



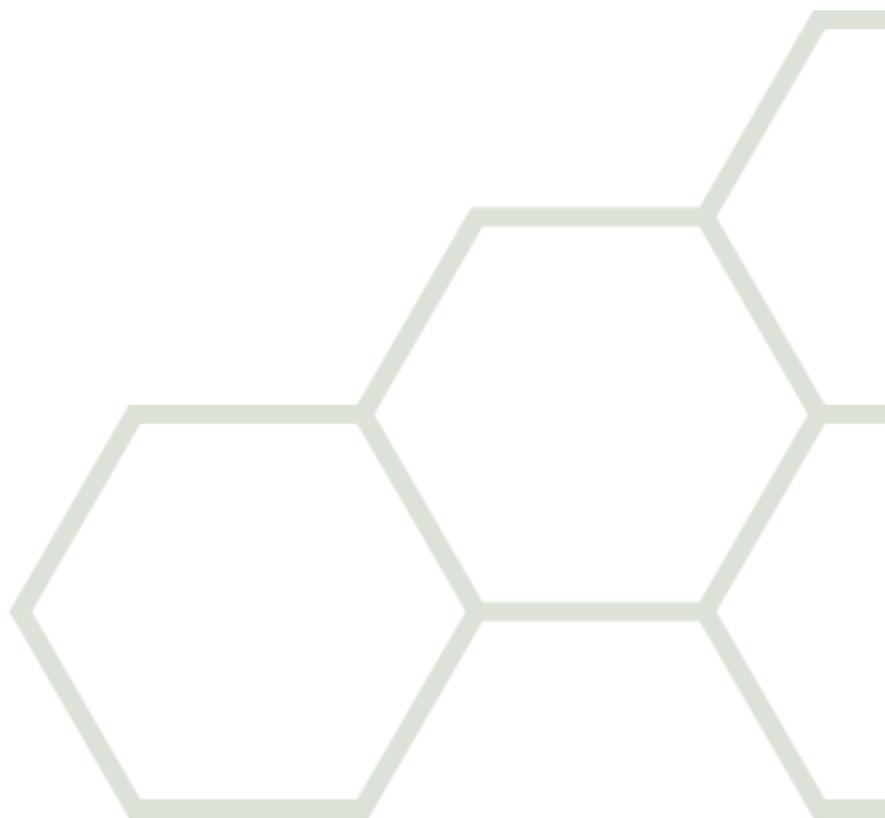
Task Force on Climate-related Financial Disclosures (TCFD) Report

2022



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Foreword

The challenge

Russell Investments formally endorsed the Task Force on Climate-related Financial Disclosure (TCFD) in 2019 in recognition that climate change is a monumental challenge and that asset managers have a critical role to play. Incorporating climate-related risks into the financial system is a crucial first step in pricing risk, and capital flows will be needed to meet global ambitions for energy transition. In this, our inaugural report focused on climate, we set out Russell Investments' climate response and related disclosures in line with the TCFD recommendations.

Our vision

We are committed to driving progress. As active owners of the companies in which we invest, we promote the TCFD's recommendation that companies provide effective climate-related disclosures that enable more informed financial decision making. We advocate for companies to have board-level oversight and governance of climate change impacts. We also hold ourselves accountable for providing transparency around our own investments and operations. In addition, we take seriously our role in partnering with clients to meet their climate objectives.

Progress to date

We have made considerable progress incorporating climate considerations into our business. In the following report, we outline the key climate-related risks and opportunities identified and assess them using metrics and scenario analysis in accordance with the recommendations of the TCFD. We share policies developed for formally and systematically addressing sustainability risks, and the practices we continue to evolve to integrate climate awareness into our investment process. We believe active ownership is an important lever for delivering investment outcomes and is also one of the most effective tools at our disposal to effect change. Progress to date has included:

Enhancing processes for **climate risk and opportunity identification, assessment, and management**

- **Establishing appropriate governance**
Establishing governance around climate risks, including development of a climate change policy, addition of climate risk to our risk management dashboard, and identification of individuals responsible for our climate response.
- **Extending quantitative research**
Expanding the depth of our quantitative risk assessment capabilities for transition and physical risk, including breakdown by channel through a partnership with a climate model specialist.
- **Policy development**
Enhancing the process through which climate risk is managed in portfolios, as detailed in our Sustainability Risk Policy. The key elements of this policy direct investment professionals to leverage data, sub-adviser insights and in-house expertise to identify and manage sustainability risks.
- **Active ownership**
Engaging with investee companies on the topic of climate change – with over 32% of our corporate engagements covering climate issues in 2021.
- **Solution development**
Managing carbon reduction portfolios, as we have done since first launching low carbon strategies in 2015, with a track record of enhancements to the approach as best practices and data evolves.

Taking **collaborative action**, in recognition that tackling climate change requires global coordination

- **Aligning with other investors** to encourage comparable disclosures and consistent regulatory frameworks, which is a necessary step to improving the availability and quality of data. This is fostered through our support for the [Carbon Disclosure Project \(CDP\)](#), the [TCFD](#), and consultations with groups such as the [Investment Company Institute \(ICI\)](#), and the [Department for Work and Pensions \(DWP\)](#).
- **Engaging collectively** with systemically important emitters as a powerful tool for driving change. This includes our support for [Climate Action 100+](#) and other collective engagement channels as detailed in our Active Ownership Report and sections that follow.
- **Sharing best practices** across industry practitioners to facilitate information sharing and collective knowledge building. This includes collaborations with, and support for, the [Institutional Investors Group on Climate Change \(IIGCC\)](#) and the [Transition Pathway Initiative \(TPI\)](#), among others.

Looking ahead

Despite considerable progress, we know this is only the beginning of a long journey for our organisation and the global investment community at large.

Most immediate on our horizon is our commitment to the net zero asset managers' initiative. Our commitment involves rapidly raising knowledge across teams, building new capabilities, and setting ambitious targets around what it means for our portfolios to be aligned to a net zero by 2050 objective, always with a client first, fiduciary focus.

We are also ramping up our coverage of active managers with a focus on climate considerations, and sustainable strategies more broadly. We continue to seek out data sets that provide valuable insight into the climate exposures of our portfolios, taking advantage of exciting improvements in the climate data landscape.

This report

In this report, we provide disclosures on progress to date and direction forward, outlining:

- Governance as a cross-cutting theme that impacts all aspects of our climate response
- Climate risks and opportunities identified
- Metrics and scenario analysis used to analyse the risks identified
- Strategies and policies developed for formally and systematically addressing sustainability risks
- Progress in active ownership, which we believe is an important lever for delivering investment outcomes and one of the most effective tools at our disposal to effect change

We commit to continuing the journey of our own disclosure, and our ability to deliver robust, climate-aware solutions to our clients. Thank you for coming along with us.



Michelle Seitz
Chairman and CEO,
Russell Investments



Kate El-Hillow
Chief Investment Officer,
Russell Investments



Key highlights

Firmwide **net zero** commitment in April 2021

Commitment to achieve **net zero** for business operations by 2030

Climate related engagement themes:

- **Climate change resilience**
- **Natural capital**

USD 8bn¹ investment in accordance with our decarbonisation strategy

ESG integrated into our manager research ranking process since 2014

Active participant of Climate Action **100+**

32% of our corporate engagements covering climate issues in 2021

Voted on **118** climate-change related proposals in 2021

Partnership with climate risk specialist **finalised in 2021**

¹ As at 31 December 2021



Summary disclosure against TCFD recommendations

The TCFD's recommended disclosures are organised according to the four pillars of Governance, Strategy, Risk Management and Metrics & Targets. Below we provide a summary of our disclosures against the 11 recommendations, as well as the location of relevant disclosures in our report.

TCFD PILLARS	RECOMMENDED DISCLOSURE	SUMMARY DISCLOSURE	SECTION
GOVERNANCE	Describe the board's oversight of climate-related risks and opportunities.	Russell Investments' Board of Directors is ultimately responsible for the strategic priority, corporate governance and long-term stewardship of the firm. Direct oversight is carried out by the firm's most senior internal committee, the Executive Committee (EC), which reports directly to the board.	1
	Describe management's role in assessing and managing climate-related risks and opportunities.	The Chief Administrative Officer is ultimately responsible for the firm's operational climate response and target setting. The Investment Strategy Committee, which is the highest investment governance body, and the Global Risk Management Committee are ultimately responsible for assessment and management of climate-related investment risks.	1
STRATEGY	Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	Climate-related investment risks and opportunities include identified transition and physical risks & opportunities in our portfolios, and are detailed in Figure 1 (pg 9) of section 2a along with relevant time horizons.	2a
	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	Impact on investment process is material and detailed in section 2. Business operational footprint and targets are being actively developed.	2, 3
	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Scenario analysis of investment portfolios detailed in section 2b.	2b
RISK MANAGEMENT	Describe the organisation's processes for identifying and assessing climate-related risks.	Carbon footprinting and scenario analysis identified as key tools. Further details supplied in climate action plan.	2a, b
	Describe the organisation's processes for managing climate-related risks.	Formal policies, enhanced practices, active ownership, carbon managed portfolios and target setting. Further details supplied in climate action plan.	2c
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	Detailed in section 2 and governance sections.	2a, 3
METRICS & TARGETS	Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	Carbon footprinting metrics (weighted average carbon intensity and financed emissions), scenario analysis, supplemented by temperature alignment.	2b
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	See page 11 for carbon footprint disclosures.	2b
	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	See section 3 for a description of our Net Zero by 2050 Commitment.	2c



Section 1: Governance of climate-related risks and opportunities



Climate-related risks and opportunities have been identified as a strategic priority for the business and as a result significant consideration has been put towards establishing the appropriate governance frameworks to identify, assess and manage these risks and opportunities.

Governance is a cross-cutting theme that touches on all aspects of our climate response. We have established a clear governance framework to identify, assess and manage climate-related risk and opportunities. We will continue to review our approach to ensure that the risk and opportunities arising from climate change are given the appropriate amount of focus and attention by senior executives within our firm.

Board oversight

Russell Investments' Board of Directors - which is chaired by our Chief Executive Officer - is ultimately responsible for the strategic priority, corporate governance and long-term stewardship of the firm. The EC is the most senior management group at Russell Investments and is responsible for determining the company's business strategy and overseeing its implementation. Climate-related risks and opportunities have been identified as a strategic priority for the business and as a result significant consideration has been put towards establishing the appropriate governance frameworks to identify, assess and manage these risks and opportunities.

The firm's TCFD report is tabled annually at the Audit and Risk Committee meeting. This provides the Board with an opportunity to further deepen their understanding of the firms' exposure to climate risk. The Group Board, through the Executive Committee (EC) and Audit and Risk Committee, has delegated oversight of the risks associated with climate change to the Chief Administrative Officer, the Investment Strategy Committee and Global Risk Management Committee.

Exhibit 1: Global governance committees



Source: Russell Investments, for illustrative purposes only.

Chief Administrative Officer

The Chief Administrative Officer is responsible for the identification, assessment and management of climate related risk and opportunities arising from the firm's business operations (i.e., excluding investments). Progress against the firm's net zero commitment in relation to its business operations is tabled annually at the EC meeting.

Investment Strategy Committee

The firm's Investment Division (ID) is responsible for undertaking all investment activities in respect of assets which the firm manages or administers for clients. The ID is governed by the Investment Strategy Committee (ISC), which is authorised by the EC to oversee investment activities, as well as reviewing performance and establishing investment policy and strategy. The ISC is responsible for the identification, assessment and management of investment portfolios' climate risk and opportunities. This committee also maintains the firm's Sustainability Risk Policy. The key elements of this policy direct investment professionals to leverage data, sub-adviser insights and in-house expertise to identify and manage sustainability risks (including climate risk).

The ID Responsible Investing Committee, which reports to the ISC, ensures that the data, infrastructure and processes are in place to support the effective assessment and management of climate-related risk and opportunities. The group consists of responsible investing experts from across our research and portfolio management teams and is empowered to propose improvements in stewardship and investment practice to be approved by the ISC.

Global Risk Management Committee

The Global Risk Management Committee (GRMC) plays a critical global role in our risk management and provides an independent global authority on the assessment of climate risk and needed controls essential to effective management of the firm's climate risk.

GRMC membership comprises the most senior officers of Russell Investments including the Chief Operating Officer, Vice Chairman, Global Chief Investment Officer, Chief Financial Officer, Chief Risk Officer and other senior management. This committee is operated by Global Risk Management ("GRM"), Russell Investments' independent enterprise risk management function. The committee meets at least quarterly to review and evaluate the material risks inherent in Russell Investments' business, as reported through the regional risk committees, as well as providing guidance to the senior executives and business units on firm-wide risk issues. Together, the GRMC and the board's Audit and Risk Committee (which the GRMC report into on a quarterly basis) work to establish Russell Investments' overall risk vision, risk management framework and risk management objectives.



Section 2: Climate action plan



The first step in managing climate-related risks in investments is identifying them. We recognise that different risks are likely to manifest over different time horizons and that they require different tools to assess

The following section details our investment climate response, adopting the TCFD framework of identification, assessment, and management. We begin by **identifying** climate risks and opportunities, including relevant measurement tools and time horizons. We then **assess** them using carbon footprint metrics and scenario analysis. Finally, we outline our **management** of climate issues including our sustainability risk policy, enhanced practice, active ownership, carbon managed portfolios, and target setting.

In recognition of the fact that our investments are a material aspect of both where the climate impacts our business, and where our business will have an impact on the climate, our climate action plan emphasises the impact on our investment portfolios, also referred to as Scope 3 (Category 15) emissions². However, we also recognise the need to incorporate these principles into our own operations, and we provide details related to our operational footprint in Section 3.

For background

Throughout our climate action plan we preface topics that benefit from additional detail with a “For Background” section in this format. Readers building familiarity with these concepts may find these useful, while others may want to skip directly to disclosures.

² https://ghgprotocol.org/sites/default/files/standards_supporting/Chapter15.pdf

Section 2a: Identification of climate-related risks and opportunities

The first step in managing climate-related risks in investments is identifying them. There are many mechanisms through which climate-related factors impact security prices and these risks can be broadly categorised as transition or physical risks. We recognise that different risks are likely to manifest over different time horizons and that they require different tools to assess, as outlined below.

Table 1: Snapshot of the climate risk identification and assessment process

RISK OR OPPORTUNITY IDENTIFIED	DESCRIPTION	EXAMPLES OF ASSESSMENT TOOLS	MOST RELEVANT TIME HORIZON
Transition Risks & opportunities	Risks arising from shift to low carbon economy	Scenario analysis (esp. transition scenarios), metrics	Medium term
<ul style="list-style-type: none"> Changes in cost 	Price on carbon, costs of abatement	Carbon footprinting metrics	Short and medium term
<ul style="list-style-type: none"> Changes in demand 	Demand destruction and creation arising from shifts in demand	Scenario analysis (esp. transition scenarios), metrics on green revenues or climate solutions, exposure to potentially stranded assets	Short and medium term
Physical Risks	Physical risks can be event driven (acute) or longer-term shifts (chronic) in climate patterns	Scenario analysis, (esp. hot house world scenarios)	Long term
<ul style="list-style-type: none"> Acute 	Increased severity of extreme weather events	Scenario analysis (esp. hot house world scenarios), asset-level risk mapping	All but increasing severity long term
<ul style="list-style-type: none"> Chronic 	Changes in weather patterns, rising temperatures, rising sea levels	Scenario analysis (esp. hot house world scenarios), estimated sensitivity to productivity impacts, heating/cooling days	Medium and long term

Climate risk is characterised by a longer time horizon than many traditionally managed risks. To make this more explicit, short- to medium-term horizons in this document refer to a three-to-ten-year horizon, and a long-term horizon refers to the period out to 2050, although we note these are rough approximations only.

Before diving into the assessment of our exposure to climate-related risk and opportunities, we provide a brief overview of the portfolio used in the analysis that follows.

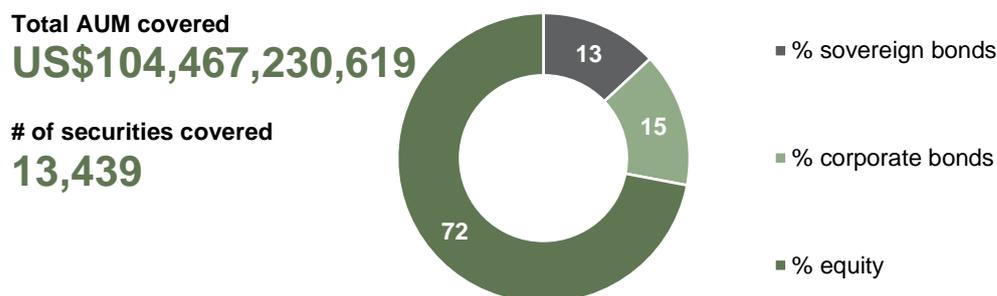
A note on Russell Investments' global portfolio

As an outsourced CIO provider, Russell Investments manages portfolios that are multi-asset and multi-manager. For the sake of understanding our exposure to climate-related risks and opportunities, we aggregated approximately 45% of our total AUM into what we refer to as our global portfolio throughout the remainder of this report.

While we manage assets in almost every asset class, we have chosen to focus this analysis on listed equities, corporate debt, and sovereign debt because this is where we have the most confidence in the available data. As data quality and availability improves across private assets and alternatives, we plan to expand this initial analysis in subsequent reports.

While the purpose of this TCFD-aligned disclosure is to assess and report our climate exposure based on this global portfolio, investment decisions generally occur at the individual client or fund level. As a result, we also plan to provide details of the exposure of individual funds in future papers.

Exhibit 2: Summary of the Russell Investments Global Portfolio



Source: Russell Investments, as at 31 December 2021.

Section 2b: Assessment of climate-related risks and opportunities

There are several methodologies available to assess the climate exposure of an investment portfolio. In our own analysis, we have focused on two primary pillars for our core assessment:

1. Carbon footprinting
2. Scenario analysis

The primary pillars of carbon footprinting and scenario analysis are supplemented with an additional metric, a temperature alignment score. This is a metric that is appealing in that it is easy to interpret, and as a result we expect its use to continue to grow. However, we note considerable variation exists in current methodologies, as detailed in the sections that follow.

By measuring exposure on a multidimensional basis, we hope to develop a more robust understanding of risk exposures both on a current and forward-looking basis.

Carbon footprinting

For background

There are both economic and non-financial motivations for measuring and managing the carbon emissions of an investment portfolio. Not only can carbon metrics provide insight into exposure to transition risk, as described below, but they can also be used to estimate a portfolio's contribution to real world emissions. In other words, carbon metrics can be used to estimate the impact that a firm has on the climate, and the potential impact of climate-related risk on the portfolio, a concept called double materiality. Unfortunately, a single metric does not exist that captures both these important dimensions, and we therefore use two metrics in our analysis.

The first metric is the **Weighted Average Carbon Intensity (WACI)**. This is an intensity-based measure, meaning that an entity's emissions are scaled by revenue. This serves as a transition-risk-related proxy for revenues available to cover the cost of emissions and captures how efficiently a company manages their carbon emissions relative to their output. An additional benefit of this carbon intensity metric is that it enables the comparison of large companies to those with much smaller operations and is well suited to comparing portfolios of different sizes. It doesn't depend on the concept of ownership share and is therefore well suited to a variety of asset classes. This is also a key metric recommended by the TCFD.

$$\sum_n^1 \left(\frac{\text{Current value of investmnt}_i}{\text{current portfolio value}} + \frac{\text{issuer's scope 1 and scope 2 GHG emissions}_i}{\text{issuer's \$M revenue}_i} \right)$$

The second metric is designed to capture the absolute emissions that a portfolio is responsible for, or “owns”, and for this we follow the guidance as shared by the Partnership for Carbon Accounting Financials (PCAF) in using a financed emissions metric. This allows us to link the carbon emissions of our portfolio to a global carbon budget and to show changes on an absolute basis.

$$\text{Financed emissions} = \sum_c \frac{\text{Outstanding amount}_c}{\text{Enterprise Value including Cash}_c} \times \text{Company emissions}_c$$

To facilitate a comparison over time, we have chosen to standardise the above calculation of financed emissions by the total portfolio value to allow for more compatible year-over-year comparisons.

In the analysis that follows, we use asset-level Scope 1, 2, and 3 greenhouse gas (GHG) emissions. These are then rolled up to the portfolio level according to the above formulas (weighted average or ownership share). Note that while we have begun reporting against Scope 3 for the sake of transparency, we note that there still exist serious data challenges for Scope 3 reporting at the asset level, and only use Scope 1 and Scope 2 emissions when managing portfolios or for target setting purposes. Over time as Scope 3 data improves, we intend to phase in its use more broadly.

Finally, note that the discussion above of Scope 1, 2 and 3 emissions refer to the emissions of the *entities* in which we invest (companies, sovereign, etc.). As an asset manager, our *own* Scope 1 and 2 emissions refer to our operational footprint and emissions from power generation. Our portfolio emissions discussed above and reported in the sections that follow can be classified as our own Scope 3 portfolio emissions.

Carbon footprinting

Table 2: Weighted Average Carbon Intensity (WACI)

FUND	WACI – Scope 1 (tCO2eq per million USD revenue)	WACI – Scope 2 (tCO2eq per million USD revenue)	WACI – Scope 3 (tCO2eq per million USD revenue)
Russell Investments Portfolio	163	48	632
MSCI World Index	107	29	402
MSCI Emerging Markets Index	250	77	936
BaML Global High-Grade Index	219	34	726

Source: Russell Investments, Planetrics, MSCI, BaML. Portfolio and emissions data as at 31 December 2021.

Table 3: Financed emissions per million invested

FUND	Financed Emissions – Scope 1 (tCO₂eq / \$mil invested)	Financed Emissions – Scope 2 (tCO₂eq / \$mil invested)	Financed Emissions – Scope 3 (tCO₂eq / \$mil invested)
Russell Investments Portfolio	65	18	238
MSCI World Index	32	8	125
MSCI Emerging Markets Index	111	24	415
BaML Global High-Grade Index	71	12	255

Source: Russell Investments, Planetrics, MSCI, BaML. Portfolio and emissions data as at 31 December 2021.

The above metrics are calculated based on coverage of approximately 77% of the global portfolio. Notably, sovereign bonds do not have coverage at this time, although they are included in the scenario analysis results that follow. We intend to report sovereign emission exposure in subsequent versions of this report.

On their own, carbon metrics can be difficult to interpret, however, they serve as a useful baseline for tracking progress against emission reduction targets over time. Comparing to common benchmarks can also provide useful context.

Key observations from carbon footprint assessment:

- Emerging markets have a significantly higher emissions than either developed equity markets or the global bond index.
- The global bond index has higher emissions than developed market equities.
- Reflecting this multi-regional and multi-asset exposure, our Russell Investments Global Portfolio has higher exposure than developed equities and lower than either emerging markets or global bonds
- Scope 1 is consistently 3-4 times the magnitude of Scope 2, except for the bond index where it is considerable higher (i.e. Scope 1 is approximately 6x Scope 2).
- Scope 3 is approximately 3 times the magnitude of Scope 1+2. Given low levels of reporting and inconsistencies in methodology used to report Scope 3, it is premature to draw robust conclusions based on this data.

Looking forward:

- We will continue to track carbon metrics to understand the organic decarbonisation taking place in the broad market, in addition to tracking our relative exposure over time.
- Targets are placed for reducing exposure to carbon metrics in many of our sustainable strategies. Additionally, reduction targets will feature as one component of our approach to managing portfolios in line with a net zero objective, more details of which are provided in the net zero target setting section below.
- We will continue to evaluate the quality of Scope 3 emissions data and look to phase in more broad use of Scope 3 in line with methodologies such as PCAF and the EU’s Sustainable Finance Disclosure Regulations.

Scenario analysis

In 2021, Russell Investments partnered with Planetrics to expand our climate risk modelling capabilities. Below we assess the expected impact of different climate scenarios at the portfolio, sector and asset-class level, and further decompose impact across transition and physical channels.

For background

A key input to scenario analysis is the scenario narrative, or the underlying assumptions to each scenario.³ In the analysis that follows, we use three NGFS (Network for Greening the Financial System) scenarios: the hot house world scenario, a net zero 2050 scenario, and a delayed transition scenario. Details on the key assumptions for each scenario are shown below:

Hot house world (current policies)

Description	Median 2100 warming	Net zero year	Tech change	Carbon Dioxide Reduction (CDR)	Regional policy variation
Existing climate policies remain in place, but there is no strengthening of ambition level. Thus, there is no transition risk. Heightened physical risks dominate , and are assumed through high climate sensitivity, especially 90th percentile temperature increase (4.4°C by 2100). This leads to high ice-sheet melt and increasing tropical cyclone risks.	4.4°C	N/A	Slow change	Low use	Low variation

Delayed transition

Description	Median 2100 warming	Net zero year	Tech change	Carbon Dioxide Reduction (CDR)	Regional policy variation
Imposes the 2°C target in 2100 and allows for temporary overshoot. Annual emissions do not decrease until 2030. Strong policies are then needed to limit warming to below 2°C, and transition risks dominate especially from 2030 onwards . This scenario includes regional carbon price variation. Regional net zero targets for countries with clear commitments at end 2020 (i.e., China, EU, Japan, and US) are applied from 2030 onwards, but not imposed for other countries.	1.6°C	2055	Slow until 2030; fast thereafter	Low use	High variation

³ As recommended in the TCFD guidance, scenario narratives should be relevant, challenging, and distinctive. They should focus on different combinations of the key factors and should illuminate future exposure to both transition and physical climate-related risks and opportunities.

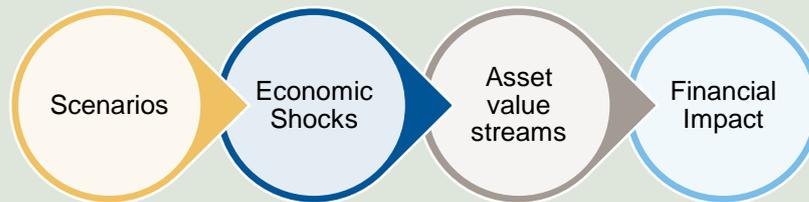
Net zero 2050

Description	Median 2100 warming	Net zero year	Tech change	Carbon Dioxide Reduction (CDR)	Regional policy variation
Limits global warming to 1.5°C (the median temperature returns to below 1.5°C in 2100, after a limited temporary overshoot) through stringent climate policies and innovation, reaching global net zero CO2 emissions around 2050. Some jurisdictions such as the US, EU and Japan reach net zero for all GHGs by 2050. Transition risks dominate and begin immediately.	1.5°C	2050	Fast change	Medium use	Medium variation

Source: NGFS Technical Documentation (2021)

These scenarios are the first step in a four-step modelling framework which translates climate scenarios into economic shocks, then asset value streams based on company- and industry-level data, and finally discounted back to present value financial impact at a security-level. This methodology was developed by Planetrics.

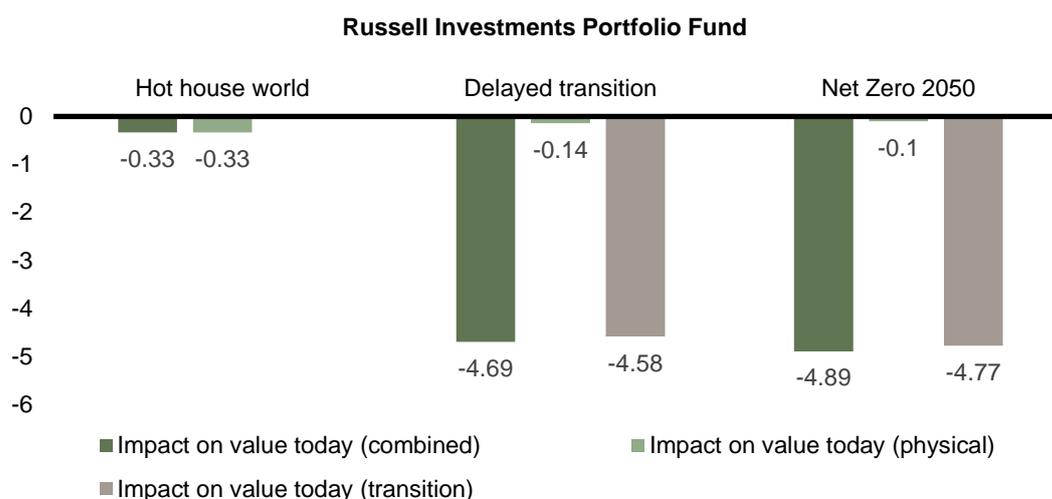
Four step climate modelling framework



See Appendix A for more details on the modelling approach, including the key assumptions underpinning each scenario including global emissions, carbon prices, and energy mix.

Following the four-step scenario analysis methodology highlighted above, valuation impacts are derived at a company level by discounting cash-flow estimates from the asset modelling component to a net present value. We model these impacts to both equities and fixed income, although there are some additional asset-class-specific steps required for fixed income securities. The result is a percent gain or loss on the portfolio in each scenario based on a timeline out to 2050, discounted back to today. This provides an estimated financial impact under the different climate scenarios.

Exhibit 3: Climate scenario analysis: Impact on portfolio value



Source: Russell Investments, Planetrics⁴ as at 31 December 2021.

Key observations from scenario analysis impact on portfolio value:

- Our global portfolio experiences the largest valuation impacts in the net zero 2050 Scenario.
- In this scenario, the economy undertakes a rapid transition to a decarbonised economy starting immediately. This rapid transition means that most of the financial impact stems from transition-related risks such as the introduction of a large and sudden carbon price.
- It is likely surprising to some readers that the transition scenarios (delayed transition and net zero by 2050) show greater financial impacts than in the hot house world scenario. Recall these scenarios involve more short- and medium-term risks (largely transition-related) and because risks are discounted back to present day, these shorter-term risks dominate the longer-term physical risks of hot house world scenario.
- It is also important to note that this scenario analysis only extends to 2050 which understates the worst physical hazards in a hot house world which will materialise after 2050.
- The high magnitude of the valuation impact in transition scenarios suggest financial markets are not pricing in a transition. If they were, the expected impact on today's prices would be closer to zero.

Looking forward

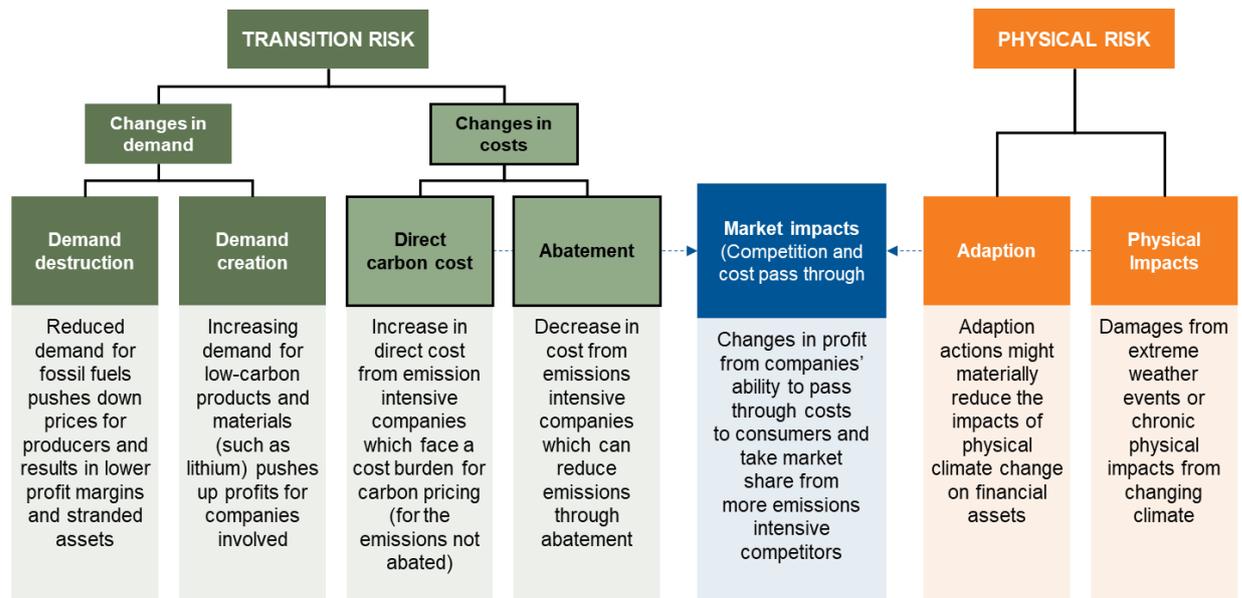
- Quantitative climate scenario analysis is a new tool and our immediate priority is to make this information more accessible to investment decision makers.
- The models are complex and rely on significant assumptions, so we will take time to digest both the outputs and underlying assumptions, before basing investment decisions directly on these outputs.

⁴ This figure has been created by Russell Investments drawing on selected data provided by Planetrics Ltd (which does not include investment advice). The figure represents Russell Investments' own selection of applicable scenarios and/or its own portfolio data. Russell Investments is solely responsible for such scenario selection, all assumptions underlying such selection, and all resulting findings, conclusions and decisions. Planetrics Ltd. Is not an investment adviser and has not provided any investment advice.

Portfolio valuation impacts by channel

Building on the transition and physical risk categories introduced in Figure 1, the overall portfolio valuation impacts above can be decomposed into key risks and opportunities not only at the level of physical and transition risk but within these channels as well. The following methodology was developed by Planetrics.

Exhibit 4: Physical and transition risk: seven channels of impact

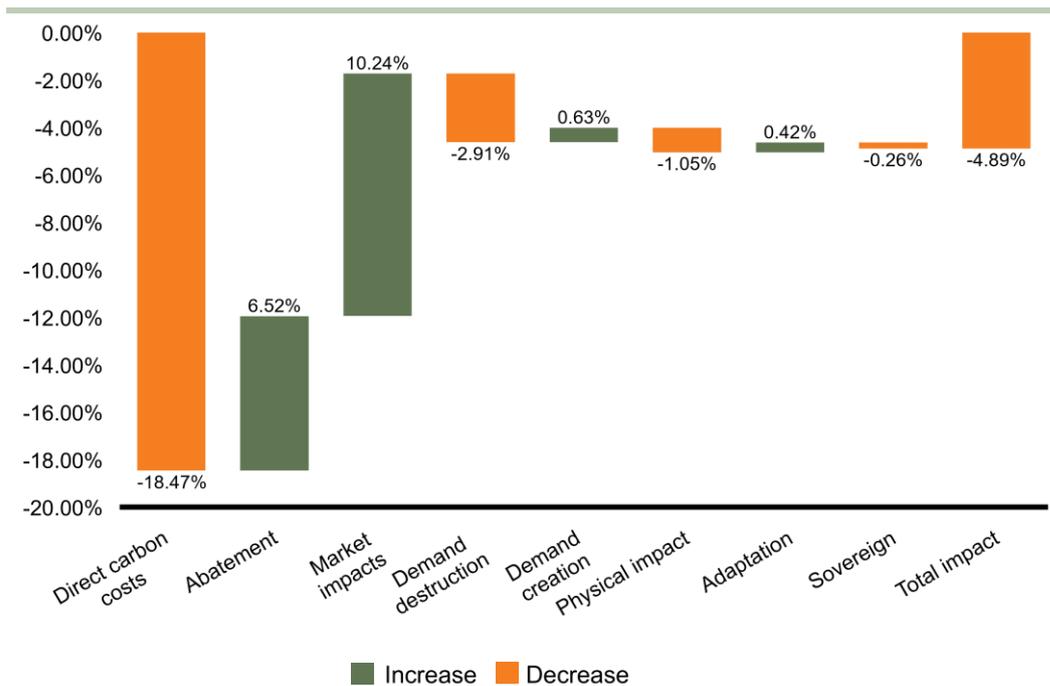


Source: Planetrics⁵, as at 31 December 2021.

⁵ This figure has been created by Russell Investments drawing on selected data provided by Planetrics Ltd (which does not include investment advice). The figure represents Russell Investments' own selection of applicable scenarios and/or its own portfolio data. Russell Investments is solely responsible for such scenario selection, all assumptions underlying such selection, and all resulting findings, conclusions and decisions. Planetrics Ltd. Is not an investment adviser and has not provided any investment advice.

These channels are estimated at the company level, using company and industry-specific information. Take, for example, a utility company that experiences relatively inelastic demand. An economic shock, such as an increased carbon price, can be partially mitigated through adopting new technologies capable of reducing emissions and by passing through costs to consumers via higher prices with relatively little impact on asset valuation. The company's valuation may then be impacted (either positively or negatively) by a change in consumer demand. For example, a utility company with significant power generation capacity from renewables can experience a positive demand shock relative to a utility with predominately coal fired power generation, which will face a negative demand shock. Finally, the utility company may experience valuation impacts based on its exposure to, and its ability to adapt to, physical hazards. These asset-level estimates are then rolled up to the portfolio level to produce the impact by channel below.

Exhibit 5: Portfolio impacts based on a high transition risk scenario (Net Zero 2050)



Source: Russell Investments, Planetrics⁵ as at 31 December 2021

Key observations from portfolio valuation impacts by channel in net zero scenario:

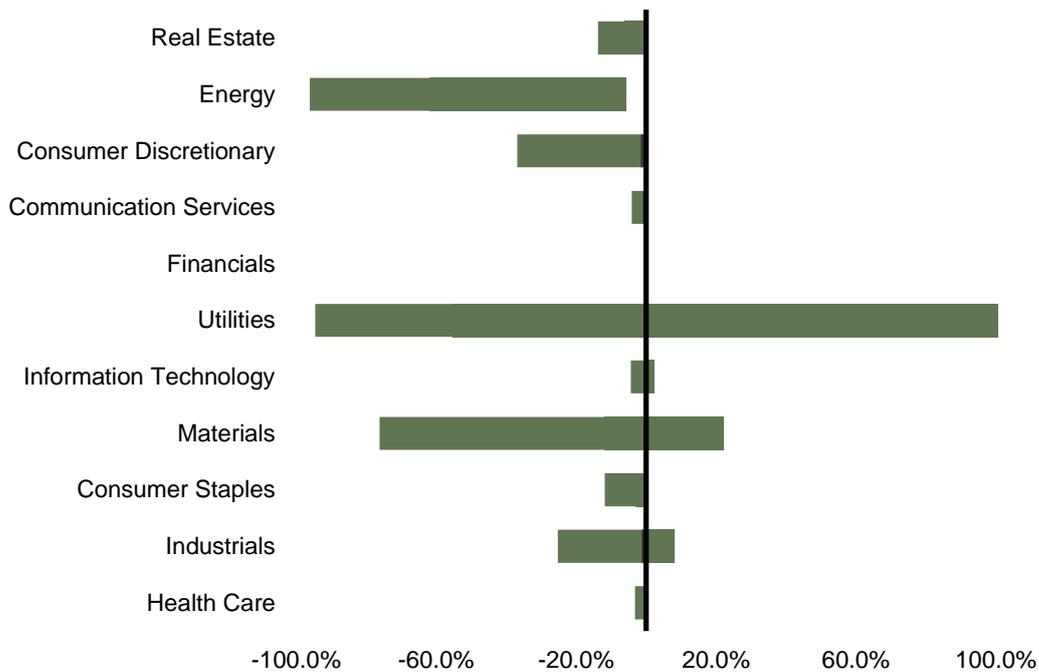
- The main driver of valuation risk is the direct carbon cost channel, responsible for a valuation impact of approximately -20% in both transition scenarios. In terms of magnitude, this swamps the impact of other risks. This reinforces why the transition scenarios exhibited the biggest loss since transition scenarios are where carbon costs are high.
- Firms can abate some of this cost with carbon efficiency measures. Through abatement and passing on carbon costs (captured in “market impacts” in figure above), firms offset much of the direct carbon costs.
- Rounding out the transition lens, demand destruction is almost 5x the magnitude of demand creation.
- Physical risk is a relatively smaller valuation impact, at least measured in present day terms. The firms in our portfolio are estimated to offset roughly half the -1% physical impact with adaptation measures.

Portfolio valuation impacts by sector allocation

Sector allocation is a key determinant of a portfolio's climate risk exposure, and we find significant variation both among sectors and within sectors. The highest at-risk sector allocations are energy, utilities and materials sectors, which is not surprising to those used to looking at carbon emissions. What is more noteworthy however, is that within some of these sectors the impact is very heterogeneous: materials, industrials and utilities sectors have a very wide range of winners and losers.

Variation of valuation impacts within sectors

Exhibit 6: 10th percentile to 90th percentile range, by sector (Net Zero 2050)



Source: Russell Investments, Planetrics as at 31 December 2021.

Key observation from portfolio impacts by sector allocation in net zero scenario:

- These variations as shown in the chart above highlight the importance of differentiating between winners and losers in the critical sectors like utilities and materials.
- As an example: Above we look at the intra-sector variance and show the range between the 10 percentile and the 90 percentile firms within each sector. In utilities for example, 10% of companies are estimated to lose over 90% of their valuation in the net zero 2050 scenario. This contrasts with other utilities who experience an almost 250% valuation increase (the chart above is truncated to range between -100% and +100%).

Portfolio valuation impacts by asset class

Table 4: Valuation impacts based on asset class

	SCENARIO	VALUATION IMPACT
Equity	Hot house world	-0.52%
	Delayed transition	-5.51%
	Net zero 2050	-6.06%
Corporate debt	Hot house world	-0.01%
	Delayed transition	-1.30%
	Net zero 2050	-1.86%
Sovereign debt	Hot house world	0.31%
	Delayed transition	-4.01%
	Net zero 2050	-1.94%

Source: Russell Investments, Planetrics⁶ as at 31 December 2021.

Key observations from portfolio valuation impacts by asset class:

- Asset class impacts are less prominent than sector-impacts.
- The larger impact on sovereign debt in transition scenarios can largely be explained by the high inflationary pressure that characterises transition scenarios, due to high carbon prices. Delayed transition requires a sharp increase in carbon prices after 2030, causing a more immediate shock than gradual transition⁷.
- While this was generally true across sovereign assets, impact varied by country. For example, if a country's GDP is forecasted to slow due to a rising temperature and lower productivity, this led to lower interest rates and an appreciation of its sovereign bond. This contrasts with the inflationary pressure of carbon prices, which also vary by region. Rising inflation led to interest rates increases, ultimately having a negative impact on the country's sovereign debt. Impact also varies depending on if the asset is inflation linked or not.
- Duration also plays a role; longer duration assets generally experience larger effects than shorter duration assets. This partially explains why equity assets, which have a longer effective duration, experience bigger impacts than corporate debt.
- Finally, we see that most of the physical risk exposure is concentrated within the equity holdings.

As a multi-asset manager, climate-related considerations faced by other asset classes such as private real estate, private credit, and alternatives are front and center in our development work. Currently, we leverage the investment managers we hire to assess these risks as data availability and methodologies continue to develop, and as we have done with the asset classes above. We hope to expand our analysis to incorporate additional asset classes into our global portfolio scenario analysis exercise in future iterations of this report.

⁶ This figure has been created by Russell Investments drawing on selected data provided by Planetrics Ltd (which does not include investment advice). The figure represents Russell Investments' own selection of applicable scenarios and/or its own portfolio data. Russell Investments is solely responsible for such scenario selection, all assumptions underlying such selection, and all resulting findings, conclusions and decisions. Planetrics Ltd. Is not an investment adviser and has not provided any investment advice.

⁷ More discussion of this relationship can be found in the Portfolio Testing Report from IIGCC available here: <https://www.parisalignedinvestment.org/media/2021/03/Portfolio-Testing-Report-IIGCC-Net-zero-Investment-Framework-1.pdf>

Looking forward

Performing climate scenario analysis is only a first step in addressing climate risk, and can be used to identify asset classes, sectors, mandates, and securities for further investigation and oversight. It is also useful for building a general understanding of the relative magnitude of risks. From a very high level, we can see that the impact of transition scenarios can be significant. However, we also recognise that despite considerable progress in modelling the financial impacts of climate change, these are still very new methods that rely on significant amounts of estimation and simplification. Therefore, we consider these inputs to an investment decision making process, supplemented by other robust sources of information, rather than something we are likely to directly manage to. We outline our management of climate-related issues further in section 2c.

Portfolio temperature alignment

For background

Temperature scores, including implied temperature rise and temperature alignment, is a new class of metrics method used to assess the alignment of a company or portfolio with the goal of limiting global warming to well below 2 degrees Celsius. An advantage of the metrics is that they are designed to be forward-looking and account for inherent differences in carbon emissions across industries and regions. Wide variations exist in methodologies to estimate temperature scores. The class of metrics aim to estimate expected future emissions, and alignment with the sector-region decarbonisation pathways associated with different levels of global warming. This estimate is then translated into a projected increase in global average temperature, above preindustrial levels, which would occur if all companies in the corresponding sector had the same carbon intensity.

While simple in concept, there is a wide divergence in estimates based on who produces temperature scores. Methodologies and final temperature scores can vary considerably depending on subtle choices under the hood. It is a relatively opaque calculation, making it difficult to back into drivers of the differences. For example, at a company-level, do future emission projections consider company targets? What likelihood is assumed that a company will reach those? Or are forecasts not company-specific and instead based on sector-region pathways? According to which forecasts? At the portfolio-level, how are temperature scores aggregated? Is it a weighted average? Ownership share? Or emission weighted? Despite this complexity, and less transparency than more explicit carbon metrics, the appeal of temperature alignment means use of these metrics is likely to increase, especially as investors look to express portfolio alignment with global temperature targets. We therefore will supplement our carbon emission and scenario analysis disclosures with this metric, while noting we still consider these metrics to be in their development phase, and likely to continue to change significantly as methodologies and consistency develop.

Table 5: Temperature scores of global Russell Investments portfolio and benchmarks

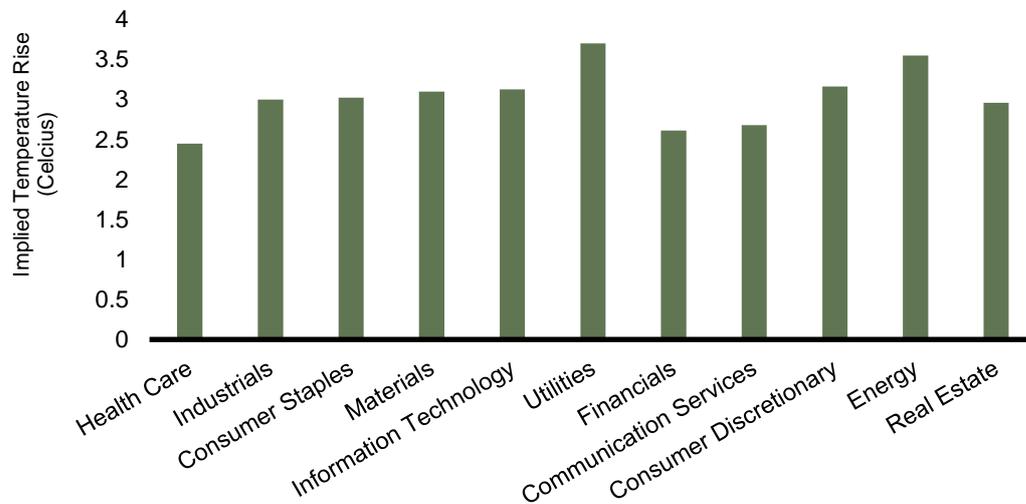
UNIVERSE	TEMPERATURE ALIGNMENT SCORE (CELSIUS)
MSCI Emerging Markets Index	3.50
MSCI All Country World Index	3.19
BaML Global High-Grade Index	3.31
Russell Investments Global Portfolio	3.25

Source: Data as of 31 December 2021. Russell Investments, Planetrics⁵, MSCI, Barclays. Value and sector-intensity weights methodology.

Both geographical and sector allocations meaningfully drive the aggregate implied temperature rise of a portfolio or index. By drilling down to the sector level of our global portfolio, we can see that significant variation exists between sectors, although no sector has achieved a below 2-degrees Celsius implied temperature rise.

Sector temperature alignment scores (GICS sector classification)

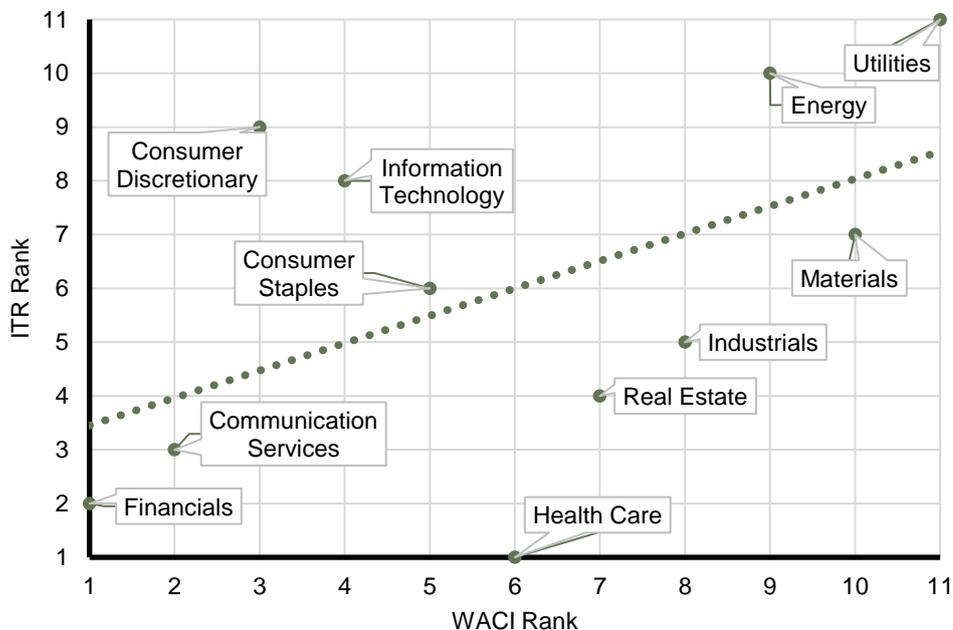
Exhibit 7: Implied temperature rise (ITR) by sector



Source: Russell Investments, Planetrics⁸, Data as of 31 December 2021. Value and sector-intensity weights methodology.

Health Care, Financials, and Communication Services have the lowest temperature alignment while Utilities and Energy have the highest ITRs around 3.5-degrees. These exposures may sound familiar to those familiar with carbon emissions metrics, given the same sectors are noted for high carbon emissions. So, what if anything is additive by looking at this metric? When we compare the sector's emissions intensity and implied temperature rise, we find the correlation is only modest at 0.51.

Exhibit 8: Correlation between sector WACI and temperature score (Rank)



Source: Russell Investments, Planetrics⁸, GICS as at 31 December 2021.

⁸ This figure has been created by Russell Investments drawing on selected data provided by Planetrics Ltd (which does not include investment advice). The figure represents Russell Investments' own selection of applicable scenarios and/or its own portfolio data. Russell Investments is solely responsible for such scenario selection, all assumptions underlying such selection, and all resulting findings, conclusions and decisions. Planetrics Ltd. Is not an investment adviser and has not provided any investment advice.

Key observations from portfolio temperature alignment

- It is noteworthy that even though Industrials are one of the highest carbon emitting sectors, the temperature rise lens accounts for differences in how sectors will transition going forward, including that the Industrials sector is composed of harder to abate activities which will not decarbonise at the same rate required by other high emitting sectors.
- The Industrials sector is therefore aligned with a lower temperature alignment than one might expect based on carbon emissions alone. This highlights one way in which ITR can be additive to the carbon emission lens.

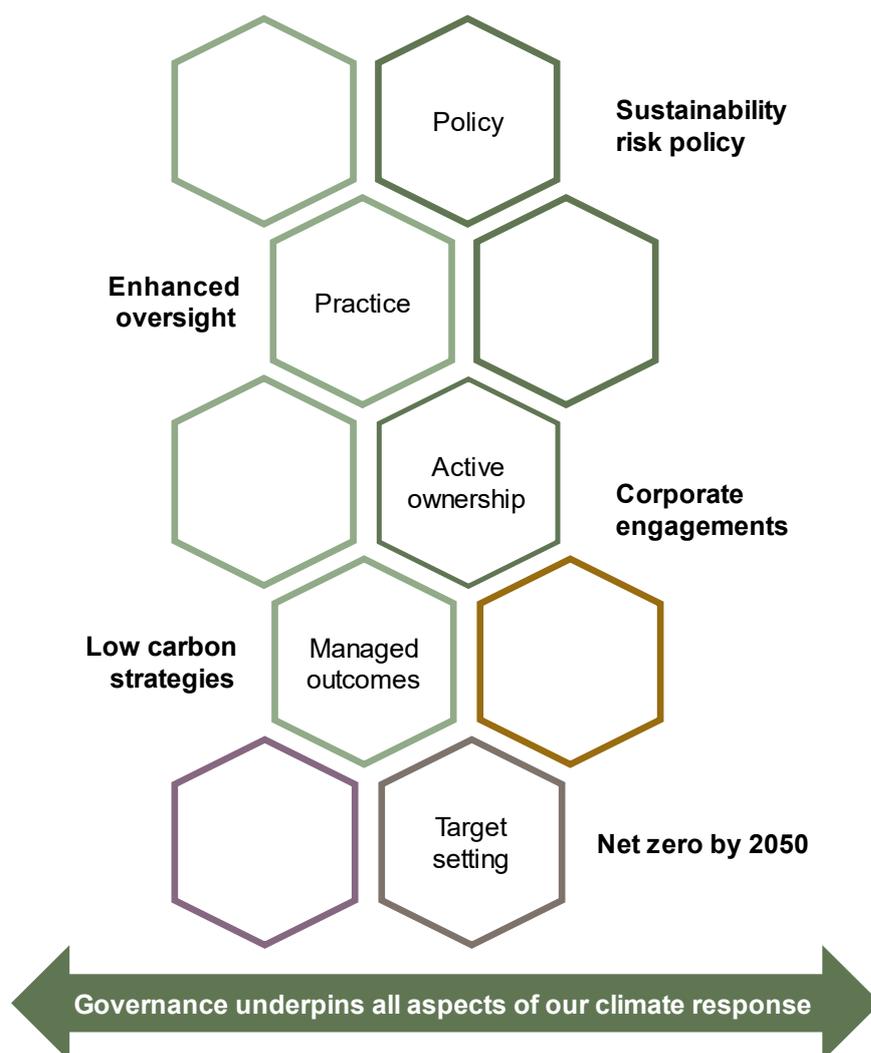
Looking forward

- While useful for providing a more sector-specific forward-looking metric, the disadvantage of temperature scores is that they have not achieved the same level of consistency and transparency that has developed for carbon emissions.
- For the time being, we continue to use carbon emission metrics as our primary reference point for target setting and progress tracking. But we will consider temperature data as a supplementary reference point.

Section 2c: Management of climate-related risk and opportunities

Following *identification* and *assessment* of climate-related risks and opportunities, we now turn to *management*. Portfolio managers are the front line of defense in managing portfolio risks, and management of climate risk is no different. Rather than building a standalone ESG team, we believe embedding deep expertise and awareness of sustainability risk within investment teams is key to fully integrating climate management into our investment process. This is formalised in our sustainability risk policy. In addition to a formal policy, our practices have evolved as well. We recently rolled out an Enhanced Oversight practice, which is detailed in the sections that follow. Another critical tool employed is active ownership. Corporate engagements are key to driving real world outcomes with the companies in which we invest, and we detail our approach in the section below. Supplementing these firm-wide practices, we continually enhance our approach to building carbon-managed portfolios for a subset of our clients and funds that want to build in more explicit climate-related outcomes. Finally, we conclude with a forward-looking section including our own net zero target setting. Taken together, we adopt a multi-layered approach to managing climate issues including formal policies, practices, engagement, carbon managed portfolios and target setting.

Exhibit 9: A multi-layered approach to our climate response: key pillars and practical examples



Source: Russell Investments, as at 31 December 2021.

Sustainability risks policy

Russell Investments' policy is to integrate sustainability risks in our investment solutions by identifying, evaluating and managing relevant risks in our investment manager review process, portfolio management and through implementing proprietary solutions. We believe sustainability risks are most relevant to investment outcomes when they exhibit financial materiality, and, like all investment risks, are incorporated by balancing expected risk with expected reward. In managing investment solutions, we consider financially-material sustainability risks in the context of expected rewards using a blend of inputs from sources including, but not limited to, investment managers, third-party data sources and Russell Investments proprietary analysis. Furthermore, we incorporate bespoke sustainability risks based on clients' requirements for customised mandates. As well, we seek to collaborate with our advisory clients to consider, monitor and manage sustainability risk priorities in their portfolios.

Enhanced oversight

Developing a deep understanding of portfolios' financially-material sustainability risks and how they are identified is included in Russell Investments' Portfolio Managers' goals and objectives. A key component of understanding these risks comes from the oversight of our sub-advisers. To systematise and track this oversight, we have initiated a practice called "Enhanced Oversight."

The enhanced oversight activity focuses on securities and themes identified from:

-
- Our own quantitative measures, where we monitor the highest and most material sustainability risks at the total-portfolio level
 - Other third-party sources including those who provide company and thematic ESG research
 - Sub-adviser insights, where we respond to financially-material sustainability issues they bring to our attention.

To complement other investment practices and to maximise impact, enhanced oversight may draw from internal themes. Internal themes include but are not limited to those featured by Russell Investments' Active Ownership Team outlined in the section below.

For each Russell Investments' managed fund or segregated portfolio, enhanced oversight may result in the following actions for certain holdings, with consideration of the impact of risks at the total portfolio level:

- Reviewing of metrics and the research behind the metrics
- Discussing with the sub-adviser supporting the holding
- Discussing with the Engagement Subcommittee to consider engagement options

Global risk management

In addition to the first line of defense that investment teams play in our risk management process, the Global Risk Management Committee (GRMC) plays a critical global role in our risk management and provides an independent global authority on the assessment of climate risk and needed controls essential to effective management of the firm's climate risk. More details on how this group fits into our overall governance is provided in Section 1.

Active ownership

Our active ownership program encompasses three pillars namely engagement, proxy voting and industry collaboration. Each of which is described in turn below:

Engagement

Ongoing dialogue with companies is a fundamental part of our responsible investing strategy. Our engagement approach is to build a mutually beneficial long-term relationship with the investee companies and to help them set a direction of travel from an ESG perspective. Full details of our engagement activity can be found in our annual Active Ownership Report. For the purposes this TCFD report, we provide a subset of information as it pertains to our management of climate-related issues.

Engagement focus areas

At Russell Investments, we believe that the key to a successful engagement programme is identifying and pursuing activities which offer the highest return or risk mitigation opportunities. To this end, Russell Investments' Active Ownership Team strategy is focused on material issues under the general categories of Environment, Social, and Governance. While we recognise that a broad set of issues are worthy of shareholder attention, we believe that identifying engagement focus areas, supports accountability and successful outcomes.

Russell Investments maintains six focus areas which have been chosen through consideration of our clients' expectations, our proxy voting and engagement practices through time, our corporate values, and our responsible investing beliefs. Two of these areas are environmentally focused: Climate Change Resilience, and Natural Capital. We provide a brief overview of these themes below:

- **Engaging on climate change resilience**

Russell Investments has been an official supporter of the TCFD since 2019, and we promote the TCFD's recommendation that companies provide effective climate-related disclosures that enable more informed financial decision making. In addition, we advocate for companies to have board-level oversight and governance of climate change impacts. Finally, Russell Investments expects companies to explain how they have implemented climate-related issues into their business, strategy, and financial planning – including the disclosure of key metrics and risk management processes.

- **Engaging on natural capital**

Measuring and valuing natural capital can provide companies with detailed statistics for better management of natural resources that contribute to economic development and growth. Better understanding of the mechanisms that link ecological systems to human wellbeing are required to assess both the value of benefits from natural resource systems, and the expenditure required to maintain those benefits.

Russell Investments believes that companies should display an understanding of their environmental resource use across their businesses, and demonstrate responsible environmental management aimed at maintaining the long-term usage of assets. We expect companies to implement sound and sustainable environmental practices across their operations and supply chains to protect against material and reputational risks which can arise from the mismanagement of natural capital.

Initiatives and policies that avoid and/or reduce deforestation is an area of focus for Russell Investments. We advocate for disclosure as a starting point. In addition, for companies with material biodiversity exposure, and/or those which operate in natural resource-constrained regions, we seek policies on restoration, preservation, and efforts to control any soil and water contamination.

A summary of our engagement activity 2021 by topic is provided below.

Exhibit 10: Engagement by category

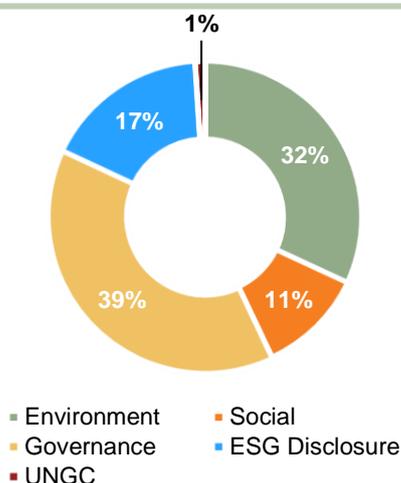
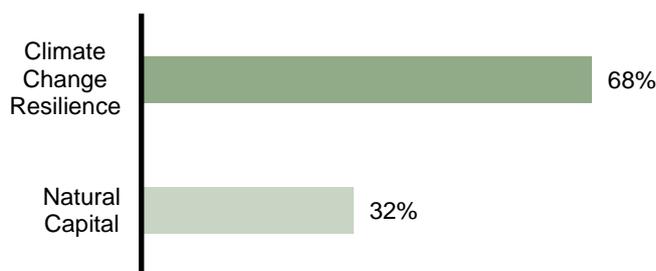


Exhibit 11: Engagements Related to Environmental Topics



Source: Russell Investments, data as at 31 December 2021.

Collaborative engagements

Since early 2020, Russell Investments has leveraged a partnership with Sustainalytics for thematic and collaborative engagements. Sustainalytics' engagement programmes enable participants to build relationships with a selected set of issuers to encourage action on specific issues in ways that promote long-term value. Russell Investments has selected engagement themes that align with our focus areas and provide expertise and access in areas where partnership increases the likelihood of success. Across all five themes selected, our investment professionals participate directly in calls with the targeted companies.

Russell Investments' collaboration with Sustainalytics has materially broadened our Scope of engagements. Sustainalytics thematic engagement programs are designed to run a three-year timeline. At the beginning of 2021, the Climate Change Transition program concluded, but Russell Investments joined two more: Climate Change-Sustainable Forests and Financing, and Modern Slavery. We chose the former to maintain our high activity on environmental issues and added the latter to bolster our outreach on an important social problem. These themes align with our active ownership strategy and our engagement focus areas.

In addition to our efforts with sub-advisers and through Sustainalytics, we play an active role in sustainability and responsible investing through involvement in organisations promoting sustainable operating and investment practices. Memberships in these organisations and investor groups broaden our Scope of influence beyond the companies in which we invest. Further information can be found in the Industry Collaboration section below.

Proxy voting

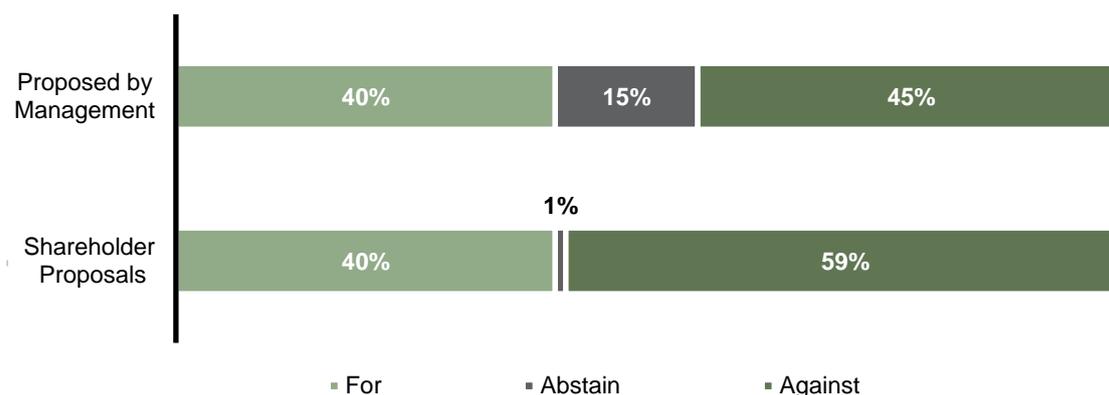
For 30 years, Russell Investments has executed a robust proxy voting programme built on policies, processes and guidelines that are consistently evaluated and evolved. Russell Investments has documented Proxy Voting Policies and Procedures and maintains custom Proxy Voting Guidelines, available to review on our Responsible Investing site [here](#). An external service provider, Glass Lewis, serves as our proxy administrator and is responsible for applying our custom guidelines when executing proxy votes.

In recent years, we have scrutinised our guidelines relating to environmental and social issues to ensure they reflect our latest thinking on these issues. Whilst our bespoke Proxy Voting Guidelines include context for our ESG beliefs, a case-by-case review allows us to vote on the merits of individual proposals, rather than apply a general stance on a given issue. After careful consideration, during 2021 the Active Ownership (AO) Committee ratified Russell Investments' approach to "Say on Climate" resolutions, ahead of the 2022 proxy season: all "say-on-climate" proposals will be reviewed on a case-by-case basis. This is a new provision which expands committee review to include management proposals, advisory and otherwise, which propose a plan for climate risk management.

Proxy voting and climate change

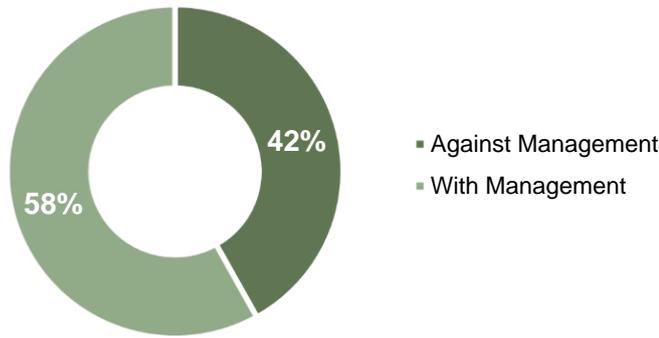
During 2021, our voting activity has been consistent with our commitment for all assets under management to achieve net zero emission by 2050 or sooner. In this regard, Russell Investments has voted 118 climate-change related proposals and it has supported all resolutions flagged by Climate Action 100+. Further detail of our proxy voting activity on climate-related resolution is provided below.

Exhibit 12: Climate change-related proposals by Proponent



Source: Russell Investments, as at 31 December 2021.

Exhibit 13: Management support on climate change-related proposal



Source: Russell Investments, as at 31 December 2021.

Industry collaboration

Active participation in sustainability and responsible investing forums is a consistent tenant across all our responsible investing channels and is detailed in our annual Stewardship Report. We have been a signatory of the United Nations-supported Principles for Responsible Investment (PRI) since 2009, and we have adopted the PRI's six principles for responsible investing, including those which relate to collaborative engagement. In our experience, even organisations that do not focus solely on climate have increasingly been providing robust forums for information exchange on climate-related issues. In addition to being a signatory of the PRI, we are either signatories, supporters, or members of the following groups which have a focus on climate-related risks and opportunities:



Institutional Investors Group on Climate Change (IIGCC)



Responsible Investment Association Australasia (RIAA)



Institutional Investors Group on Climate Change (IIGCC)



Carbon Disclosure Project (CDP)



Task Force on Climate Related Financial Disclosures



Transition Pathway Initiative (TPI)

Climate Action 100+

Climate Action 100+ is an investor initiative launched in 2017 to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. We joined the Climate Action 100+ initiative in early 2020 and have directly engaged with a select number of companies on climate transition through the regional entities.

As active members of the Climate Action 100+ initiative, we have been engaging with companies to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. To this end, during 2021 we have shown support for all Climate Action 100+ flagged proxy voting resolutions, which is a clear expression of preference on issues directly related to the initiative's goals.

Institutional Investors Group on Climate Change (IIGCC)

The IIGCC is the European membership body for investor collaboration on climate change. IIGCC's mission is to mobilise capital for the low carbon transition and to ensure resilience to the impacts of a changing climate by collaborating with business, policymakers and fellow investors. We have been a member of IIGCC since 2015 and actively collaborate and participate at industry events and seminars. We also actively contribute to consultations when there is an opportunity to do so.

Carbon managed portfolios

In addition to the management of climate-related risks and opportunities across all our investments, Russell Investments has a history of collaborating with clients to build mandates that explicitly manage climate-related outcome such as carbon emissions, fossil fuel reserves and renewable energy exposure. We first launched our low carbon strategy in 2015, with a focus on reducing exposure to high carbon emitters and companies with large volumes of fossil fuel reserves. These strategies are often built with a specific carbon reduction target such as a 25% or 50% reduction in weighted average carbon intensity or exposure to fossil fuel reserves. We continually evolve our approach to incorporating climate risks into portfolios, incorporating best practices as the space evolves. As of 31 December 2021, we have approximately \$8Bn USD in carbon-managed strategies.

Target setting

In 2021, Russell Investments committed to support the goal of net zero GHG emissions by 2050 by signing on to the Net Zero Asset Manager Commitment initiative (NZAMi). As part of this commitment, we are working in partnership with clients to develop a roadmap for portfolio alignment. So far, our activity has focused on:

- performing due diligence on target setting methodologies,
- rapidly raising knowledge across teams including enhancing our climate training,
- building new capabilities for tracking progress against climate targets, and critically,
- defining our approach for considering portfolio to be aligned to a net zero by 2050 objective.

We released our interim net zero targets in the second quarter of this year. Below we provide an outline of the learnings so far.

Update on our approach to net zero Target setting

While the concept of net zero by 2050 is relatively clear (i.e. global greenhouse gases emitted should be less than greenhouses gases captured or removed from the atmosphere by the year 2050), it is less clear what this means for investment portfolios.

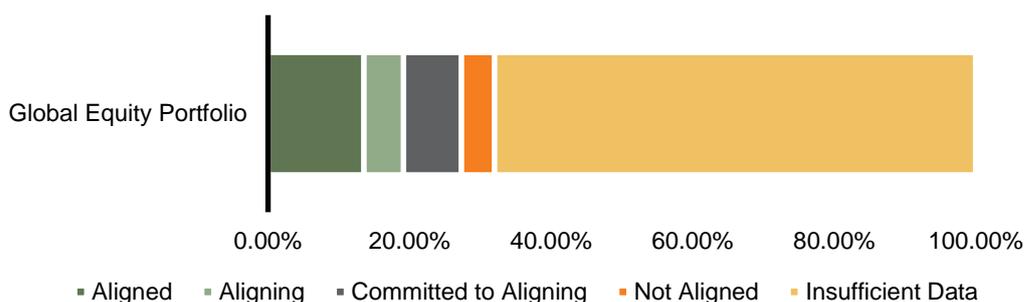
Useful frameworks from industry bodies can be leveraged for aligning a portfolio with net zero ambition, but approaches vary considerably in the details. As a starting point, we researched several methodologies, with a focus on the NZAMi "approved" target setting methodologies: SBTi for Financial Institutions, the Net Zero Asset Owner Target Setting Protocol, and the Paris Aligned Investor Initiative's Net Zero Investment Framework (NZIF).

A consistent theme throughout alignment frameworks is the need for multiple levels of targets. In particular, there is growing recognition that achieving an overall portfolio carbon reduction or temperature score alone is not sufficient. Instead, most frameworks propose a combination of an overall portfolio target, for example a carbon reduction or temperature alignment, in addition to increasing the percent of the portfolio's assets that can be considered aligned. Engagement also has an important role, as a mechanism to encourage decarbonisation of the largest emitters in the portfolio rather than simply divesting from them. This is because decarbonisation of the largest emitters will be critical to achieving the global goal of net zero. Finally, increasing investments in

climate solutions is also consistently noted as an important consideration, and potentially another explicit target to be set.

For our own targets, we primarily leverage the PAI Net Zero Investment Framework, supplemented with our own insights. After reviewing a range of approaches, we found the NZIF to be reasonably constructed and sufficiently adaptable to our use case which covers many investment styles, geographies, and asset classes. As noted above, this framework will include multiple levels of targets. The bottom-up asset alignment measures what percent of securities in the portfolio are aligned, aligning, committed to aligning, or not aligned. To date, we have completed a mapping of open data sources such as Climate Action 100+ Benchmark, Transition Pathway Initiative, Science Based Target Initiative, as well as our proprietary data providers. Below we provide an example of this type of assessment:

Exhibit 14: Baseline asset alignment assessment on a sample global equity portfolio



Source: Russell Investments, data as of 31 December 2021.

Over time, portfolios on a net zero trajectory need to increase the percentage of the portfolio in the higher ambition buckets (aligned, aligning). We will also set targets to engage with companies in material sectors who represent significant sources of GHGs and are lagging on these assessments.

The next type of target, the top-down portfolio level reference, acts as an accountability mechanism for ensuring that the decarbonisation of the portfolio is consistent with a science-based net zero pathway. Portfolio-level carbon emissions must decrease over time relative to a base year. For example, global absolute GHG emissions need to decrease by approximately 6.7% per year between now and 2030 to be on one of the commonly cited net zero pathways, and this is a common starting reference for a portfolio decarbonisation objective over time. Global emissions need to decrease by approximately 50% by 2030 relative to a 2019 baseline to be aligned to a limited or no overshoot pathway in the IPCC Special Report on 1.5 degrees, and this serves as another common reference point.

While these reference points serve as our guides, there is nuance around the selection of carbon metric and accounting for sector and regional exposures of a portfolio, given the economy will decarbonise at different rates. In a diversified global portfolio, this may not be critical since the portfolio exposures largely align with the global market on average. However, in an emerging markets fund, or a concentrated infrastructure fund, sectoral or regional decarbonisation considerations can be more meaningful.

Finally, the Net Zero Investment Framework highlights the critical need for increasing investment in climate solutions. These investment opportunities can be identified and targeted via the EU taxonomy criteria although there may be a rationale for using less stringent definitions of climate solutions as well. We have already acquired EU taxonomy data and have begun exploring the use of EU taxonomy data in our processes but note this is still a relatively new area and one we find requires more investigation before robust target setting is possible.



Section 3: Business operations



We will use the Greenhouse Gas Protocol Corporate standard as a guide to our commitment to net zero. Our commitment extends across our Scope 1 and 2 emissions, and material Scope 3 emissions identified as the most important levers for reducing emissions.

Russell Investments acknowledges its role in combating climate change and in April 2021 announced its commitment to achieving net zero carbon emissions by 2030 with respect to its global business operations.

The full announcement on Russell Investments' net zero carbon emissions goal, along with details of the firm's participation and collaboration in climate-related and other ESG initiatives, can be found on our website.

Global sustainability governance structure

In 2021, we created the Global Sustainable Work Practices Council chaired by Vernon Barback, our Chief Administrative Officer.

The Council brings together members to work year-round with the mission to identify and reduce the impact on the environment by ensuring that our day-to-day procedures are carried out in the most sustainable manner.

The overarching purpose of the Council is to:

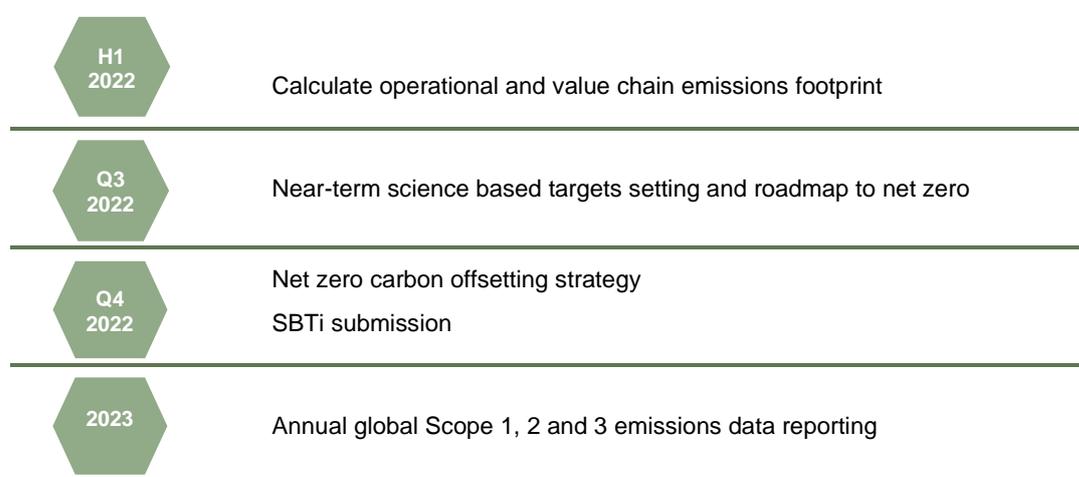
1. Develop a set of objectives in line with the 2030 net zero goal for global business operations
2. Provide a framework for setting objectives, reviewing initiatives and monitoring performance
3. Ensure a consistent approach to best practice principles is adopted across various regional offices
4. Ensure that our internal practices reflect what we advocate to the wider investment community including our clients, prospects and investments partners

The Council is supported by three regional groups across North America, EMEA and APAC. They are critical in bringing awareness to employees and creating a sustainable culture at Russell Investments. The regional groups are also responsible for raising associate engagement via events and training and encouraging associates to adopt sustainable practices in their day-to-day decisions. Last year, they launched a global SharePoint and quarterly newsletter for associates to access various resources.

Road to net zero

In January 2022, Russell Investments partnered with an external provider to develop a robust framework to meet our 2030 net zero goal. We are currently gathering data to calculate our global carbon footprint. The aim is to release milestone targets by Q3 2022 to define our roadmap to net zero by 2030.

Exhibit 15: 2022 milestone targets plan



Source: Russell Investments, data as of 31 December 2021.

We will use the Greenhouse Gas Protocol Corporate standard as a guide to our commitment to net zero. Our commitment extends across our Scope 1 and 2 emissions, and material Scope 3 emissions identified as the most important levers for reducing emissions.

Further information is contained in our [Corporate Social Responsibility Report](#).

Appendix

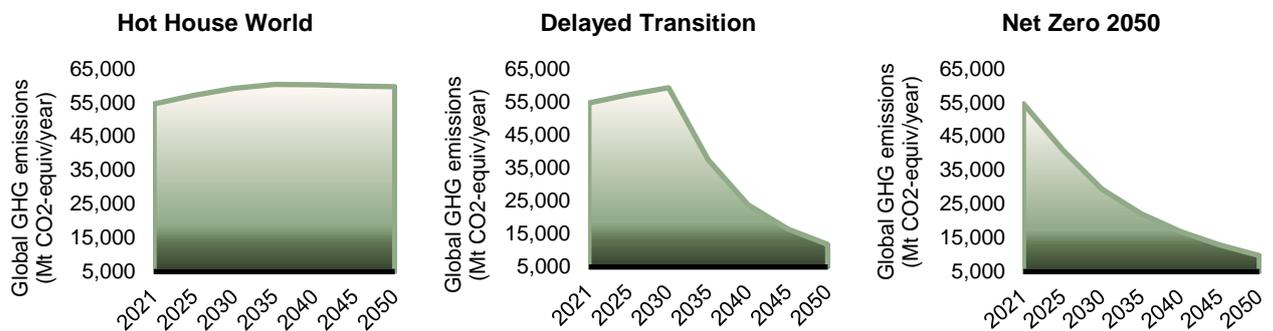
Key Scenario Assumptions

Each climate scenario used contains important assumptions about how the world and global economy will be affected. These modelling inputs include key climate-related variables such as global mean temperature, carbon prices, commodity demand, GHG emissions, and oil prices.

Global greenhouse gas emissions

The path which the world takes to reduce greenhouse gas emissions dramatically influences the extent of potential portfolio impacts. When will we start to see a serious decline in emissions and how rapid will that decline be? These answers help set the stage for other key modelling assumptions, such as the carbon price and energy mix projections. As seen below, the hot house world scenario assumes a business-as-usual (and unsustainable) increase in GHG emissions over time. This is contrasted to both the delayed transition and the net zero 2050 scenarios whose paths see significant decreases in global GHG emissions over time. The major difference between the latter two being their respective reduction timelines.

Exhibit 16: Global GHG emissions under selected scenarios (Mt CO₂-equiv/year)

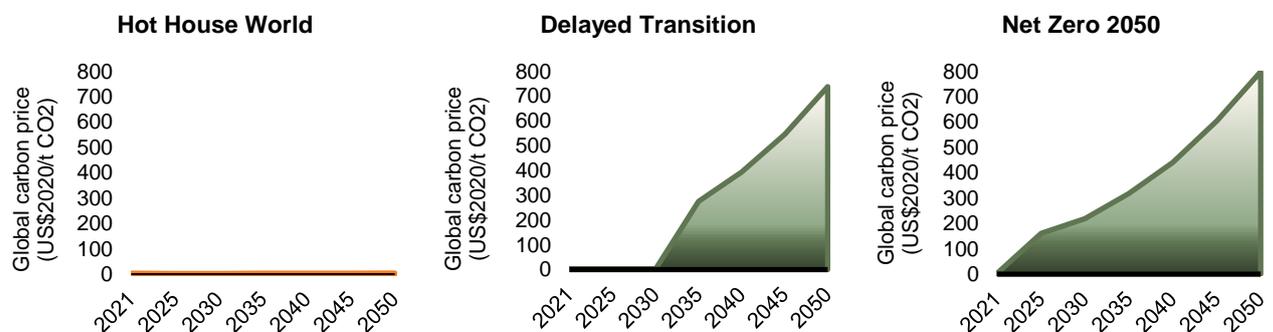


Source: Planetrics, NGFS, as at 31 December 2021.

Global carbon price

The United Nations Global Compact has recommended a global average carbon price of \$100 per ton today to help keep GHG emissions consistent with a 1.5-2-degree pathway. This would call for a substantial increase from the current global price of around \$3 per ton. In our analysis, we use the implied global carbon price to calculate the economic impact firms experience based on their current and future GHG emission intensity levels. Since we do not assume any further climate action in the hot house world, the implied global carbon price remains in the single digits. As expected, the delayed transition and net zero 2050 scenarios mark significant shifts in carbon pricing levels compared to what we are experiencing today.

Exhibit 17: Global carbon price under selected scenarios (US\$2020/t CO₂)

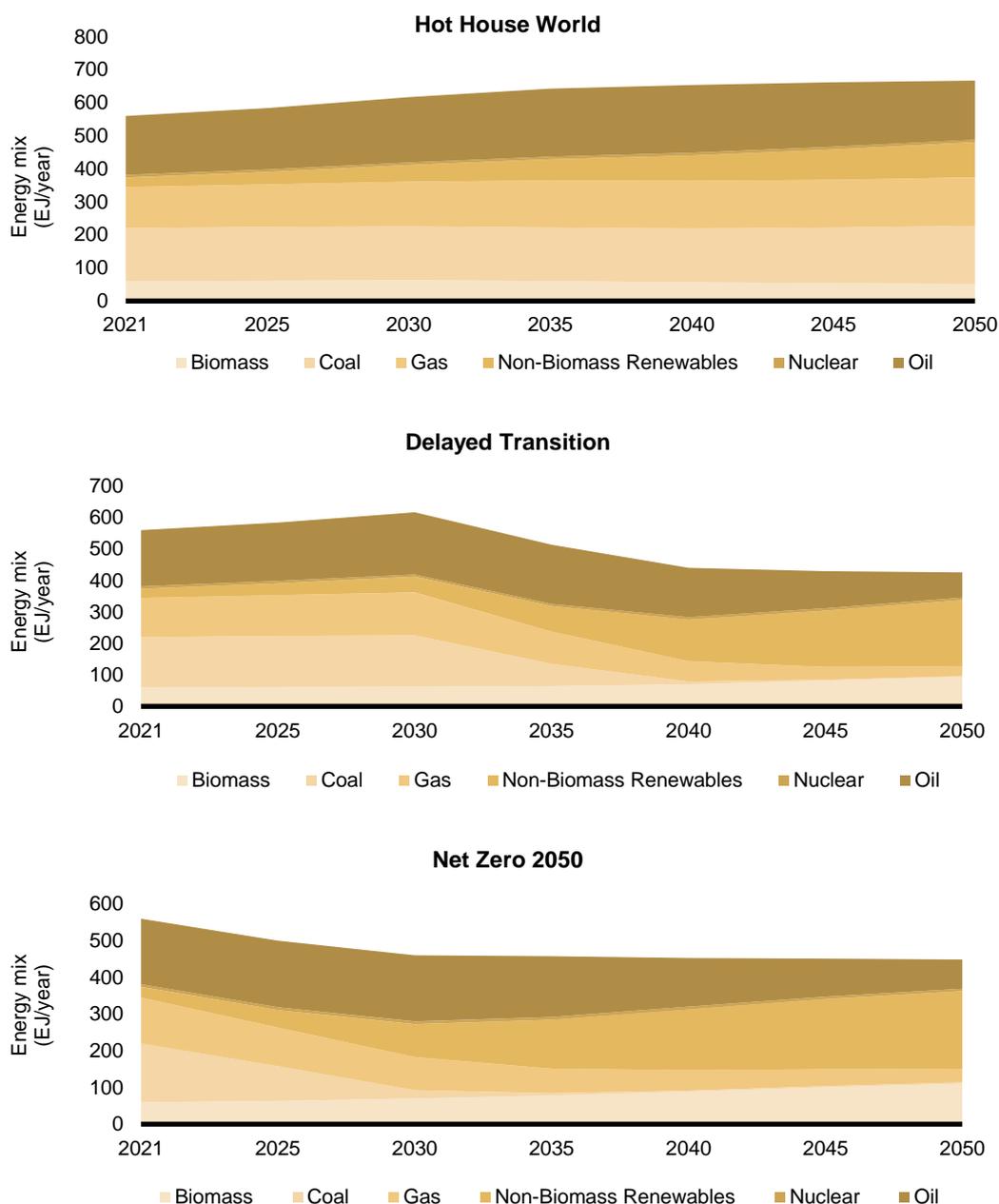


Source: Planetrics, NGFS, as at 31 December 2021.

Global energy mix

To stay below the 2-degree objective of the Paris Agreement, it is estimated that 33% of oil, 49% of gas, and 82% of coal reserves need to remain underground⁹. This highlights both the significant risk of stranded assets, but also means that tomorrow's energy mix composition will look wildly different than today's. The composition shifts can be visualised below:

Exhibit 18: Global energy mix under selected scenarios (EJ/year)



Source: Planetrics, NGFS, as at 31 December 2021.

We see an almost complete global phaseout of coal before 2030 in the net zero 2050 scenario. The gap created from the phase out of coal is primarily filled by renewables and biomass, which are modeled to make up almost 70% of the global energy mix by 2050.

The delayed transition scenario captures the dramatic shift starting in 2030 and consequently creates a high potential for stranded asset risk, specifically for firms operating in the coal industry, and to a lesser extent, oil & gas.

⁹ McGlade C and Ekins P. 2015. The geographical distribution of fossil fuels unused when limiting global warming to 2 °C. Nature. 517(7533): pp.187–190.

For more information

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