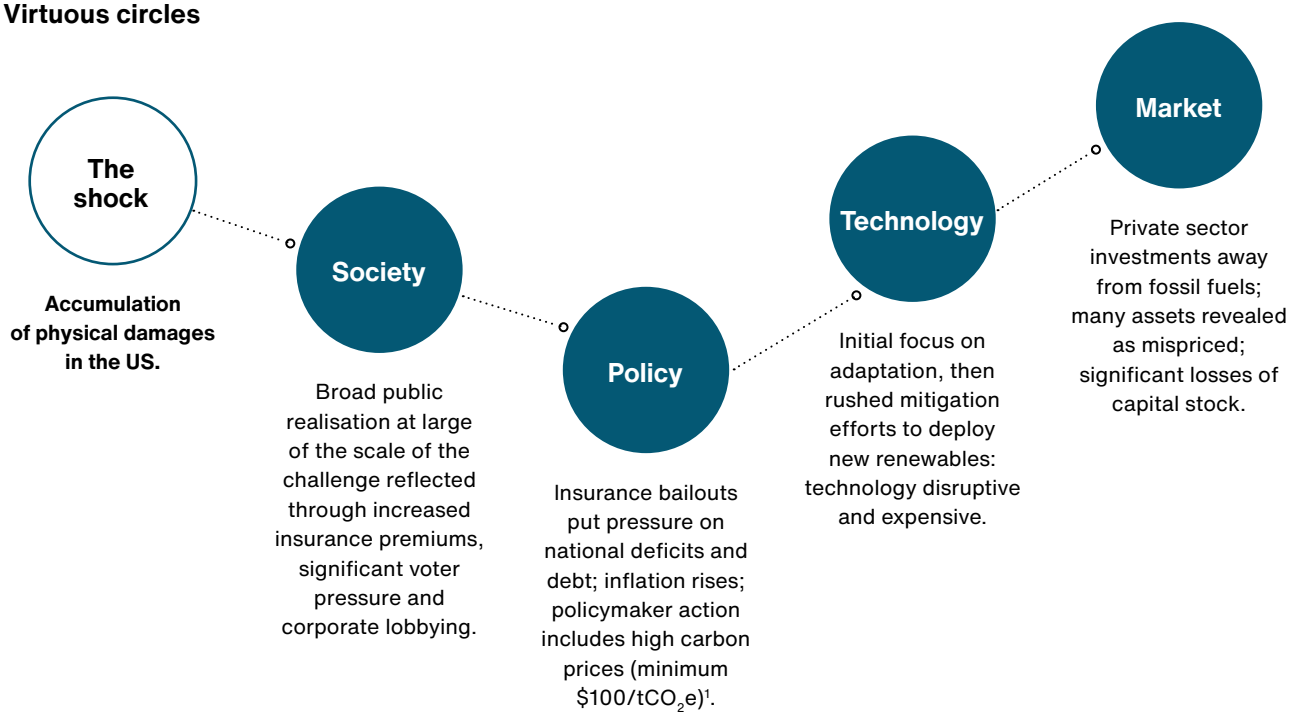


US debt/GDP



What are the key challenges to overcome?	If the action comes too late, is insufficient, or severe physical damages compound without full realisation, then it might be 'too little, too late'.
What saves the day?	• Policymaker action following voter and corporate pressure as well as insurance industry calamities. • A combination of constructive new national and international policy initiatives. • Powerful private sector 'green' (sustainable) investment. • Technology developments that continue to reduce the costs of renewables. • The West and China do eventually cooperate.
What is the state of affairs in 2050?	A disorderly, albeit rushed, transition has resulted in a <2C temperature increase and climate stabilisation for the rest of the century; getting there has been costly.

Virtuous circles



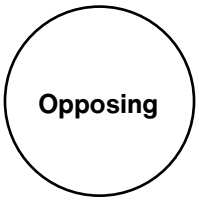
[1] Tonnes of Carbon Dioxide equivalent.

Scenario 1 overview

Key 'watch-fors'

Accumulating physical damages begins to shift sentiment

Abrupt introduction of carbon prices at high levels in major emitting countries (minimum $\$100/tCO_2e$)



Political opposition to climate change policies on cost grounds (higher prices or tax)

Illustrative portfolio investment opportunities

Select developed or emerging market sovereign bonds

Biasing towards those with more resilience to natural catastrophe disruption

Developed market equity and infrastructure

Recovery and future-proofing spending will begin at home, so cyclical exposures should rebound quickly eg sectors that are dependent on the prosperity of the wider economy, like construction and materials

Insurance-linked securities

The short-term nature of catastrophe bonds allows insurers and reinsurers to adjust premiums up or down based on recent experience and prevailing risks, which gives a natural smoothing of longer-term return prospects

Illustrative portfolio investment risks

US utilities

Corporations may be saddled with substantial liabilities

Property

Real estate and insurance in this sector hurt as a result of the destruction of property values in the most vulnerable areas

Credit and equity

The worst-affected regions will underperform in the shock and the immediate aftermath, particularly low-lying, over-exposed markets and those with under-insurance

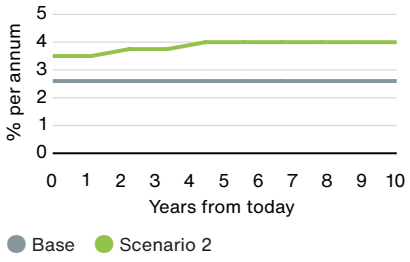
Scenario 2 overview

Private sector investment

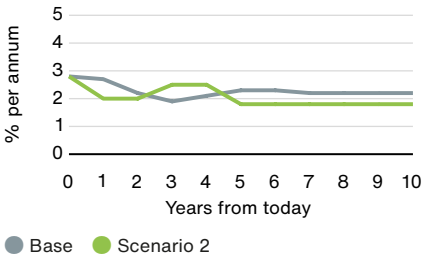
Positive technology momentum

The research question	**What happens when green technology efficiencies drive private sector competition at scale?**
The shock	Initially, technological progress and upscaling go 'unnoticed' until a 'critical mass' is reached, tipping 'green' scaling to a massive scale; private sector competitive forces seek opportunities, driving a 'race to the top'; capital markets adjust and/or there is the prospect of assets becoming obsolete which takes many market participants and society by surprise.
What are the key drivers?	'Race to the top' and fear of missing out on opportunities and valuation changes; the West and China cooperate; policy is not leading here but needs to be sufficiently agreeable so as not to obstruct and be nudged in the right direction; once 'green' (sustainable) technology scales, mitigation and adaptation efforts are successful; net zero is reached sooner than in the other scenarios.
How does the macroenvironment look?	This scenario is facilitated by private sector investment, is distinctly disinflationary and boosts short- and long-term growth. Because of the lack of government involvement and spending, debt levels fall sharply. Real interest rates remain relatively high for good reasons – strong growth, even as inflation remains at or slightly below target.

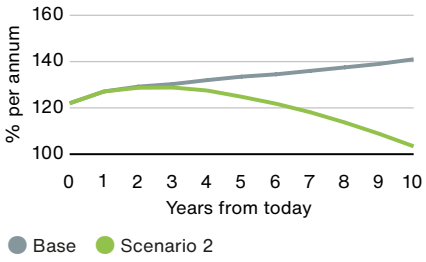
Global GDP growth



US inflation

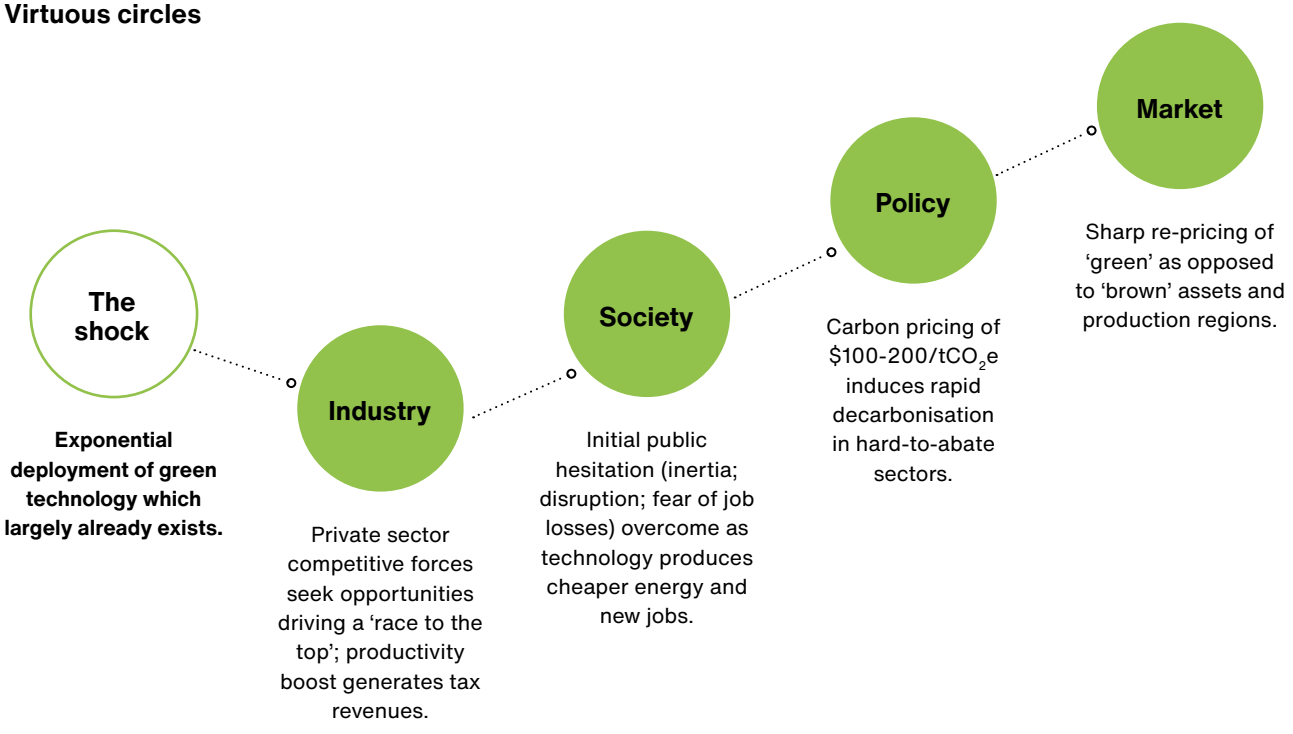


US debt/GDP



What are the key challenges to overcome?	Risk aversion prevails; strong inertia in 'doing things the way we have always done'; 'green' transition considered unjust (political backlash); high initial disruption and switching costs; continued lobbying and financial support for fossil fuel investments; the availability of critical metals and minerals.
What saves the day?	• Expectations are changing rapidly, and the transition is seen as an opportunity, not a burden. • Technologies are switching from one network to another with accelerating cost reductions. • Policy that encourages investment in clean technologies while at the same time stopping subsidising fossil fuel industries. • Reinforcing feedback effects accumulate, including breakthroughs in key technologies. • Physical damages are at the more benign end of expectations. • Planning reforms make land and commodities available at pace.
What is the state of affairs in 2050?	A Disorderly Transition resulting in a less than 2C temperature increase and climate stabilisation for the rest of the century. This scenario gets there more quickly and efficiently than in Scenario 1.

Virtuous circles

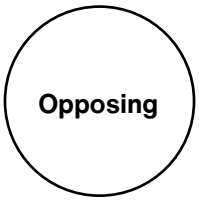


Scenario 2 overview

Key 'watch-fors'

Fossil fuel and green technology relative valuations are changing rapidly, with risk premiums on fossil-fuel-intensive capital rising

A reduction in regulatory burden and deployment barriers (eg planning conditions)



Unavailability of critical metals/minerals

Illustrative portfolio investment opportunities

Developed market growth equity

Private firms driving the change, likely with US technology seeing substantial earnings growth upside and positive sentiment

Green infrastructure, including utilities

Key recipients of technology developments and financing boosts

Transition metals

Increasing demand for finite resources

Illustrative portfolio investment risks

Oil-producing countries

Reduced fossil fuel revenues and stranded assets (negative for the Middle East, and select African countries)

'Brown' technologies

Those vulnerable to obsolescence or becoming stranded in a rapidly evolving landscape

Legacy renewables

Substantial differentiation is likely even within renewables investments, with older technology or contracts suffering from lower power prices

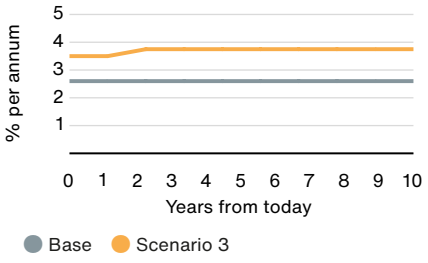
Scenario 3 overview

Developed market action

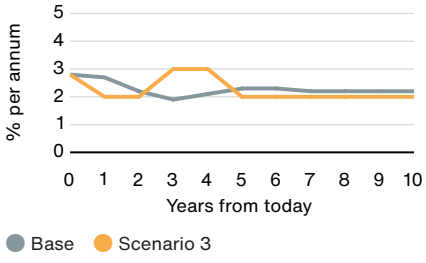
Significant scaling up of climate finance

The research question	**How could a significant increase in financial flows to emerging market countries accelerate the transition?**
The shock	Developed markets start viewing international climate finance commitments as a key requirement for a successful transition, necessary to avoid mass migration and an opportunity to counter China's soft-power geopolitical influence in the Global South.
What are the key drivers?	Emerging market countries in various groupings ramp up political pressure on developed market countries to compensate them for damages already caused by climate change and help them convert to green technologies; where states vie for influence, this plays out in the form of competition between power groups seeking to support emerging market countries to capture markets and access resources; belated, gradual but ultimately coordinated developed market investment nudges the path back on track.
How does the macroenvironment look?	Increasing financial flows from developed countries to emerging markets causes real interest rates to rise in the developed world through the shock but then fall back afterwards. A global rise in productivity and growth leads to higher real interest rates while inflation remains near target.

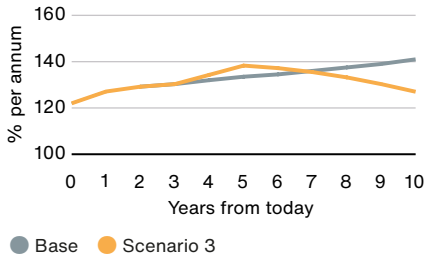
Global GDP growth



US inflation

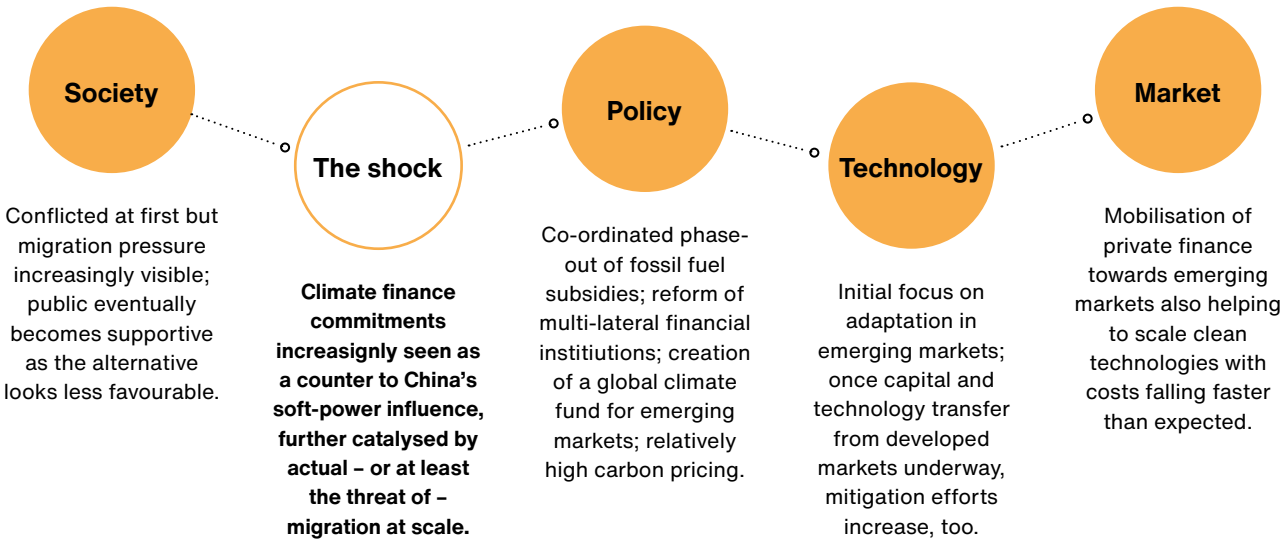


US debt/GDP



What are the key challenges to overcome?	Competition with China not going so far as to tip over into hard power battles; developed markets turning protectionist – economically (financing emerging markets not palatable to developed market voters) and militarily (defence spending taking priority over climate finance).
What saves the day?	• Mounting migration pressures, but not (yet) catastrophic physical damages. • A combination of technological progress and political will being mutually reinforcing as one drives the other. • Political cooperation between the big-emitting developed market countries. • A workable and fair global framework for collecting and distributing climate funds. • Private capital mobilises to include funding adaptation measures and accelerating transition technologies. • Enabled by a period of strong, positive economic growth in developed markets (perhaps an AI-boom) that creates the cash to divert to emerging markets.
What is the state of affairs in 2050?	A disorderly, albeit rushed and more costly, transition results in a less than 2C temperature increase and climate stabilisation for the rest of the century. Given the transfers from developed to emerging market countries, this scenario also results in a more equitable world.

Virtuous circles

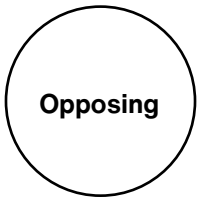


Scenario 3 overview

Key 'watch-fors'

Emerging markets moving into China's geopolitical orbit

COP 2024 commitments, including reform of multi-lateral financial institutions, kickstart a revived flow of funds from developed to emerging markets



Although carbon prices are at $100/tCO$_2$e or higher in developed markets, proceeds are not flowing to emerging markets or emerging market institutions are unable to absorb inflows efficiently

Illustrative portfolio investment opportunities

Emerging market assets

Sectors with the most scope for mitigation and likely capital inflows do best, eg renewable energy generation, transport systems and food production

Green bonds

With more focus on sustainable practices, expect greater demand for these structures

Alternatives

A benign and trending environment provides a conducive backdrop for protective strategies, ie cheap insurance, and a global carbon market that remunerates nature-based removals

Illustrative portfolio investment risks

Asset stranding

Early retirement of fossil fuel power generation

'Brown' (unsustainable) equity and credit

Repriced due to phase out of fossil fuel subsidies and high carbon prices

European assets

Part of this scenario is a race between the US and China – might Europe be left behind?

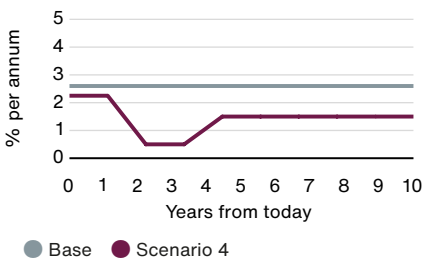
Scenario 4 overview

Climate tipping points

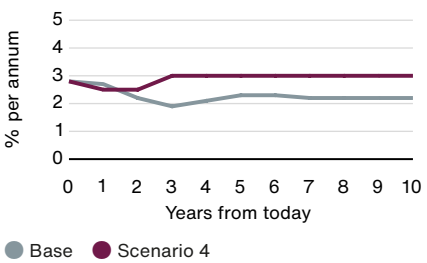
Recession and ‘too little, too late’

The research question	**What if economic and geopolitical distractions force climate actions to be too little, too late?**
The shock	Damage to capital and a global recession are so extensive and costly that they distract policymakers and industry leaders from climate transition planning; economic and climate ‘downward spirals’ trigger capital markets to reprice and/or face the prospect of assets becoming obsolete.
What are the key drivers?	Slow growth begets slow growth, resulting in: lower private/public investment; interest rates remain low, reflecting low growth; and a continual erosion of global wealth stock. In parallel, physical damages accumulate and the negative consequences of environmental tipping points become increasingly clear.
How does the macroenvironment look?	Against a background of growth slowing sharply from the post-Covid boom, physical climate shocks and associated supply side issues cause higher and more volatile inflation. Following outright economic contraction in the recession, there is a lacklustre uptick to around 2 per cent – an unprecedently weak recovery compared to history. Government finances are pressured by slower growth and rebuilding costs, while central banks are constrained in lowering interest rates because inflation remains above target. Although real interest rates fall, debt metrics are poor in this stagflationary environment.

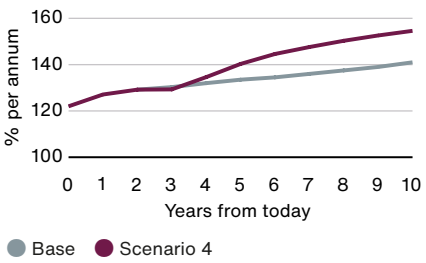
Global GDP growth



US inflation

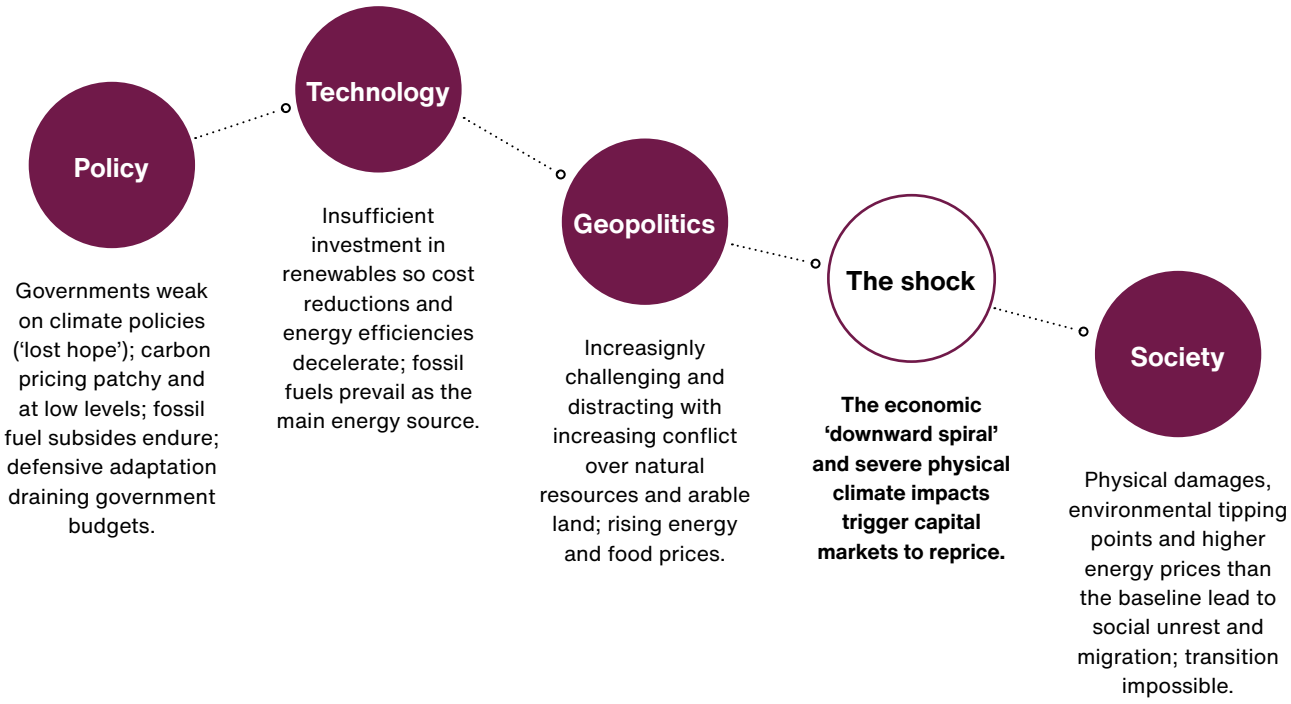


US debt/GDP



What are the key challenges to overcome?	Secular growth downtrend/recession eroding public and private sector will and ability; geopolitical conflict over resources and arable land; rising energy and food prices; cost reductions in key renewable and energy efficiency technologies stalling.
What saves the day?	Unlike our other disorderly scenarios, action in this scenario is insufficient and results in a Failed Transition.
What is the state of affairs in 2050?	The economic environment has been so challenging and distracting for policymakers that climate action has failed; it has resulted in a 2C temperature increase mid-century, with a 3C or higher temperature increase beckoning by the end of the century.

Downward spirals

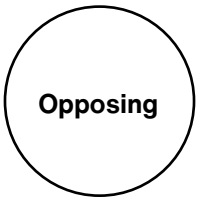


Scenario 4 overview

Key 'watch-fors'

Carbon pricing is patchy and at low rates

Cost reductions in key renewable and energy efficiency technologies are decelerating on slow take-up and coordination; planning and integration requirements are blocked



A technology break-through that allows a late stage transition at pace

Illustrative portfolio investment opportunities

Sovereign bonds

'Safe haven' assets within developed markets; bias towards food- or energy-producing markets within emerging markets

Infrastructure

Governments may feel spurred to make last-ditch funding concessions post-shock, even if it ultimately turns out to be insufficient

Commodities

In recession and amid risk-off sentiment, gold and other precious metals benefit from the 'flight to safety'; carbon credit prices rise with energy commodities

Illustrative portfolio investment risks

Government bonds

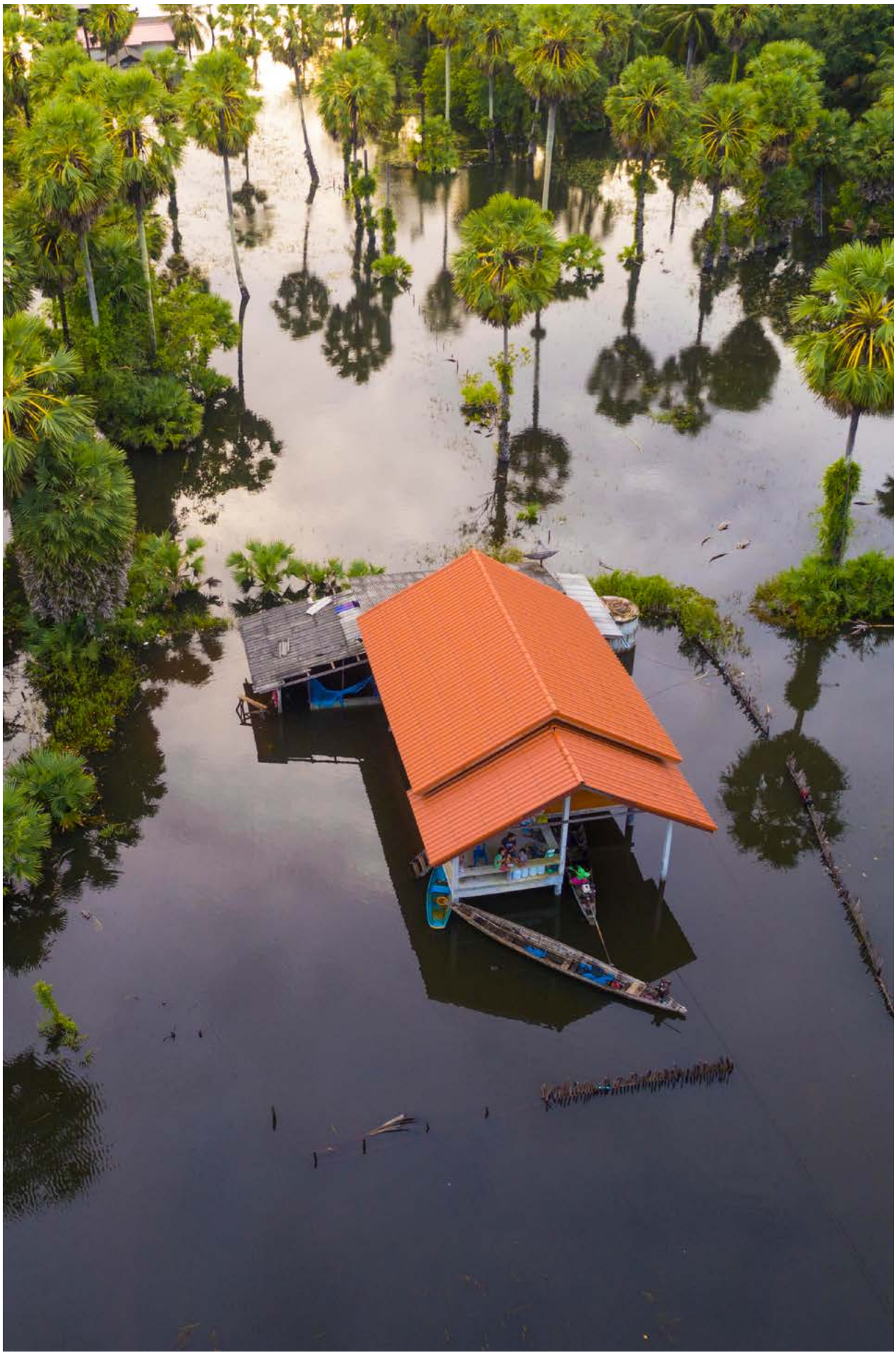
More volatile as governments have not been able to sufficiently invest in physical risk adaptation measures with ongoing build-back costs which are particularly severe in emerging markets

'Green' equity and bonds

Underperformance due to high carbon alternatives still benefiting from fossil fuel subsidies without a carbon tax burden

International supply chain disruptions

From fractious geopolitics and physical disruptions; near- or friend- shoring, where production moves to countries that are geopolitical allies, is preferred

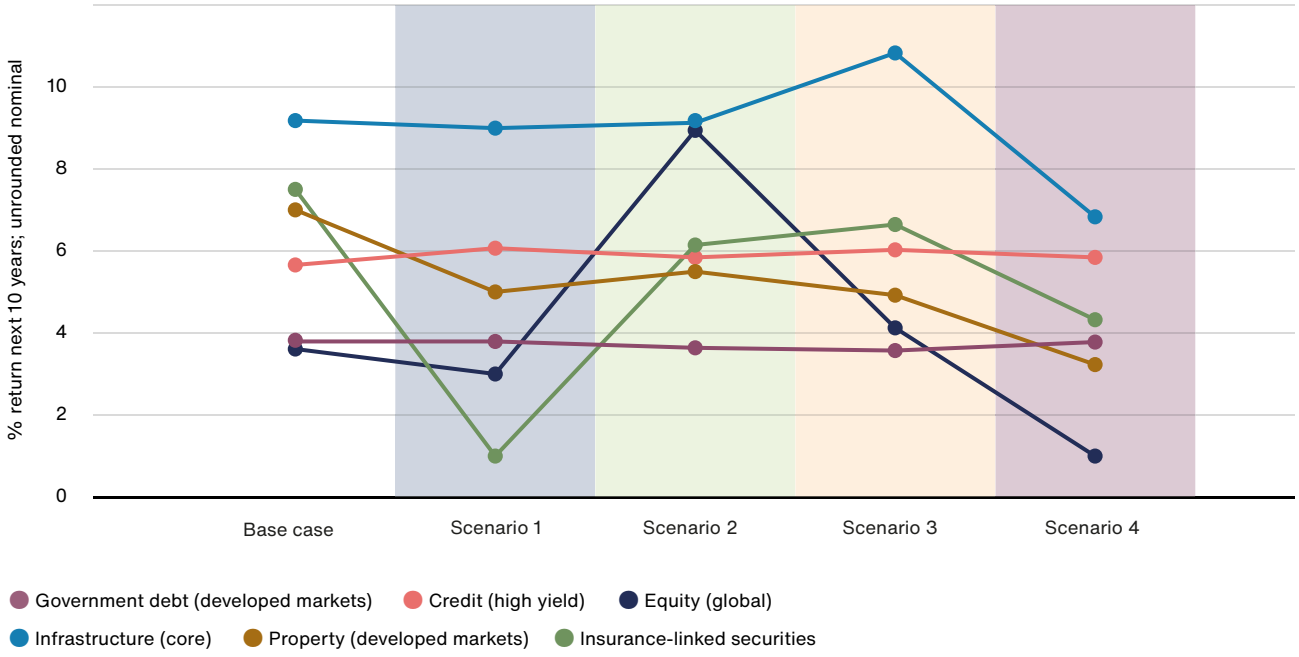


Market outcomes

The previous section outlined the likely macroeconomic impacts and investment implications of the investigated scenarios. Using our proprietary *Long Term Return Expectations* (LTRE) process and with input from our asset class specialist teams, we have prepared scenario-specific forecasts for the main asset classes used in our multi asset portfolios. The base forecasts shown below are adjusted by each climate transition scenario.

Our core LTRE analysis starts by forecasting returns from broad exposures to the main asset classes over the next decade. For some asset classes, such as listed equity and real estate, our analysis shows substantial differences between the scenarios at this top level. For others, such as developed market government bonds and credit, there is limited impact at this level, with more differentiation happening *within* the asset class.

Long-Term Return Expectations outcomes for selected asset classes



Generally, those scenarios which result in a successful, albeit late and disorderly, transition also result in better investment returns. In contrast, Scenario 4, the 'too little, too late' Failed Transition, encompasses a recession of sufficient depth and length to distract from climate action, damaging assets such as equity and property. Although corporate defaults are expected to be higher in this environment, its impact for the high yield asset class as a whole is largely offset by higher spreads and a higher underlying risk-free rate. This is the most differentiated of the scenarios we considered, and therefore would have the most wide-ranging investment opportunities.

The adjusted outcomes by scenario show us that, unsurprisingly, Scenario 2 – Positive technology momentum – in which private sector technological developments trigger virtuous circles, sees strong expected returns for listed equity markets, economic infrastructure and industrial metals (see the Appendix for a more detailed breakdown of the asset class forecast returns). The disorderly and disruptive natures of all the scenarios tested here are negative for the property sector, whether through physical impacts or the headwind from higher rates.

It may seem surprising that all tested scenarios show worse returns for certain asset classes than our baseline forecasts. This reflects that the specific scenarios selected are simply a small number of the infinite possible paths, successful and unsuccessful. Our baseline assumes a more generic Disorderly Transition rather than, for example, the midpoint of the scenarios tested here, which could miss material tail risk or, indeed, opportunity.

Our LTRE process runs every six months. One of the key benefits of this exercise has been thinking broadly and widely about the asset classes and assumptions included therein. In the future, we will feed this back into our regular process.

While this analysis focuses on the next decade, in some cases the most significant opportunities or risks lie over the shorter term, perhaps during or following the 'shock'. A good example here from within multi asset – but which is indicative of the types of considerations given to asset classes in general should particular elements of these scenarios play out – would be insurance-linked securities (ILS) in Scenario 1. Here, there are substantial capital losses leading up to and during the climate-related physical damage 'shock', but an even greater demand for even scarcer pools of reinsurance capital afterwards. Were we to see some of the Scenario 1 narrative and 'watch-fors' playing out, we would want to be dialling back portfolio exposure here and preserving capital ready to take advantage of the resulting improvement in return expectations post-shock.

Conclusion

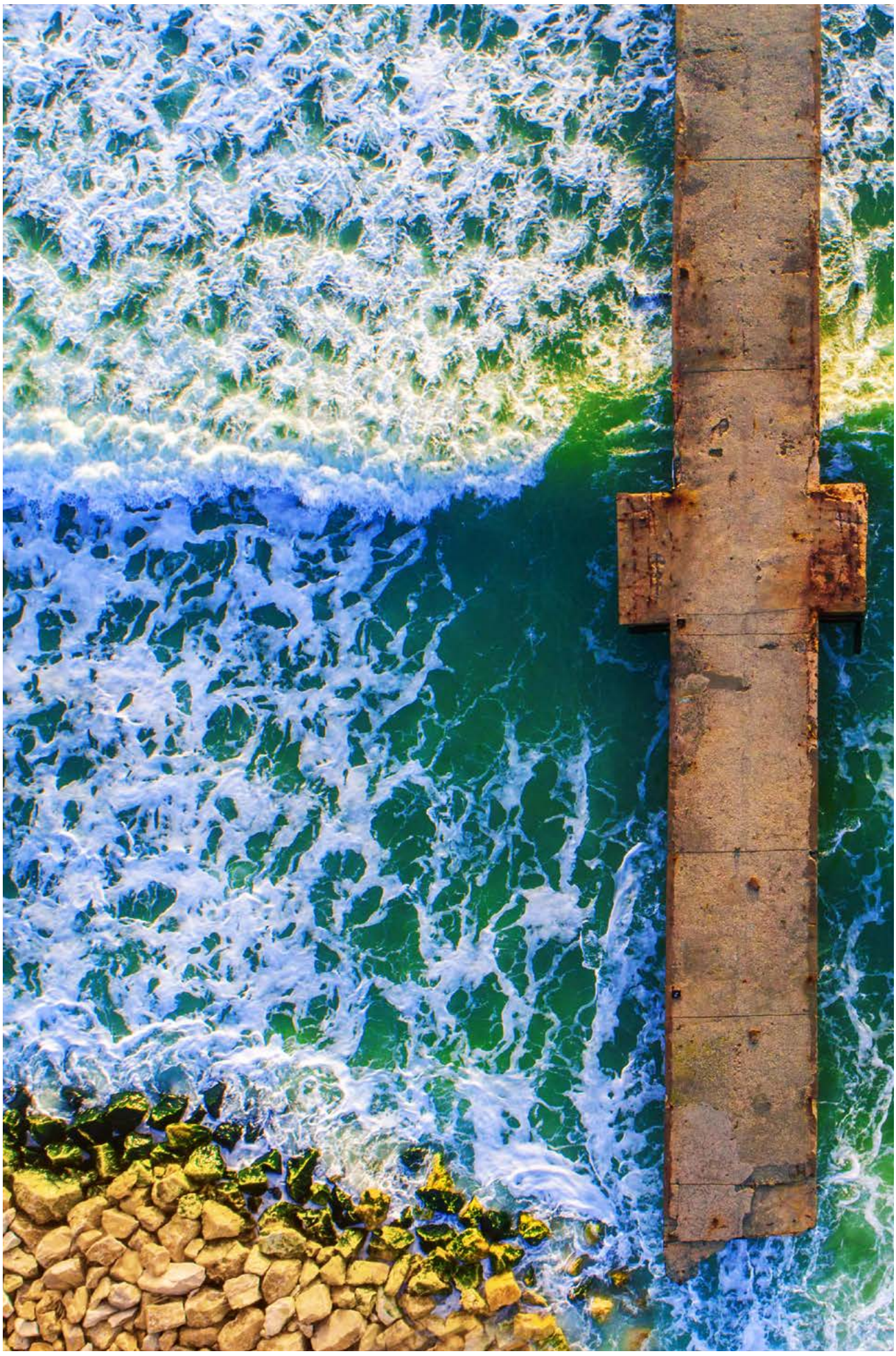
Building on the strong qualitative foundations developed in **Part One** of Baillie Gifford's climate scenario analysis, we considered and decided on the assumptions, narratives, and the scale, speed and interconnected nature of the reinforcing feedback loops within each chosen pathway outlined here in **Part Two**. While parts of this work relate to specific asset class return forecasting, the true value to our investment process has been the journey – the conversations and debates both within Baillie Gifford and with our external collaborators. Thinking through the chosen scenarios, their impact on the macroeconomic variables, and how they feed through to investment markets has been a deep and rich experience, and one from which we emerge more prepared to look for signals, signposts and surprises.

Climate-related physical and transition risks and opportunities can be correlated within the macroenvironment and asset classes. So, it is vital we consider and understand where the direct and indirect relationships are. Of far more interest for our investment research and portfolio management has been what is going on beneath and within the headline return forecasts, particularly:

- Which are the investment winners and losers within each asset class?
- Where are the proverbial canaries in the coal mines?
- And, what can we do today to make our portfolios more resilient for the array of possible tomorrows?

This imaginative analysis, debate and discussion boosts our understanding of asset class sensitivities, volatility, and 'winners' and 'losers' across the broad spectrum of physical damage, technology, market and geopolitical scenarios. It also helps us to more explicitly recognise the limitations and uncertainties of our broad base case. Even though we focused on four specific pathways, we can draw clear generalisations and act within portfolios; generalisations also remind us that specific scenarios are necessarily simplistic and are certainly not forecasts of the future.

By preparing in advance for plausible shocks, we can consider asset class sensitivities and investment opportunities more precisely over the long term. Ultimately, climate scenario analysis sets us up with a series of hypothetical 'game plans' should we find ourselves in similar scenarios over the coming years. By doing the work upfront and thinking broadly and deeply about the implications, we will be less surprised by any shocks and far better able to take effective and proactive steps for our clients.



Appendix: overarching scenario summaries

Hot House World

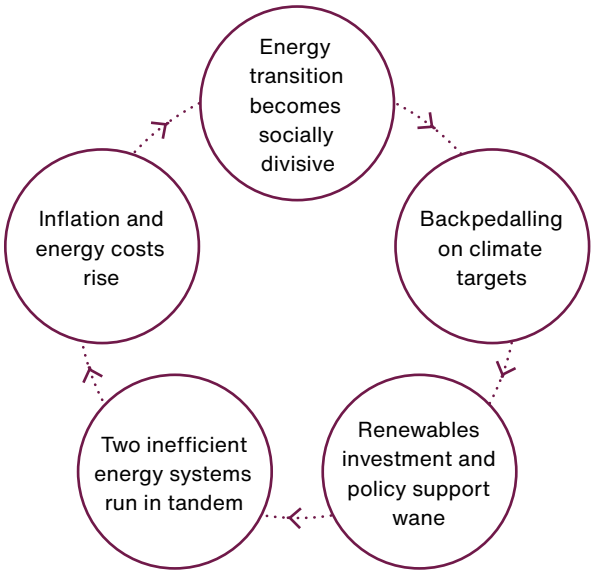
The Hot House World scenario depicts society's failure to contain the global average temperature rise to below 2C, with global warming exceeding 2.5C by 2100. The consequences of such changes are increasingly extreme:

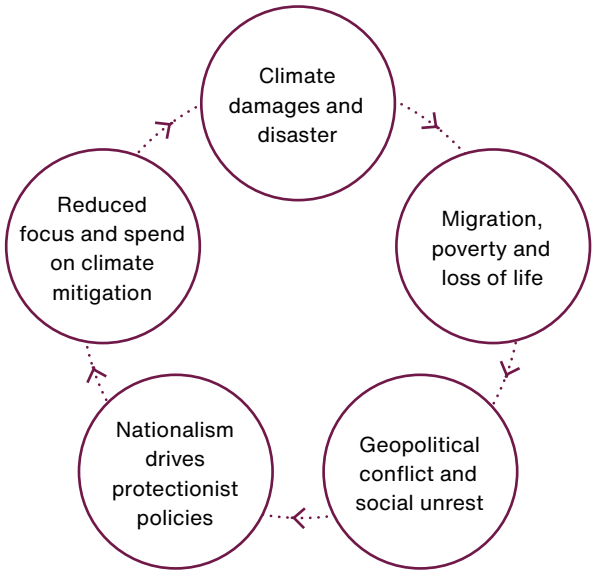
- severe physical damages lead to massive losses in lives and livelihoods;
- productivity and economic growth fall as supply-driven inflation rises;
- large swathes of land become uninhabitable and unsuitable for food production (inarable);
- migration towards more favourable climates drives conflict;
- and geopolitical divisions rise.

For many societies, the global climate impacts become simply unmanageable. This scenario aims to explore how humanity could become immobilised and unable to change course when facing such dire consequences.

Geopolitical hostility and conflict drive protectionist agendas, with globalisation going into reverse. The energy transition slows as nations vie for strategic positioning, seeking instead to invest in defence, support incumbent industries and protect national borders. A lack of predictable long-term investment results in poor technological progress, meaning cost and scale-based tipping points for vital technologies are not reached. The reliance on fossil fuels and high-carbon industrial processes is sustained. A Hot House World scenario produces a highly unequal world. Without the technological advancements or financial resilience to adapt globally, the wealthy and powerful thrive by exploiting the natural resources of the vulnerable.

Though climate risks accumulate gradually to begin with and do not trigger decisive climate action, impacts quickly unravel in a non-linear manner as extreme weather events become far more frequent and disruptive. The combination of physical damages, inefficient energy systems and geopolitical conflict results in a highly volatile and inflationary environment, leaving countries in a poor state to regain control. Importantly, though industry and politics are distracted by what is occurring, they are not passive. As climate impacts unfold, significant investment and innovation arise around adaptation – especially in agriculture, healthcare, disaster management and ultimately new energies.





Disorderly Transition

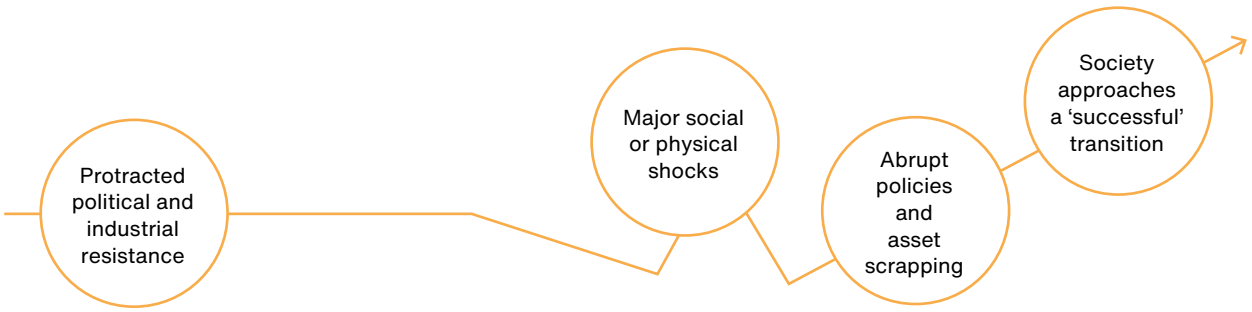
In the Disorderly Transition, the world initially follows an emissions trajectory on course for a Hot House World, driven by incumbent lobbies and political-economy resistance to the transition.

Contradictory policies and capital deployment provide incremental opportunities for new green sectors but still allow profits to accumulate for high-carbon incumbents. As time passes, the dire implications of the trajectory become more apparent, and pressure grows for a more ambitious response.

When the system is finally 'shocked' towards a successful transition, it is rushed and requires radical change and strong innovation to meet climate targets. The transition, therefore, relies on the rapid scaling of still relatively immature technologies and the scrapping of functional high-carbon assets. The transition is expensive because the world is not optimised for either energy system. Actual or shadow carbon prices are higher and more disruptive than they would have been if introduced earlier and more gradually. Inflation, too, is higher and more volatile as opportunities for an early energy transition are missed.

The transition is also less equitable and supportive of developing markets than the Orderly Transition. Within countries, fast scrapping of infrastructure and transitioning of sectors result in higher levels of unemployment. Between countries, the powerful seek to stabilise their economies by exploiting the materials, renewable capacity and natural resources of weaker nations.

Whereas the feasible pathways to an orderly and hot house transition are few[1], disorderly transitions come in many forms and are not preordained. Rather, they are the product of periodic forces, or shocks, that themselves are a reaction to the evolving situation. There is a near-infinite set of idiosyncratic disorderly scenarios. The one posed here is simply illustrative. That said, forces strong enough to materially shock the trajectory to success are probably limited in number. Many future pathways might look initially like a Disorderly Transition, but efforts could ultimately prove 'too little too late' to prevent a Hot House World. In our scenario, as 1.5C and perhaps even well below 2C targets are initially overshot, a significant amount of remedial carbon capture (both technological and nature-based) is required to correct the overshoot and avoid unmanageable climate impacts.



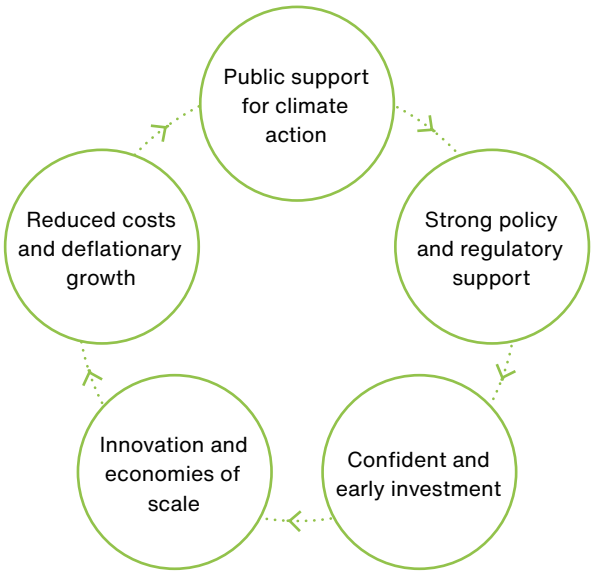
[1] Partly because they rely on the extreme ends of political and industrial action, but also because the Orderly Transition requires relatively minimal physical impacts to materialise, whereas the Hot House World – in which the climate becomes quickly unmanageable – requires near-worst case physical impacts.

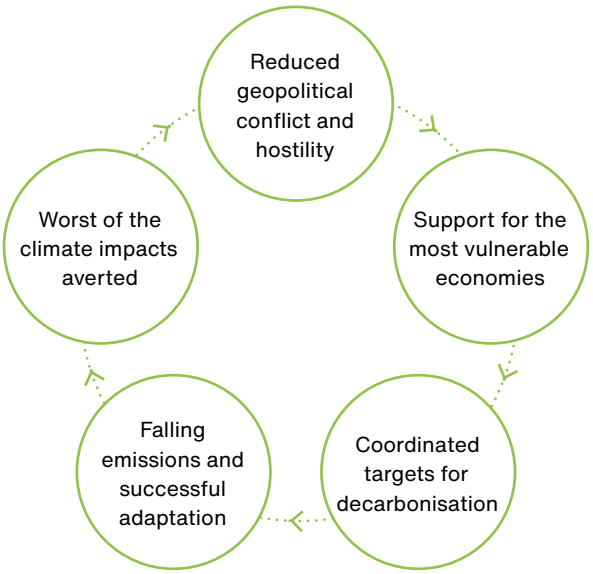
Orderly Transition

An Orderly Transition – containing the global average temperature rise to 1.5C by 2100 – assumes that climate policies are introduced early and become steadily more stringent. The scenario relies upon significant front-loading of policy and investment efforts to minimise climate damages in the long run. As a result, both physical and transition risks are relatively subdued. Fossil fuels are replaced rapidly by renewables and electrification. The strong policy support for the energy transition eliminates the inefficiencies of supporting old high-carbon systems. Energy efficiency and circularity are prioritised early and assisted by progress in AI, as well as pro-transition behavioural change. By 2050, both the geographies and industries of growth have been transformed – dominated by regions with relatively stable climates, favourable demographics and abundant access to renewables and transition materials.

Even at this level of warming, the physical realities society faces change: extreme weather events are more common and areas of the world are now unliveable and inarable. Adaptation requires significant investment but is largely successful: agricultural innovation and effective urbanisation counteract the worst of climate impacts. With land emerging as a yet more important asset class, natural carbon sinks are protected and restored, which in turn channels capital towards rural and emerging economies.

The orderly scenario is only feasible if powerful political and institutional feedback loops work together, driving rapid cost reductions, learning effects, economies of scale and technological tipping points. With the sheer scale, complexity, and interdependency of the needed changes, strong and undistracted policy support and global cooperation underpin this transition. Thus, geopolitical conditions must avoid conflict and favour free trade, investment flows and productive competition to benefit from the combinatorial effects of moving in tandem. Politics itself manages the transition's trade-offs, with public funds (expanded by carbon tax revenues) providing a pool of capital to buy 'losers' consent'.





Portfolio outcomes

Shock scenario 1: Physical climate risk

What scale of physical damage could turn public opinion without undermining society's ability to act?

Investment **opportunities** for asset classes				
Government bonds Into the shock developed market rate cuts, sticky inflation, fiscal spending cause curves to steepen. Overweight countries with low debt in 'safe' areas – Sweden, Canada. Emerging markets are generally okay; watch for insurance resilience v physical climate risk.	**Credit** Opportunities exist in sectors most affected by the shock, as well as adaptation solutions (in agriculture/food production), greenhouse gas reduction solutions and carbon capture solutions (CCS). Developed markets will likely outperform emerging markets as recovery spending begins at home.	**Equity** Potential near-term opportunities from indiscriminate selling immediately post-shock.	**Real assets** Reinstating damaged infrastructure and futureproofing will require significant investment. Supply shortages in key commodities in the pre- to mid-shock period gives positive asymmetry. Tailwind for transition commodities (copper, aluminium, silver, rare earth metals eg neodymium) in the rebuild.	**Alternatives** In the longer term, the need for insurance capital will likely drive premiums higher, so insurance-linked securities (ILS) could re-price even more attractively.
Investment **risks** for asset classes				
Government bonds Government bailouts are required to resolve crises in the insurance and reinsurance industries in developed market countries. Damaged debt dynamics trigger debt crises. Post-shock: In the Philippines, India, China, and the US, there is a high risk of hazard and low insurance coverage.	**Credit** High-emitting companies/industries may see credit rating downgrades, even amid recovery, and commensurately higher defaults. The credit markets of the worst-affected regions will underperform in the shock and the immediate aftermath. Also, as for government bonds, low-lying and over-exposed markets with under-insurance in emerging markets fair worse.	**Equity** Emerging markets are initially likely to underperform developed markets as recovery spending begins at home.	**Real assets** Real estate, and insurance in that sector, will be particularly affected by the destruction of property values in the most vulnerable areas; higher rates are a headwind for real estate generally. Longer term, it is potentially detrimental to infrastructure as power prices decline.	**Alternatives** Natural catastrophe ILS are likely to suffer directly in the shock from actual impairments and strongly negative sentiment. Aggregate structures, and those covering wildfires, will be especially vulnerable.

Shock scenario 2: Positive technology momentum

What happens when green technology efficiencies drive private sector competition at scale?

Investment **opportunities** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
Positive productivity shock benefits countries that (i) can deploy technology, (ii) are currently reliant on fossil fuel imports and (iii) are threatened by climate vulnerability. Developed market duration fares well; emerging market energy importers should re-rate positively.	Relative tailwind for energy-consuming corporates in this scenario – especially those able to adapt quickly to the new technologies.	'Race to the top', with the sudden increase in capital flows towards renewable technologies funded from outflows from fossil fuels. Winners: established green technology businesses; Europe is a more conducive environment, although industry consolidation may impact smaller firms. Valuations are better able to remain at elevated levels in this scenario. Opportunities in transition metal recycling.	Leveraged investment prompts a 'green' bubble; improved fundamentals and sentiment give outsized returns to leading infrastructure businesses, including large developed market utilities. Demand and prices of transition metals and minerals rise.	Trending markets and increased consolidation can benefit systematic momentum and arbitrage hedge fund strategies. ILS spreads to remain elevated. A low volatility regime may make portfolio insurance more attractive.

Investment **risks** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
Significant headwind for already-highly-indebted fossil fuel producers with a high cost base.	Fears for the long-term viability of those firms and industries 'left behind'. Wary of 'bad corporate behaviours' in strong macroenvironment post-shock – over-leveraging and storing up of future problems.	Sharp repricing of 'green' (sustainable) as opposed to 'brown' (unsustainable) assets and activities; particularly sharp devaluation and stranding of high-carbon, resource-intensive assets.	Lower power prices might translate to lower revenues on legacy renewable assets within infrastructure; and danger of technology obsolescence. Energy commodities and related sectors are in accelerated decline. Supply issues create bottlenecks during shock, but more efficient recycling of materials may eventually alleviate pressure.	With market dislocations likely, beware of certain commodity-related strategies. Limited difference from 'business-as-usual' for this group of strategies.

Shock scenario 3: Significant scaling up of climate finance

How could a significant increase in financial flows to emerging market countries accelerate the transition?

Investment **opportunities** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
Emerging markets benefit from: i) Financing flows. ii) Global economic growth is accelerating, and economic outcomes improve in the Global South. iii) Falling risk premia on investing in these markets.	Labelled debt (lower volatility rather than greater returns). Green technology businesses will be well placed, but equity-friendly practices may offset the environment. Emerging market companies stand to gain more from developed market countries' improved long-term growth and financial support.	Real asset flows from developed to emerging markets; sectors with the most scope for mitigation and likely capital inflows do best (eg transport systems, food production). Developed market 'green' technologies and emerging market industrials are likely to outperform as key beneficiaries of additional financing. There are opportunities for well-prepared and well-positioned emerging markets to leapfrog developed markets and other emerging market competition (eg India).	Real asset flows from developed to emerging markets; sectors with the most scope for mitigation and likely capital inflows do best (eg renewable energy generation and transmission; emerging market utilities benefit from enhanced access to capital). Focus on deploying core infrastructure in new technologies. Transition metals benefit from the build-out demand.	Trending markets and increased consolidation can benefit systematic momentum and arbitrage hedge fund strategies. ILS spreads to remain elevated. A low volatility regime may make portfolio insurance more attractive, together with some scope for near-term shocks.

Investment **risks** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
Emerging growth lagging initially – climate damage and societal disorder in emerging market countries is building. The 'greening' of emerging markets leads to stranded fossil-fuel-based assets and systems; and the avoidance of fossil fuel producers.	Government support will help, but high emitters may have to bear some transition costs. Lower margins and higher borrowing costs, plus the need to adjust to a different environment, will likely lead to marginally higher default rates than our baseline.	Domestic developed market growth opportunities are more muted. High US interest rates create a headwind for leveraged developed market companies, especially those not participating in the emerging market rush. There is the potential for European underperformance as immigration rises, affecting politics and focus; the US/China are better placed to lead in 'green' technology.	Developed market real estate muted in the headwinds of higher rates and diverted resources. Lower energy prices, in commodities and power prices, impacts legacy, passive developed market renewable operators.	Market dislocations are likely, so beware of certain commodity-related strategies. Limited difference from business-as-usual for this group of strategies.

Shock scenario 4: Recession and 'too little, too late'

What if economic and geopolitical distractions force climate actions to be too little, too late?

Investment **opportunities** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
'Flight to safety' – US treasuries and other 'safe haven' assets outperform. Relative tailwind for food- or energy-producing countries.	Once government bonds adjust to the high interest rate environment, investment grade and BB-rated bonds should do relatively well, but the focus should be on short-dated bonds. Companies with pricing power, such as consumer staples, will be a good fishing ground.	Defence spending takes priority over climate mitigation and adaptation. Fossil fuels, with subsidies enduring, prevail as the primary energy source.	Gold as 'flight to safety'. Energy commodities, including carbon credits, could increase prices due to dwindling supplies and weak renewables build-outs. Some 'green' infrastructure assets could see beneficial financing in this scenario, albeit without long-term fruition.	Protective strategies can offset losses in risk-on markets, and lowly correlated strategies can benefit in down-trending markets. ILS are a good diversifier in the near term, but the risks increase over the decade.

Investment **risks** for asset classes

Government bonds	Credit	Equity	Real assets	Alternatives
Repercussions in the emerging market world become severe, especially in hotter countries. This is particularly significant in the Indian subcontinent and Sub-Saharan Africa, where it leads to social unrest and migration. Geopolitical conflict over resources/ arable land; rising energy and food prices likely to pressure emerging market countries.	Emerging supply constraints further drive near- or home-shoring and deglobalisation. Initially, high funding costs and weak recovery will push high yield default rates higher. The worst scenario for credit investors is higher default rates and few winners, even in a relative sense.	'Green' investments are not given priority and are underperforming. There is pressure on valuations throughout, with those already on near all-time highs poised to suffer more. Widespread losses, and even bankruptcies, as recession hits. Cyclical sectors and volatile stocks suffer most. Insurance sector – rising defaults across corporates affected by the worsening effects of climate change.	Real estate, and insurance in that sector, will be particularly affected by the destruction of property values in the most vulnerable areas, as in Scenario 1. Recession sees industrial commodities in decline, including transition metals.	Governments exploit natural commodities despite environmental costs. ILS losses to natural disasters, as in Scenario 1, become chronic and threaten the viability of the asset class in the long run.

Macroeconomic 10-year forecasts by scenario*

Stock	Base**	Scenario 1: Physical climate risk	Scenario 2: Positive technology momentum	Scenario 3: Scaling up of climate finance	Scenario 4: Too little, too late
US growth (<10 years, %)	2.2	2.0	2.8	2.8	1.4
US growth (>10 years, %)	2.0	2.3	2.8	2.5	1.3
US government debt/GDP (%)	141.0	139.0	103.0	127.0	155.0
China growth (<10 years, %)	3.4	3.3	4.8	5.0	2.0
China growth (>10 years, %)	2.6	3.8	4.8	5.0	1.5
US productivity (% per annum)	1.9	2.1	2.6	2.5	1.5
US inflation (PCE†, % per annum)	2.0	2.0	1.8	2.0	3.0
China inflation (% per annum)	2.0	2.0	1.8	2.5	2.5
US policy rate (in 10 years)	3.3	3.8	4.0	4.3	4.2
US bond real yield (in 10 years)	1.3	1.8	2.3	2.3	1.2
US bond 10 year yield (in 10 years)	3.8	5.0	4.6	5.1	5.9
EURUSD	–	+3.0	-5.0	-1.0	+3.0
CNYUSD	–	+4.0	+10	+9.0	0.0

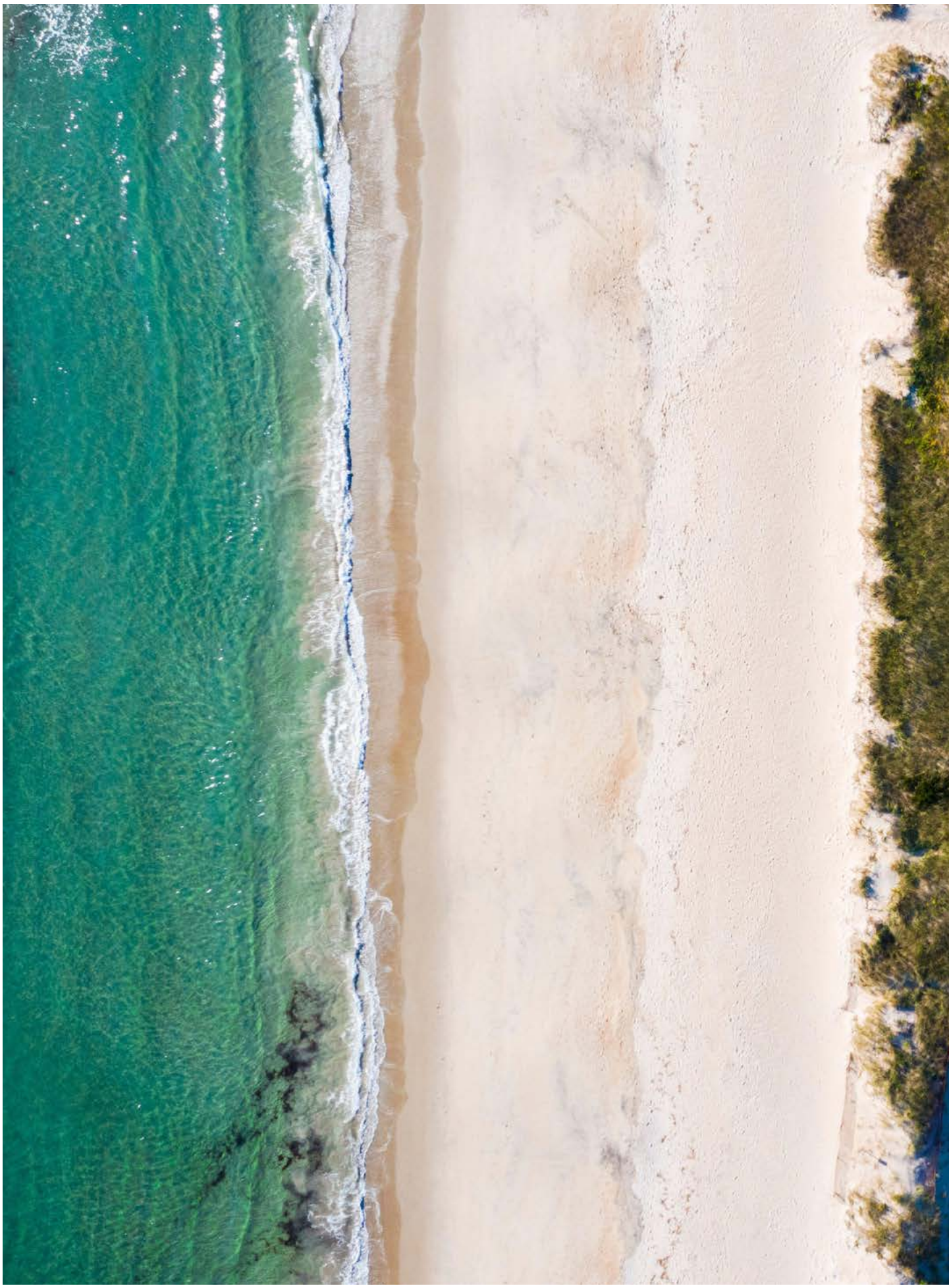
* Productivity, inflation, policy and exchange rates are post-shock run rate per annum.

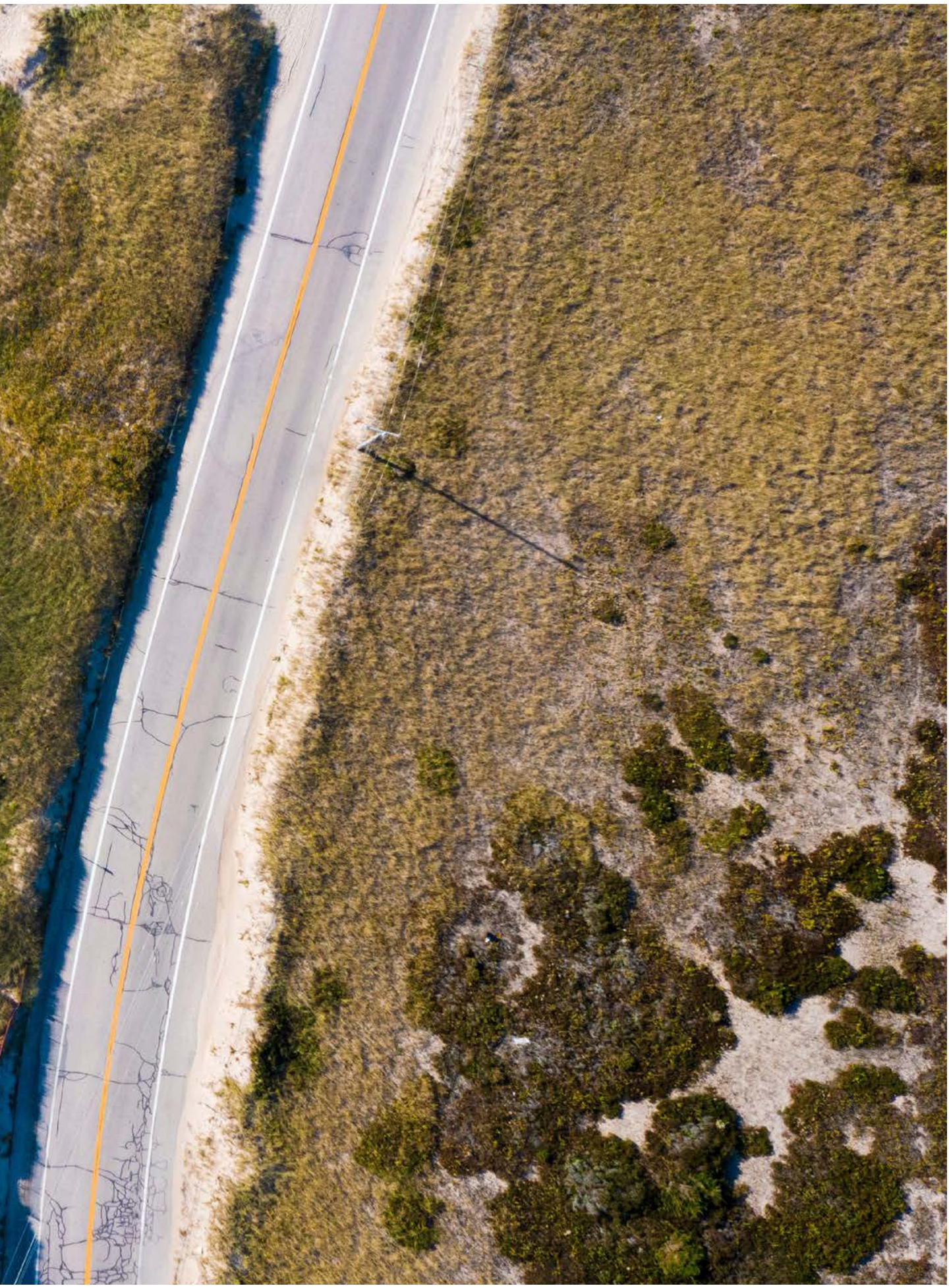
** The base case shown here is as at the end of June 2024.

† Private Consumption Expenditure.

Market outcomes: Long-Term Return Expectations, as at June 2024

		Expected nominal returns (next 10 years, % per annum; rounded to nearest 0.25%)				
	Asset class	**Base %**	**Scenario 1 %**	**Scenario 2 %**	**Scenario 3 %**	**Scenario 4 %**
Cash	UK cash (Bank of England base rate)	3.00	4.00	3.75	4.25	4.00
Equity	Growth equities	3.00	3.00	10.00	4.00	-0.25
	Value equities	4.75	3.25	8.00	4.75	3.25
	Emerging market equities	7.50	5.00	9.00	12.00	3.75
	Core equities	3.75	3.00	9.00	4.25	1.25
Credit	Investment grade/crossover credit	5.25	5.00	4.75	5.00	5.00
	Developed market high yield	5.75	6.00	6.00	6.00	5.75
	Emerging market high yield	6.25	6.75	6.50	6.75	6.75
	Loans	7.00	7.75	7.75	8.00	7.25
	Senior structured finance	4.25	5.25	5.00	5.50	5.25
	Leveraged senior structured finance	7.25	8.25	8.00	8.25	8.50
	Mezzanine structured finance	7.50	8.50	8.25	8.50	8.25
Real assets	Agricultural commodities	3.00	4.00	3.75	4.25	4.00
	Industrial metals commodities	4.50	9.75	10.75	11.25	3.25
	Precious metals commodities	3.00	4.00	3.75	4.25	4.00
	Energy commodities	3.00	4.00	3.75	4.25	4.00
	Core infrastructure	9.25	9.00	9.25	10.75	6.75
	Economic infrastructure	8.75	12.25	11.25	15.50	12.25
	Property	7.00	5.00	5.50	5.00	3.25
Rates and currencies	Developed market government debt	3.75	3.75	3.75	3.50	3.75
	Emerging market hard currency debt	7.50	7.25	7.50	7.25	7.00
	Emerging market local currency debt	5.75	6.00	6.00	6.00	6.00
	Active currency	3.00	4.00	3.75	4.25	4.00
Alternatives	Protective strategies	-45.25	-45.00	-45.00	-45.25	-45.00
	Uncorrelated strategies	4.50	5.00	5.75	6.25	6.00
	Insurance linked securities	7.50	1.00	6.25	6.75	4.50





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