

Task Force on Climate-related Financial Disclosures

2021 Report

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CIO message

Since the launch of [Our Approach to Climate Change](#) in 2020, assessing the implications of climate change on our investment portfolios has continued to be a priority for RBC Global Asset Management (RBC GAM).¹ This year we took steps to advance our efforts in integrating climate change within our investment processes, and we affirmed in [Our Net-Zero Ambition](#) how we will support the global goal of achieving net-zero emissions by 2050 or sooner.

As active managers, we are committed to integrating material environmental, social, and governance (ESG) factors into our investment processes. Our investment teams continue to expand their knowledge of ESG factors, including climate change; they use innovative and advanced data and analytics to enhance decision making; and they actively engage with issuers on material ESG issues.

This is our second annual TCFD Report. Its purpose is to provide details on how we are addressing climate change in our governance, strategy, and risk management processes, as well as the metrics we are using to measure and monitor climate impacts across asset classes and portfolios. We are committed to providing transparency through regular disclosures.

RBC GAM supports the global goal of achieving net-zero emissions by 2050 or sooner. Our Net-Zero Ambition articulates how we are supporting this goal by setting expectations for the issuers in which we are invested to align to net-zero, and indicating that we will engage with issuers that may not be meeting our expectations on this topic. The transition to a net-zero economy requires absolute greenhouse gas (GHG) emission reductions across sectors, including our energy, transportation, manufacturing, building, and food sectors. The

concept of a just transition is critical, as it recognizes the need to create a bridge from where we are today to a sustainable future that promotes widely shared economic prosperity. This transition must be done thoughtfully and with consideration of issues such as energy security and resilience, employment and re-skilling, community transformation and revitalization, and poverty alleviation and equality.

Climate change is a systemic risk whose impact on the economy, markets, and society is complex and varied. Understanding and responding to these impacts requires in-depth knowledge and understanding of climate change, advanced data and analytics to assess financial impacts, and ongoing measurement to monitor and adjust our investment approach, when necessary. As we look ahead to 2022, RBC GAM will continue to deliver transparency on climate change impacts, to integrate climate change in our investment approach, and to employ active stewardship, including collaborating with investors, to advance the global goal of achieving net-zero emissions by 2050 or sooner. We believe that this approach aligns with our fiduciary duty and will support our ability to deliver long-term investment performance to our clients.

“Climate change will impact economies, markets, and societies, posing both risks and opportunities for investors. We are committed to continually assessing climate metrics and forward-looking methodologies to inform our investment processes and maximize risk-adjusted returns for our clients.”

Daniel E. Chornous, CFA
Chief Investment Officer, RBC Global Asset Management

¹In this document, references to RBC GAM (we, our or us) include the following affiliates: BlueBay Asset Management LLP (BlueBay), RBC Global Asset Management Inc. (including Phillips, Hager & North Investment Management), RBC Global Asset Management (U.S.) Inc., RBC Global Asset Management (UK) Limited, and RBC Global Asset Management (Asia) Limited, which are separate, but affiliated subsidiaries of Royal Bank of Canada (RBC). Unless otherwise stated, BlueBay Asset Management LLP (BlueBay) is included in this document. “RBC” refers to Royal Bank of Canada and its subsidiaries in this Report.

Introduction

RBC Global Asset Management is the asset management division of Royal Bank of Canada (RBC).² RBC GAM manages US\$484.2 billion³ in assets under management (AUM) and has approximately 1,400 employees located across Canada, the United States, Europe, and Asia.

We are a provider of global investment management services and solutions to institutional, high-net-worth, and individual investors through separate accounts, pooled funds, mutual funds, hedge funds, exchange-traded funds, and specialty investment strategies. Our experienced investment teams are active across capital markets and asset classes, deploying traditional and innovative strategies. Our investment solutions span a range of asset classes such as equities, fixed income and real estate, with investments globally in both developed and emerging markets, across corporate and sovereign issuers.

[Our Approach to Climate Change](#) is built upon a core belief that integrating material ESG factors into our investment approach can enhance long-term, risk-adjusted returns. Climate change is one such factor. We support this belief by integrating material climate change considerations in our investment decision making and by using our influence as active investors to engage on this topic with the issuers in which we are invested. We make investment decisions based on our in-depth due diligence and analysis, and use active stewardship activities to motivate companies to consider the impacts of climate change on their business and operations, and where appropriate, to implement strategies that enable climate change mitigation and adaptation.

The year 2021 was a pivotal one for climate science and for government action on climate change. In August 2021, the Intergovernmental Panel on Climate Change (IPCC) released their sixth assessment report on the state of climate change⁴, whose conclusions were supported by the scientific bodies of every United Nations member country. The consensus on climate science is clear – climate change is due to human activity and global average temperatures will continue to rise under all emissions scenarios and could well exceed 1.5°C warming by the early 2030s. The IPCC also makes clear that there is still time to reduce GHG emissions and avoid the worst physical impacts of climate change by transitioning to net-zero emissions by 2050 or sooner. This however, will require significant transformation across the energy, food, transportation, and infrastructure systems.

A few months after the release of the IPCC report, governments from around the world convened for the annual United Nations Climate Change Conference (COP26). In advance of COP26, countries that are signatories to the Paris Agreement announced updated climate pledges for

the first time since the signing of the Paris Agreement in 2015. COP26 was also notable for country commitments to reduce methane emissions, to halt deforestation, and to address inefficient fossil fuel subsidies. Moving forward, it will be important for governments to translate country commitments into sector transition plans and effective government policies. COP26 made clear that when it comes to climate change, the direction of travel for governments is clear: achieving net-zero emissions by 2050 or sooner. The speed, mode, and path of travel are less obvious.

In advance of COP26, over 450 financial institutions joined the Glasgow Financial Alliance for Net Zero. As part of this initiative, RBC joined the Net Zero Banking Alliance (NZBA), a global industry-led initiative to accelerate and support efforts to address climate change and drive credible progress toward achieving net-zero emissions by 2050. As a signatory to the NZBA, RBC is committed to achieving net-zero emissions in its lending portfolio, and to working collaboratively to support banks' and clients' transition to net-zero. Visit the [RBC Climate Hub](#) for more information.



²“RBC” refers to Royal Bank of Canada and its subsidiaries in this Report.

³Inclusive of BlueBay Asset Management LLP assets under management (US\$78.0 billion), as at December 31, 2021.

⁴Sixth Assessment Report, Intergovernmental Panel on Climate Change, August 9, 2021 ([Link](#))

Our net-zero ambition and our approach to climate change

RBC GAM has long had a focus on responsible investment, which is inclusive of climate change. In 2020, we took the additional steps of formalizing how we address climate change as an ESG factor with the release of [Our Approach to Climate Change](#), which is built upon the three pillars established in [Our Approach to Responsible Investment](#).

In 2021, RBC GAM took the additional step of publishing [Our Net-Zero Ambition](#), which confirms our support for the global goal of achieving net-zero emissions by 2050 or sooner. We also recognize and support the need to achieve a just and orderly transition to net-zero that promotes widely shared economic prosperity. Our commitment to net-zero focuses on providing transparency through robust climate disclosures, on supporting the transition to net-zero through our investment approach, and on maintaining net-zero operations.

RBC GAM's core beliefs, commitments, and actions embedded within Our Net-Zero Ambition and Our Approach to Climate Change are described below⁵:



Our net-zero ambition and our approach to climate change



Our beliefs

- Climate change is a pressing issue that may impact issuers and the economies, markets, and society in which they operate.
- A just and orderly transition that promotes widely shared economic prosperity is critical.
- We believe that the integration of ESG factors, inclusive of climate change, can enhance long-term risk-adjusted returns.
- Active stewardship is one of the most effective ways for investors to drive real world, economy-wide emissions reductions, while also meeting our fiduciary duty to clients.



Our commitments

- We support the global goal of achieving net-zero emissions by 2050 or sooner.
- All of our investment teams integrate material climate change factors into their investment approach.
- We analyze issuer and portfolio-level climate risks and opportunities.
- We use active stewardship to advance our climate change commitments.
- We collaborate with like-minded investors.
- We provide climate-based solutions to meet client needs.
- We provide transparent disclosures on climate change.
- We maintain net-zero emissions in our operations.



Our actions

- We use a broad range of climate data and other inputs to integrate material climate factors into our investment approach.
- We measure, monitor, and disclose the carbon emissions of our assets under management, and conduct net-zero and climate scenario analysis.
- We conduct climate research and build climate expertise across investment and other platforms.
- We convey our views on climate change through proxy voting, as per the [RBC GAM Proxy Voting Guidelines](#), and disclose our proxy voting records on our regional websites in accordance with applicable regulations.
- We actively engage with issuers for whom climate change is a material financial risk if they do not have a net-zero target or action plan.
- We are a member of Climate Action 100+ and Climate Engagement Canada.
- We are a formal supporter of the Task Force on Climate-Related Financial Disclosures (TCFD), and publish an annual TCFD report.

⁵See [Our Net-Zero Ambition](#) and [Our Approach To Climate Change](#) for exact language.

TCFD support and alignment

The Task Force on Climate-related Financial Disclosures, mandated by the Financial Stability Board, issued its recommendations in 2017, and updated these in 2021. The TCFD recommendations are a set of reporting guidelines for disclosure of material climate-related risks and opportunities.

Enhancing the comprehensiveness, consistency, and comparability of climate-related metrics and disclosures is a critical imperative for financial institutions, corporate issuers, regulators, and governments. RBC GAM has supported and encouraged TCFD disclosures through active stewardship since 2018. We became a formal supporter of the TCFD in 2020, and issued our first [RBC GAM TCFD Report 2020](#) the following year.

This report covers calendar year 2021 and is our second TCFD-aligned disclosure.⁶ As recommended by the TCFD and as described below, RBC GAM is taking a phased approach to implementing the TCFD recommendations,

and we have structured this report according to the TCFD disclosure framework outlined in Figure 1. We are committed to continuous improvement and expect that our TCFD disclosures and the actions we take to address climate change will advance over time.



Figure 1: RBC GAM progress against TCFD disclosure framework and requirements

1	Governance	Disclose the organization's governance around climate-related risks and opportunities.	
1.1	Board oversight	Describe the Board's oversight of climate-related risks and opportunities.	●
1.2	Management's role	Describe management's role in assessing and managing climate-related risks and opportunities.	●
2	Strategy	Disclose actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning, where the information is material.	
2.1	Description of climate risks and opportunities	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	●
2.2	Impact of climate risks and opportunities	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	●
2.3	Resilience to climate risks and opportunities	Describe the potential impact of different scenarios, including a 2 degree scenario, on the organization's businesses, strategy, and financial planning.	●
3	Risk management	Disclose how the organization identifies, assesses, and manages climate-related risks.	
3.1	Identification and assessment of climate risks	Describe the organization's processes for identifying and assessing climate-related risks.	●
3.2	Management of climate risks	Describe the organization's processes for managing climate-related risks.	●
3.3	Integration of climate risks	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.	●
4	Metrics and targets	Describe the metrics and targets used to assess and manage relevant climate-related risks and opportunities, where the information is material.	
4.1	Climate-related metrics	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	●
4.2	Operational emissions	Disclose Scope 1, Scope 2, and if appropriate Scope 3 greenhouse gas emissions, and the related risks.	●
4.3	Climate-related targets	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	●

● complete ● in progress

⁶Please note that while there is alignment in BlueBay's overall approach to climate change, there may be some differences with regards to specific climate-related practices as compared to those referenced in this document.



1. Governance

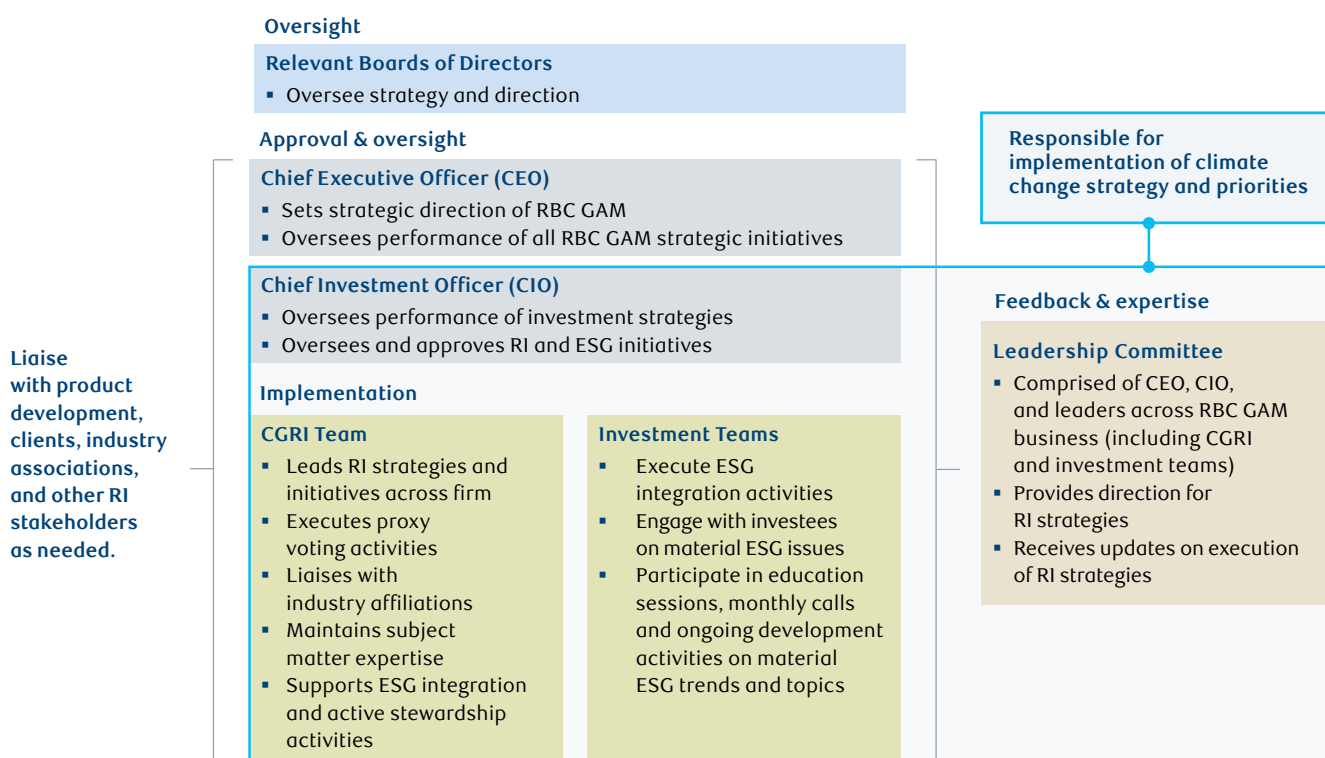
Disclose the organization's governance around climate-related risks and opportunities.

1.1 Board oversight

The various Boards of Directors (Boards) of the entities that comprise RBC GAM oversee the overall performance of their firms, which includes strategic priorities related to responsible investment. The Boards delegate responsibility for implementation of strategic priorities to the RBC GAM

Leadership Committee (Leadership Committee), which is comprised of the Chief Executive Officer (CEO), Chief Investment Officer (CIO) and leaders across the Corporate Governance & Responsible Investment (CGRI) team and the fixed income and equities investment teams, among others.

Figure 2: RBC GAM's governance oversight of climate change



RI = responsible investment

The Leadership Committee has identified the advancement of responsible investment, inclusive of climate change, as a strategic objective for the organization, and meets monthly to review and monitor progress against this strategic objective. The CEO reviews and reports to the Boards on all strategic priorities on an annual basis. The direct annual compensation of management includes an assessment of performance in achieving these strategic priorities. In addition, performance on strategic initiatives can also contribute to the overall firm-level performance factor that is applied to employees' annual variable compensation amount. As of 2022, the Leadership Committee will review climate performance metrics for RBC GAM assets under management on a regular basis.

1.2 Management's role

[Our Approach to Climate Change](#) and [Our Approach to Responsible Investment](#) set out RBC GAM's strategic priorities and commitments, which are reviewed by the Leadership Committee. The Head of CGRI reports quarterly to the Leadership Committee on strategic priorities for responsible investment including climate change.

Management oversight of climate-related risks and responsibilities includes the following:

- The CEO oversees and manages RBC GAM's activities and strategies and is responsible for approving RBC GAM's investment priorities, including Our Approach to Climate Change.
- The CIO is responsible for overseeing and managing all investment activities and is the ultimate investment risk owner responsible for climate change.
- The CGRI and investment teams are responsible for the implementation of our responsible investment activities and strategic priorities, and the Head of CGRI is a permanent member of the Leadership Committee. All investment teams and the CGRI team report directly to the CIO.
- Heads of institutional and retail businesses oversee product development with input from the CGRI team and oversight by the CIO and CEO.





2. Strategy

Disclose the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.

2.1 Description of climate risks and opportunities

Climate change will impact economies, markets, and societies, posing both financial risks and opportunities for issuers and investors. The impacts of climate change are systemic and unprecedented. They are also already apparent.

- **Climate risks** include *physical impacts* from more extreme weather events and changing climate patterns, and *transition impacts* from the shift to a low-carbon economy.
- **Climate opportunities** arise from investment in resource efficiency, low-carbon energy sourcing, the development of new products and services, access to new markets and customers, and enabling business resilience.

Figure 3: Description of climate-related risks⁷

Transition risks	
Policy	Due to government policies and regulations aimed at constraining activities that contribute to climate change. Includes policies that promote low-carbon substitutes.
Legal	Due to litigation claims related to failure to mitigate climate change, insufficient disclosure, or material misstatements.
Technology	Due to new, low-carbon technologies disrupting traditional systems.
Markets	Due to shifts in supply and demand for certain commodities, products, and services.
Reputation	Due to changing customer or community expectations of a company, based on the impact of their activities and their contribution to climate change.
Physical risks	
Acute events	Extreme weather events that include increased frequency and intensity of storms. This may cause increased coastal and inland flooding, disruptions to critical infrastructure, and mass migration.
Chronic impacts	Longer-term shifts in climate patterns, which may cause water stress and prolonged droughts, larger and more intense wildfires, heat waves, mass migration, and the spread of pests and infectious disease.

⁷ Adapted from Recommendations of the Task force on Climate-related Financial Disclosures, June 2017 ([Link](#))

Rising global temperatures cause the physical impacts of climate change, which are driven by an increase in frequency and intensity of extreme weather events, and longer-term shifts in climate patterns. Efforts to reduce GHG emissions cause the transition impacts of climate change, which are driven by government policies and regulations, increasing legal action and litigation claims, technology disruption and transformation, shifts in supply and demand, and changing consumer and employee expectations related to climate change.

Corporate and sovereign issuers may be directly and indirectly affected by both the physical and transition impacts of climate change. Depending on the issuer, this may impact profitability, the value of their financial assets, and productivity. Climate

change may also impact economic growth, prices and inflation, employment and labour productivity, trade flows, debt, and financial stability within the economies and societies within which issuers and investors operate.

Investors are indirectly affected by climate change – through their investments and exposure to economies and markets more broadly (see Box 1 – Economic impacts of climate change). Portfolio exposure to issuers across global markets and asset classes may result in the mispricing of assets, asset stranding, and credit default risks. This in turn can lead to an increase in volatility and uncertainty in markets, which may positively or negatively impact long-term risk-adjusted returns.

BOX 1: ECONOMIC IMPACTS OF CLIMATE CHANGE

By: Eric Lascelles, Chief Economist, RBC GAM

The impacts of climate change will affect not only the planet and the quality of human life, but have tertiary effects on the global and local economies as well. Some of the channels through which climate change may impact the economy include:

- Higher temperatures that directly affect sectors such as agriculture, tourism, and insurance, as well as lower overall productivity.
- More natural disasters that increase economic damage due to lost productivity and the cost of reconstruction, while also providing greater overall uncertainty.
- Climate regulations that can result in a higher price on carbon emissions, which may impede some industries, while also likely spurring increased investment in low-carbon technologies, products, and solutions.
- Transition costs that are likely to arise from the need to transition key sectors such as Energy, Utilities, and Materials to less carbon-intensive models, with the potential for stranded assets and labour disruption.

- Second-round effects that could include impacts on financial stability due to weaker economies and disrupted industries, as well as economic damage from geopolitical conflicts and greater inequality.

There is considerable debate over the magnitude of potential economic damage due to climate change, with a roughly five-fold range of estimates.⁸ Damage varies significantly by sector and country. The potential for economic damage is most significant over longer time horizons, with potentially trillions of dollars per year at stake by 2100.⁹ It remains difficult to incorporate climate change into short-term economic models due to highly variable damage by year and large differences in sector and geographic implications, but it is likely that the impact of climate change isn't yet fully factored into market pricing.

⁸Burke, Hsiang, and Miguel 2015; Nordhays 2010; IMGWEO October 2020; RBC GAM 2021

⁹RBC GAM as at September 1, 2021

Asset classes and time horizon

As investors and fiduciaries of our clients' assets, we actively consider how climate-related risks and opportunities impact equity, fixed income, and real assets in our portfolios.

Our principal duty is to maximize investment returns for our clients without undue risk of loss. We do this within the investment limits described in each investment mandate. The majority of our mandates follow medium- (1-5 year) to long-term (5-15 year) time horizons. As such, this is the investment time horizon we generally consider in our investment activities. However, we recognize that the physical impacts of climate change are currently being felt in some geographies, resulting in more short-term (0-1 year) impacts. In addition, governments are implementing more stringent regulatory requirements (e.g., carbon pricing, pollution reduction) that may result in policy and market impacts for some sectors and geographies in the short term.



Equities: As equity investors, we are concerned about the value of businesses in which we invest and therefore consider relevant climate-related risks and opportunities to determine if they have been priced into an issuer's valuation. Corporate issuers in all sectors and geographies may be impacted by climate change, although in different ways. Within sectors, it is a company's business model, strategy, the geographic location of its assets, and the quality of its corporate governance that will ultimately determine the size and impact of climate change on its profits and valuation.



Fixed income: Debt issuers' credit risk ratings and ability to pay their debts may also be affected by climate change. The impact of climate change on fixed income securities depends on a range of factors including the nature of the issuer (e.g., corporate versus sovereign), the nature of the instrument type, the yield being offered, and the maturity of the investment.



Real assets: The effects of climate change on real assets is primarily due to physical impacts and therefore depends in large part on the geographic location of these assets. Acute and chronic physical risks, like flooding, hurricanes, and rising sea levels, are typically the biggest climate risks for real assets. Longer term concerns include potential cost increases due to higher energy and water costs and related upgrades that may be required to adapt to new policy requirements and physical climate conditions.



BOX 2: SCOPE OF ASSETS INCLUDED IN PORTFOLIO ANALYSIS (SECTION 2.2 AND 2.3)

In this report, portfolio analysis is conducted on 54% (US\$260.9 billion) of RBC GAM's total AUM, as at December 31st, 2021. This represents 85% of RBC GAM's equity investments and 38% of fixed income investments. Climate-related data coverage is available for 89% (US\$231.0 billion) of the AUM included in the scope of portfolio analysis, as described below. The scope of portfolio analysis does not include BlueBay, except for US\$10.6 billion in funds sub-advised by BlueBay for RBC GAM.

Holdings in this report are an aggregation of AUM by asset type and issuer country of domicile, which are compared to a representative benchmark, as indicated below.

Assets that are not included in the portfolio analysis are: government bonds, cash and equivalents, other bonds, ETFs or mutual funds, mortgages, asset-backed securities, other assets (mainly real estate and money market securities), private placements, and derivatives. These assets are primarily excluded from this analysis due to limitations in data availability, inapplicability of methodologies, and/or minor financial materiality to the overall AUM.

Portfolio (Port.)			
Name	AUM in scope of analysis		Representative benchmark (Bmk.)
	USD (billion)	% data coverage	
Canadian equities	\$60.7	98%	S&P/TSX Capped Composite Index
U.S. equities	\$63.4	97%	S&P 500 Index
International equities	\$24.0	99%	MSCI Europe, Australasia, Far East (EAFE) Index [†]
Emerging Market equities	\$2.9	77%	MSCI Emerging Markets (EM) Index, ex Asia-Pacific [†]
Asia-Pacific equities	\$25.7	88%	MSCI All-Country Asia-Pacific Index
Canadian corporate bonds	\$47.3	73%	FTSE Canada Universe Bond Index, corporates only
U.S. corporate bonds	\$26.4	82%	ICE BofA U.S. Corporate Master Index
International corporate bonds	\$10.5	54%	Bloomberg Barclays Global Aggregate Corporate Index (BAGACC)
Total AUM included	\$260.9	89%	

[†] The representative benchmarks only include a sub-set of countries within the MSCI EAFE Index and the MSCI EM Index. The subset of countries included in the MSCI EAFE Index are: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and Israel. The subset of countries included in the MSCI EM Index are: Argentina, Brazil, Chile, Colombia, Czech Republic, Egypt, Greece, Hungary, Mexico, Peru, Poland, Qatar, Russia, South Africa, Turkey, and the United Arab Emirates. This approach was taken to avoid overlap between the MSCI EAFE Index, MSCI Emerging Markets Index, and the MSCI All-Country Asia-Pacific Index. To remain consistent, the same subset of countries were used across the International equities and Emerging Market equities portfolios.

2.2 Portfolio analysis of climate impact

Carbon emissions analysis

Carbon emissions analysis provides a view on the relative exposure of portfolios, sectors, and issuers to climate-related transition risks such as policy, market, and technology risks. It also provides a view on the absolute and relative contribution of a portfolio, sector, or issuer to global emissions, and by extension to climate change.

Carbon emissions analysis is an important foundational element for assessing climate-related risks and opportunities, and serves as an input to forward-looking analysis such as net-zero portfolio alignment and climate scenario analysis (see Section 2.3). Carbon emissions analysis is, however, a static and backwards-looking metric in that it provides a view on what an issuer's emissions have been, which is not necessarily reflective of what they will be in the future. Importantly, carbon emissions analysis does not reflect what actions an issuer is, or will be, taking to manage or mitigate potential climate risks or to capitalize upon opportunities. For this reason, RBC GAM uses a suite of climate metrics to assess climate-related risks and opportunities at an issuer and portfolio level, which includes: exposure to low-carbon transition risks, such as asset stranding; percentage of green revenue versus fossil fuel revenue; percentage of investments in low-carbon patents; issuers' climate targets and progress in achieving these; governance oversight of climate change; and climate scenario analysis (see Section 2.3).

Description of carbon emissions analysis

RBC GAM conducts portfolio carbon emissions analysis on a quarterly basis for over 100 core equity and fixed income

funds, which are reviewed by investment teams (see Section 3.1 for more). On an annual basis, we also assess portfolio carbon emissions by asset class and geography, which is reviewed by RBC GAM's Chief Investment Officer and our Leadership Committee.

RBC GAM uses several metrics to measure and assess portfolio carbon emissions of investments in corporate issuers (see Figure 4). The selection of metrics is informed by the recommendations of the TCFD, the Partnership for Carbon Accounting Financials (PCAF), and emerging best practice.^{10,11} As such, we disclose the weighted average carbon intensity (WACI) and emissions by dollars invested, as well as financed emissions. All climate metrics are reported in Section 4.1.

Data quality and coverage is of utmost importance in conducting carbon emissions analysis. Our preference is to use reported emissions data, calculated in line with the GHG Protocol, and collected from a verified third-party data provider. Where reported data is not available, we use estimated data, calculated using physical activity-based emissions (e.g., megawatt hours by fuel type) and economic activity-based emissions (e.g., sector average tCO₂ eq./revenue).¹² Our internal assessment of carbon emissions is inclusive of all emissions scopes (scope 1, 2, and 3), where data is available. As there continue to be challenges in the quality and consistency of scope 3 emissions estimation methodologies, and concerns regarding double-counting of emissions when aggregating emissions at a portfolio level, the portfolio carbon emissions disclosures in this report focus exclusively on scope 1 and 2 emissions.

Figure 4: Overview of climate metrics and calculations used for portfolio carbon emissions.

See Section 4.1 for full disclosure of these climate metrics.

Climate metric	Unit	Calculation	Key question
Weighted average carbon intensity (WACI)	tCO ₂ eq./\$M revenue and tCO ₂ eq./EVIC	$\sum_i \left(\frac{\text{current value of investment}_i}{\text{current portfolio value}} * \frac{\text{issuer's Scope 1 and Scope 2 GHG emissions}_i}{\text{issuer's \$M revenue}_i} \right)$ $\sum_i \left(\frac{\text{current value of investment}_i}{\text{current portfolio value}} * \frac{\text{issuer's Scope 1 and Scope 2 GHG emissions}_i}{\text{issuer's \$M enterprise value including cash}_i} \right)$	How efficient is the portfolio at using GHG emissions per unit of output? What is the portfolio's exposure to carbon intensive issuers?
Carbon emissions per dollars invested	tCO ₂ eq./\$M invested	$\sum_i \left(\frac{\text{current value of investment}_i}{\text{enterprise value including cash}} * \frac{\text{issuer's Scope 1 and Scope 2 GHG emissions}_i}{\text{current portfolio value (\$M)}} \right)$	What quantity of absolute GHG emissions are generated for every million dollars invested in the portfolio?
Financed emissions	tCO ₂ eq.	$\sum_i \frac{\text{current value of investment}_i}{\text{enterprise value including cash}_i} \times \text{Issuer emissions}_i$ <p>Note: The same denominator is used for listed equities and corporate bonds to allow for aggregation across portfolios.</p>	What are the absolute GHG emissions associated with the portfolio?

¹⁰ Implementing the recommendations of the TCFD, October 2021 ([Link](#))

¹¹ The Global GHG Accounting and reporting Standard for the Financial industry, November 2020 ([Link](#))

¹² MSCI ESG Climate Change Metrics, December 2021, MSCI®

Results of portfolio carbon emissions analysis

The WACI of portfolios is generally less than that of their representative benchmarks (see Figure 5). Across all portfolios in the scope of this analysis, WACI is generally driven by sector exposure. The Energy, Utilities, Materials, and Industrials sectors are the greatest contributors to portfolio carbon emissions across regions (see Figure 6). Carbon-intensive sectors are generally those that will be exposed to greater transition risks, such as the impact of policy changes and technology disruption. Within these sectors, however, issuers may differ significantly in how they are managing and mitigating these risks, which may provide opportunities for investors to maximize long-term, risk-adjusted returns while reducing exposure to transition risks.

When evaluating a portfolio's carbon emissions and its contribution to global emissions, it is important to consider what is being measured. Scope 1 and 2 emissions represent the emissions generated by operations, and the purchase of electricity, steam, and heat or cooling. This provides a view on the quantity of emissions produced by a company to extract, manufacture, produce, or distribute a good or service. While a useful indicator of a company's carbon efficiency, this production-level view of emissions does not take into consideration where emissions are consumed. For example, methane emissions produced from agriculture are considered scope 1 emissions for a farm. However, a food processor or distributor would categorize these same emissions as part of their scope 3 emissions. It is challenging to include scope 3 emissions into portfolio carbon emissions analysis as this can result in double counting of emissions (e.g., one company's

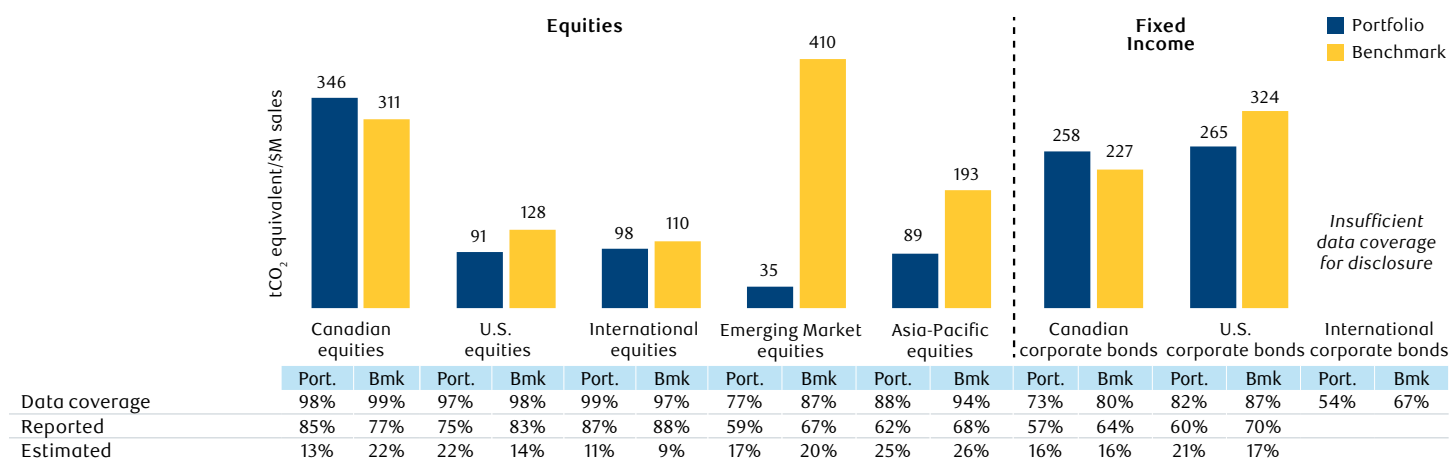
scope 1 emissions may be another's scope 2 or 3 emissions). There are also significant issues with data quality and poor coverage of reported scope 3 emissions. For example, less than 50% of issuers within MSCI ACWI Index report their scope 3 emissions.¹³

Because portfolio carbon emissions analysis provides a view on where emissions are produced (not where they are consumed), this impacts both sector and regional variation in portfolio carbon emissions. This dynamic plays out across sectors and industries given the interconnections between value chains. It also occurs across regions and countries, based on whether those economies are net-producers or net-consumers of carbon-intensive goods and services. By adjusting a country's carbon emissions for trade, we are able to identify which countries are net-importers of emissions (i.e., import more goods with embedded emissions than they export) or net-exporters.¹⁴ Countries that are net-importers of emissions include the United States, United Kingdom, most of Europe, Brazil, and Japan. Countries that are net-exporters of emissions include Canada, Australia, China, and India. Portfolio carbon emissions are in large part reflective of each portfolio's sector distribution and the carbon intensity of those sectors. They are also largely reflective of whether a region is a net-producer or consumer of emissions.

With rising global emissions due to both the production and consumption of carbon-intensive goods and services across sectors and regions, in order to reach the global goal of achieving net-zero emissions by 2050, both demand for and supply of emissions-generating goods and services will need to be addressed.

Figure 5: Weighted average carbon intensity (inclusive of scope 1 and 2 emissions), by portfolio¹⁵

As at December 31, 2021



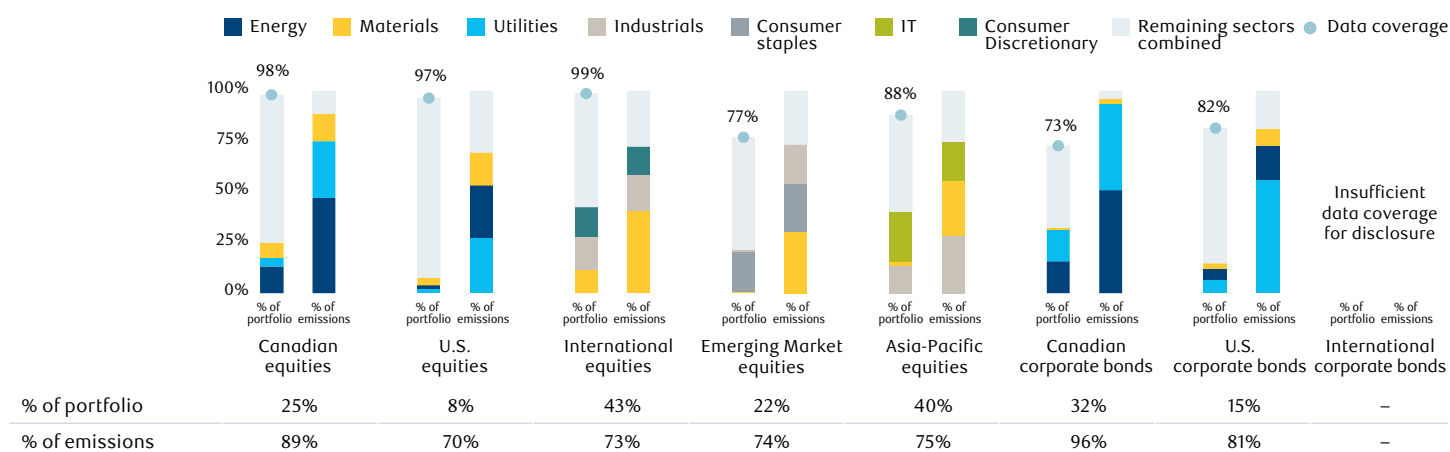
¹³ RBC GAM analysis, based on MSCI ESG Climate Change Metrics, December 2021, MSCI®

¹⁴ How do CO₂ emissions compare when we adjust for trade, Our World in Data based on the Global Carbon Project, 2019 ([Link](#))

¹⁵ See Box 2 for portfolio and benchmark information. ESG data coverage for fixed income securities continues to be low across regions, which results in low data coverage for corporate bond portfolios. As calculating some climate metrics when there is low data coverage may skew the results, in this report we have applied a minimum data coverage threshold of 65% for disclosures. MSCI ESG Climate Change Metrics, December 2021, MSCI®

Figure 6: Top three sectors contributing to portfolio emissions, by portfolio¹⁶

As at December 31, 2021



Net-zero alignment of portfolios

As part of [Our Net-Zero Ambition](#), RBC GAM is committed to measuring and monitoring the net-zero alignment of our portfolios. Methodologies for measuring net-zero alignment of investment portfolios are still in development and are expected to evolve over time. It is for this reason that we currently track and monitor net-zero alignment using two approaches, both of which are recommended by the Science Based Targets initiative (SBTi) in their draft guidance¹⁷ (see

Figure 7). RBC GAM is focused on approaches for measuring and monitoring net-zero alignment that can drive real emissions reduction within portfolio companies, by focusing on actions issuers can take to reduce their emissions across sectors. RBC GAM remains committed to providing transparent disclosures and will seek to align with best practices as they emerge over time.

Figure 7: Overview of metrics considered as part of net-zero alignment

See Section 4.1 for full disclosure of these climate metrics.

Climate metric	Unit	Calculation	Key question
Alignment of portfolio companies	% of AUM invested in issuers with Paris or net-zero aligned targets	$\sum \frac{\text{current value of investments with target}^{18}}{\text{current portfolio value}} * 100$	What percentage of investments in the portfolio have Paris-aligned or net-zero aligned targets?
Implied temperature rise ¹⁹	Degrees Celsius	$2^{\circ}\text{C base temperature} + \text{Relative portfolio-level over/undershoot of carbon budget} \times \text{Global } 2^{\circ}\text{C carbon budget} \times \text{TCRE Factor}^{20}$	If the global economy looked like this portfolio, what would the global average temperature increase be (from pre-industrial times to 2100)?

¹⁶ See Box 2 for portfolio and benchmark information. ESG data coverage for fixed income securities continues to be low across regions, which results in low data coverage for corporate bond portfolios. As calculating some climate metrics when there is low data coverage may skew the results, in this report we have applied a minimum data coverage threshold of 65% for disclosures., MSCI ESG Climate Change Metrics, December 2021, MSCI®.

¹⁷ Foundation for Science-based Net-zero Target Setting in the Financial Sector: Draft for Public Comment, Version 0, November 2021, ([Link](#))

¹⁸ For the purposes of this report, RBC GAM considers carbon emissions reduction targets to be Paris-aligned (also called science-based) or net-zero aligned if they have been verified by the Science-based Targets Initiative (SBTi) as meeting their related target-setting criteria. The SBTi public database of companies, as at January 25, 2021, was used for this report ([Link](#)).

¹⁹ Based on MSCI Implied Temperature Rise methodology, 2021 ([Link](#))

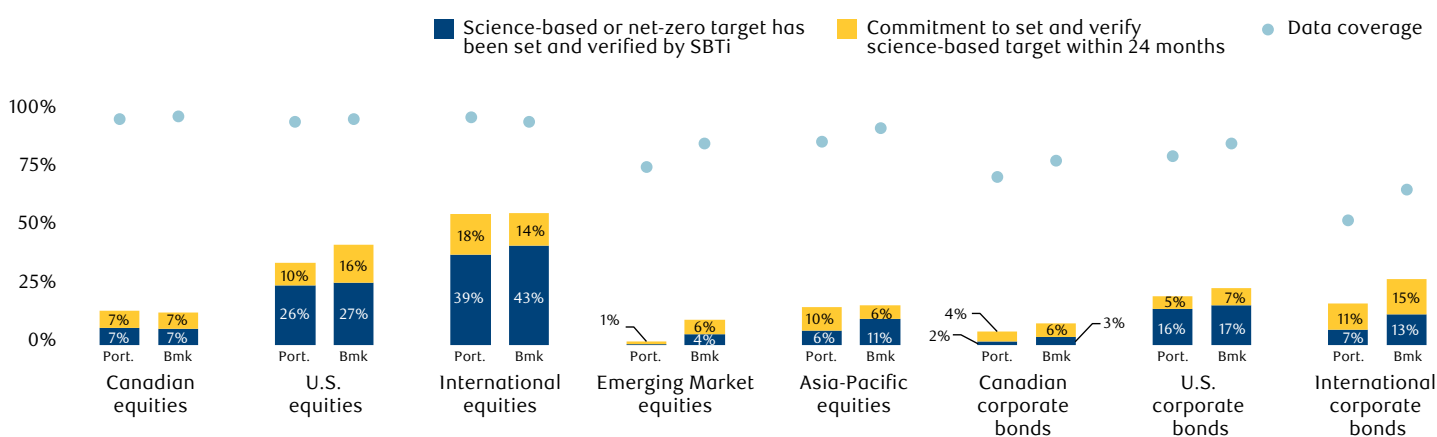
²⁰ The [2020 Measuring Portfolio Alignment Report](#) from the TCFD recommends a Transient Climate Response to Cumulative Carbon Emissions (TCRE) factor of 0.000545°C warming per Gt CO₂, which is based on the Intergovernmental Panel on Climate Change Physical Science Basis report (2013). The TCRE provides a relationship that links each additional unit of emissions emitted beyond the available remaining global 2°C carbon budget to degrees of additional warming. This value is used to convert a portfolio's allocated carbon budget over/undershoot into a degree of warming.

Paris and net-zero alignment of portfolio companies provides a forward-looking view to assess the relative level of commitment and expected trajectory of emissions for portfolio companies.²¹ For this report, RBC GAM considers targets to be Paris-aligned (also called science-based) or net-zero aligned if they have been verified by SBTi as meeting their related target-setting criteria.²² SBTi provides a publicly available database of companies that have verified science-based and net-zero targets, and of companies that have committed to set a target within 24 months. Overall, 23% (US\$59.6 billion) of AUM in scope of this analysis (see Box

2 above) is invested in issuers that have either set a Paris-aligned or net-zero target, or will do so within 24 months (see Figure 8).

14% (US\$37.2 billion) of AUM in the scope of this analysis is invested in issuers with a Paris-aligned or net-zero target, and 9% (US\$22.4 billion) is invested in issuers that have committed to set a target within 24 months.

Figure 8: Percentage of AUM invested in issuers with Paris-aligned or net-zero targets (based on SBTi)²³
As at December 31, 2021



²¹ Foundation for Science-based Net-zero Target Setting in the Financial Sector: Draft for Public Comment, Version 0, November 2021, ([Link](#)).

²² Companies taking action, Science based targets initiative, as at January 25, 2022 ([Link](#))

²³ See Box 2 for portfolio and benchmark information. Data on science-based and net-zero targets is from Science based targets Initiative (SBTi), as at January 25, 2022, ([Link](#)).



Carbon emission reduction targets can vary significantly based on the scope of emissions included, the ambition of the emissions reductions, and the company's likelihood of achieving the target. It is for this reason that verified targets that meet an established standard are preferable from a comparative and consistency perspective. However, RBC GAM also recognizes that not all issuers may choose to apply a voluntary standard such as the one established by SBTi. For this reason, we also track and monitor AUM invested in issuers with any carbon emissions reduction targets and, where climate change is material to the issuer, we assess the scope, ambition, and achievability of targets on a case-by-case basis.

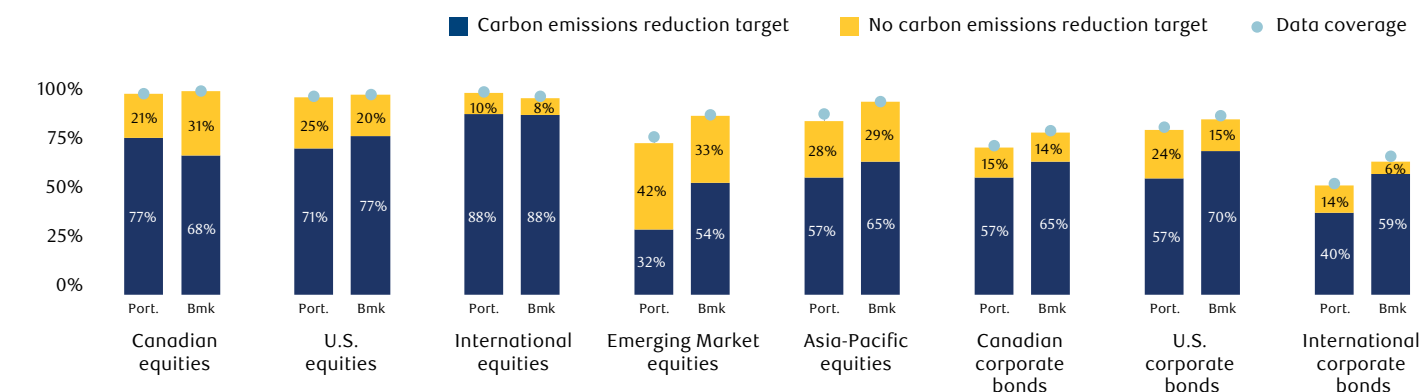
Across asset classes and geography, portfolios in the scope of this analysis show a range of 32% to 88% of AUM invested

in issuers with carbon emissions reduction targets (see Figure 9). For both the portfolio and benchmark, emerging market equities have the lowest percentage of AUM invested in issuers with carbon emissions reduction targets, which is to be expected given that issuers in these regions tend to be earlier in their ESG disclosure and target-setting processes.

RBC GAM continues to monitor and evaluate the quality of data inputs to assess carbon emissions reduction targets, and internally evaluates progress in achieving those targets, where applicable. As per [Our Net-Zero Ambition](#), RBC GAM is committed to actively engaging with issuers for whom climate change is a material financial risk if they do not have a net-zero target and action plan, or are lagging their peers.

67% (US\$174.4 billion) of AUM in the scope of this analysis is invested in issuers with a carbon emissions reduction target.

Figure 9: Percentage of AUM invested in issuers with carbon emissions reduction targets²⁴
As at December 31, 2021



Implied temperature rise (ITR) is a modelled, forward-looking metric that provides an indication of what temperature pathway an issuer or portfolio aligns with.²⁵ This metric indicates what the global temperature rise would be in 2100 if the global economy looked like that issuer or portfolio. The portfolio-level ITR is generated by calculating a total carbon budget for the portfolio²⁶, determining the portfolio's relative overshoot or undershoot of its carbon budget²⁷, and translating that into a representative global temperature, in degrees Celsius.²⁸ This methodology takes into consideration the recommendations of the TCFD technical documentation on portfolio alignment.²⁹

²⁴ See Box 2 for portfolio and benchmark information. MSCI ESG Climate Change Metrics, December 2021, MSCI®

²⁵ Implied Temperature Rise Methodology, MSCI ESG Research, September 2021, ([Link](#))

²⁶ The IPCC Special Report on 1.5 °C provides the remaining global carbon budget for different temperature rises and probabilities, Table 2.2, ([Link](#)). This includes Scope 1, 2 and 3 emissions.

²⁷ The future carbon emissions of all underlying issuers within the portfolio are estimated based on their current emissions and taking into account existing carbon emissions reduction targets.

²⁸ The relative carbon overshoot or undershoot is then translated into a representative global temperature increase in degrees Celsius, using the science-based Transient Climate Response to Cumulative Emissions (TCRE) approach.

²⁹ Portfolio alignment technical considerations, Portfolio Alignment Team, October 2021, ([Link](#))

The ITR of portfolios in the scope of this analysis have a lower ITR than their representative benchmarks (see Figure 10). The fact that most portfolios do not yet align to well-below 2°C is to be expected as current government policies are estimated to put the world on course for a 3°C increase in temperature by the end of the century,³⁰ and the decarbonization across sectors is still in progress. The portfolio-level ITR provides an aggregated view of a diversified portfolio, which can mask the distribution of ITRs for issuers within the portfolio. Across

portfolios, between 23% and 67% of AUM in the scope of this analysis is aligned with a below 2°C implied temperature rise (see Figure 11).

45% (US\$116.5 billion) of AUM included in the scope of this analysis is aligned with a below 2°C implied temperature rise.

Figure 10: Implied temperature rise, by portfolio³¹

As at December 31, 2021

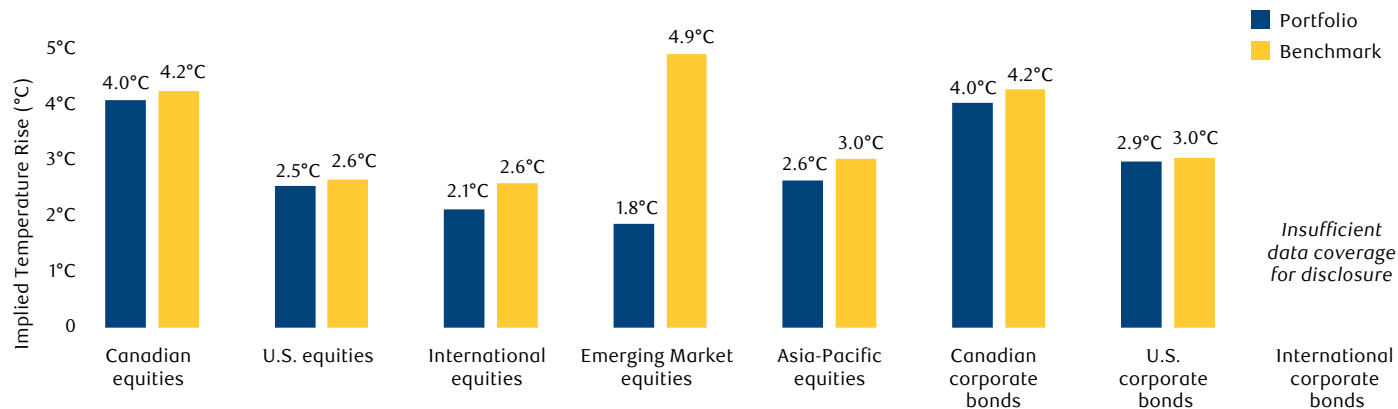
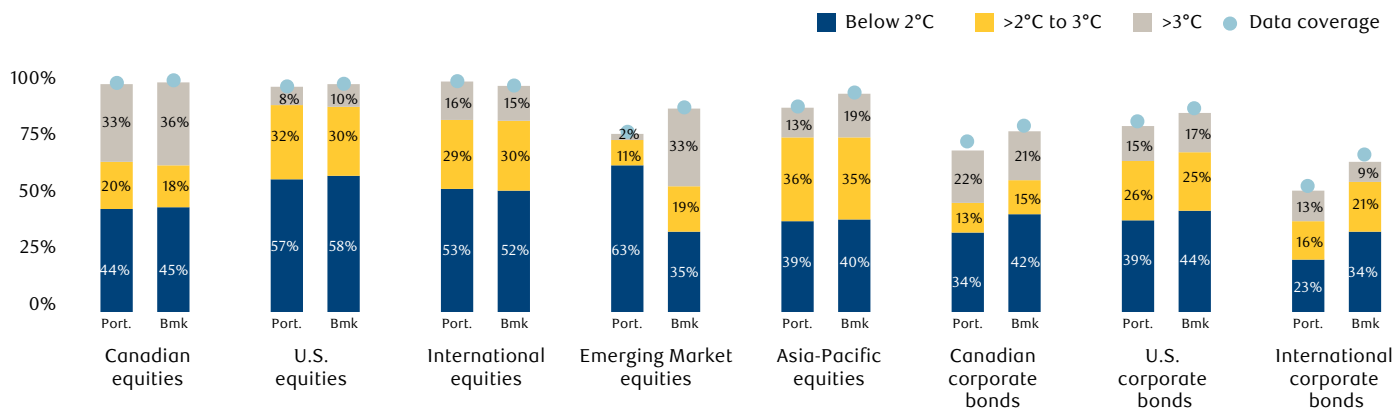


Figure 11: Implied temperature rise distribution, by portfolio. Percentage of AUM by ITR range³²

As at December 31, 2021



³⁰ NGFS scenarios for central banks and supervisors, Network for greening the financial system, June 2021, ([Link](#))

³¹ See Box 2 for portfolio and benchmark information. ESG data coverage for fixed income securities continues to be low across regions, which results in low data coverage for corporate bond portfolios. As calculating some climate metrics when there is low data coverage may skew the results, in this report we have applied a minimum data coverage threshold of 65% for disclosures. MSCI ESG Climate Change Metrics, December 2021, MSCI®

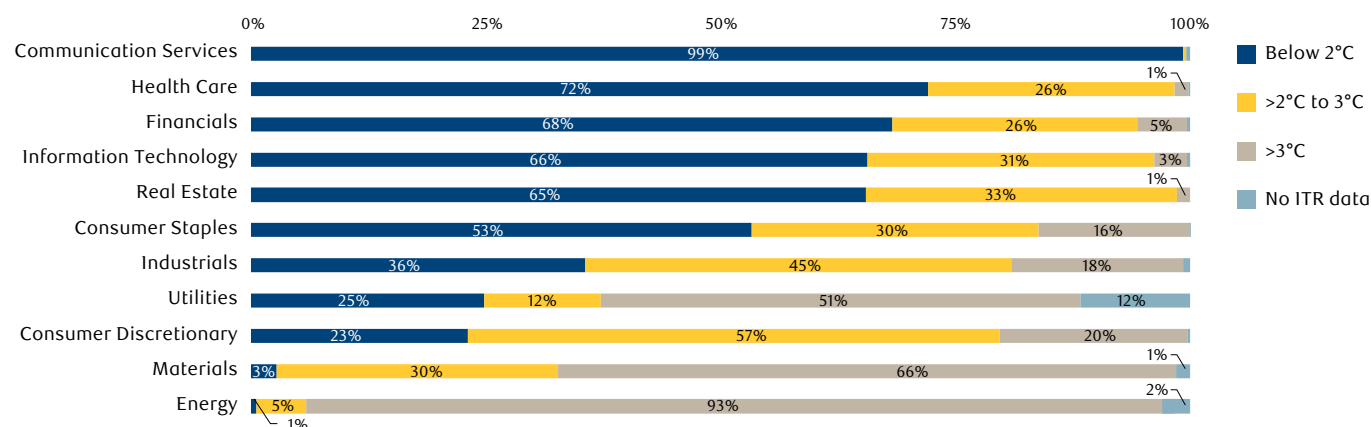
³² See Box 2 for portfolio and benchmark information. MSCI ESG Climate Change Metrics, December 2021, MSCI®

The most carbon-intensive sectors will have the greatest difficulty reaching a below 2°C ITR. The Energy and Materials sectors have the lowest percentage of AUM that aligns with a temperature range of below 2°C, highlighting the decarbonization challenge faced by issuers in those sectors (see Figure 12). While the energy transition has already begun, to date the speed, scale, and scope of this transition has been uneven and inconsistent across regions and countries. The pace of change is however accelerating – driven by increasing climate regulations, declining costs for renewable electricity, growing demand for power due to electrification, and evolving market expectations. The energy sector is an important partner in this transition as they have the infrastructure, resources, technology, and the expertise to implement the structural changes required to enable this transition. As the global energy system continues to transform in the years and decades to come, the concept of

a just transition is critical, as it recognizes the need to create a bridge from where we are today to an inclusive and sustainable low-carbon future. This transition must be done thoughtfully and in consideration of issues such as energy security and resilience, employment and re-skilling, community transformation and revitalization, poverty alleviation and equality.

While the ITR is largely reflective of the carbon intensity of the underlying issuers, it also provides an additional view on the degree to which issuers within a portfolio are expected to reduce emissions over time. This type of forward-looking analysis is a useful supplement to portfolio carbon emissions analysis in that it is reflective of a portfolio's direction of travel towards achieving net-zero alignment. Achieving net-zero emissions by 2050 is often seen as synonymous with keeping global warming below 1.5°C by the end of the century.³³

Figure 12: Implied temperature rise distribution, by sector. Percentage of AUM by ITR range³⁴
Based on portfolios in scope of analysis for which there is data coverage. As at December 31, 2021



2.3 Portfolio analysis of climate resilience

The factors that drive the transition to a net-zero economy and the physical impacts of climate change are fairly well understood. How these factors will play out over time, at what speed and scale, and society's response are less certain. Climate scenario analysis enables investors to assess the impact of possible future scenarios on issuers and portfolios. Scenario analysis is not meant to be a forecast, but represents a range of plausible future pathways consistent with achieving specific climate temperature targets, and based on certain conditions and assumptions regarding policies, energy supply and demand, technology and more.³⁵

Figure 13: Overview of metric used to quantify the impact of climate scenarios

See Section 4.1 for full disclosure of these climate metrics.

Climate metric	Unit	Calculation	Key question
Climate Value at Risk (VaR)	Potential % change in market value due to climate change factors	Aggregated Climate VaR = Policy Risk Climate VaR + Technology opportunity Climate VaR + Physical risk and opportunity Climate VaR	How might the market value of the portfolio change under different global warming scenarios (1.5°C, 2°C, 3°C), due to key climate factors?

³³ NGFS scenarios portal, Frequently Asked Questions, Network for Greening the Financial System, accessed January 10, 2022 ([Link](#))

³⁴ MSCI ESG Climate Change Metrics, December 2021, MSCI®

³⁵ Final Report of the BoC-OSFI Climate Scenario Analysis Pilot, Office of the Superintendent of Financial Institutions (OSFI) and Bank of Canada (BoC) ([Link](#))

RBC GAM is committed to conducting climate scenario analysis to evaluate the resilience of our investments, and, where material, to integrate insights into our investment approach. In order to assess the impact of different climate scenarios on an individual security or portfolio, it is necessary to translate scenario outputs into a measure of financial risk. We use Climate Value at Risk (VaR) to determine the potential change in valuation of a security or

portfolio due to climate change, expressed as a percentage (see Figure 14). It is calculated by modelling the future costs and revenue for issuers due to policy risk, technology opportunities, and physical risks and opportunities under each scenario. Financial modelling is then used to derive valuation impacts over time, which can be assessed at an aggregate level, or based on transition or physical risks and opportunities, as summarized below.³⁶

Figure 14: Description of Climate VaR methodology

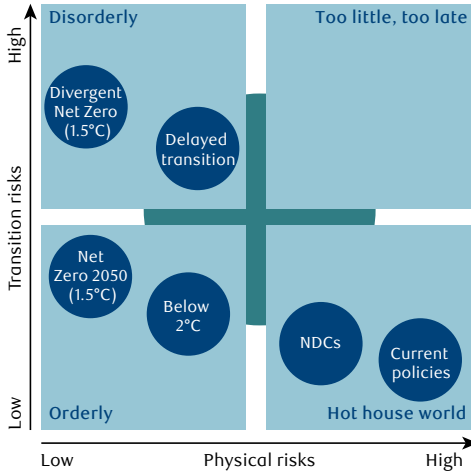
Aggregated Climate VaR =				Transition risks and opportunities	+	Physical risks and opportunities
Climate metric	Policy risk Climate VaR		Technology opportunity Climate VaR		Physical risk and opportunity Climate VaR	
Climate impact driver	Policy		Technology		Acute events Chronic impacts	
Modeled inputs	<ul style="list-style-type: none"> GHG emissions reduction requirements Costs of reduction requirements (based on carbon price) 		<ul style="list-style-type: none"> Advances in low-carbon technology (based on patents) Low-carbon revenue 		<ul style="list-style-type: none"> Business interruption and asset damage due to chronic and acute physical risks 	
Time horizon	To 2080		To 2080		To 2080	
Climate scenarios	NGFS scenarios³⁷ Net Zero 2050 (1.5°C) Divergent Net Zero (1.5°C) Below 2°C (1.8°C) Delayed Transition (1.7°C) Nationally Determined Contributions (NDCs) (2.5°C)				IPCC scenario RCP 8.5 ³⁸ (~4.3°C) Includes an average and aggressive (95 th percentile) scenario	

Description of climate scenarios

In 2021, RBC GAM’s climate scenario analysis focused on the transition scenarios recommended by the Network for Greening the Financial System (NGFS). The NGFS scenarios provide alternative views on long-term temperature targets, net-zero emissions targets, energy supply and demand, climate policy, and technology availability. The scenarios also vary in terms of whether the transition occurs in an orderly or disorderly manner, with policy action beginning in 2025 for orderly transitions, and in 2030 for disorderly transitions. See Figure 15 and 16.

RBC GAM uses the NGFS scenarios modelled by the REMIND-MAGPIE integrated assessment model (IAM), which are summarized in Figure 17.³⁹ All NGFS scenarios are currently based on SSP2 (“Middle of the Road”) socio-economic assumptions.⁴⁰ We do not use the current policies scenario in our analysis. This scenario assumes all government policies, as of December 2019, are implemented and as such the costs of those policies are assumed to be already priced into markets.

Figure 15: NGFS scenarios framework



NDCs =Nationally Determined Contributions

³⁶ Detailed methodology for calculating Climate VaR is available from MSCI®, ([Link](#)).

³⁷ The Network for Greening the Financial System (NGFS). The NGFS climate scenarios were developed in partnership with an academic consortium including the Potsdam Institute for Climate Impact Research (PIK), the International Institute for Applied Systems Analysis (IIASA), the Center for Global Sustainability at the University of Maryland (UMD), Climate Analytics (CA), the Swiss Federal Institute of Technology in Zurich (ETHZ) and the National Institute of Economic and Social Research (NIESR).

³⁸ The Representative Concentration Pathways (RCPs) are a set of scenarios established by the IPCC. RCP 8.5 is generally viewed as a high emissions, business-as-usual scenario. Riahi, K., Rao, S., Krey, V. et al. RCP 8.5—A scenario of comparatively high greenhouse gas emissions. Climatic Change 109, 33 (2011). ([Link](#))

³⁹ REMIND-MAGPIE is a comprehensive IAM framework that simulates, in a forward-looking fashion, the dynamics within and between the energy, land-use, water, air pollution and health, economy and climate systems.

⁴⁰ The Shared Socio-economic Pathways (SSPs) were developed to complement the RCPs by varying socio-economic futures. The combination of SSP-based socio-economic scenarios and RCP-based climate projections provide an integrative frame for climate impact and policy analysis. (O'Neill et al., 2017; Riahi, V(uuren, et al., 2017).

Figure 16: Description of NGFS scenarios






	Orderly	Net Zero by 2050 limits global warming to 1.5°C through stringent climate policies that begin in 2025, and reaches net-zero around 2050. This scenario assumes moderate use of carbon dioxide removal technology, and corresponds to the International Energy Agency's (IEA) Net Zero Emissions (NZE) scenario.
	Disorderly	Divergent Net Zero limits global warming to 1.5°C and reaches net-zero around 2050, but with higher costs due to climate policies beginning later (in 2030), and greater divergence in policies across sectors. The failure to coordinate policy stringency across sectors results in a high burden on consumers (highest carbon price of all scenarios), while decarbonization of energy supply and industry is less stringent. This scenario assumes low availability of carbon dioxide removal technologies.
	Orderly	Below 2°C limits global warming to below 2°C with climate policies introduced starting in 2025 and becoming gradually more stringent. Under this scenario carbon pricing remains relatively low, but net-zero emissions are achieved significantly later, around 2100.
	Disorderly	Delayed Transition limits global warming to below 2°C but assumes that climate policies only start in 2030, which is when annual emissions begin to decrease. The level of action differs across countries and regions, which is determined based on currently implemented policies. Carbon prices in this scenario are assumed to be higher than in the Below 2°C scenario, but less than the Net Zero 2050 and Divergent Net Zero scenarios.
	Hot House World	Nationally Determined Contributions (NDCs) includes all government pledged policies as of December 2020, even if not yet implemented. Emissions decline but lead nonetheless to about 2.5 °C of warming. This scenario has the lowest carbon prices, which only reach \$34 (US\$ 2010/tCO ₂) in 2050.

Figure 17: Summary of key variables for NGFS scenarios used in climate scenario analysis⁴¹

	1.5°C		2.0°C		3.0°C
	Net Zero 2050 Orderly	Divergent Net Zero Disorderly	Below 2°C Orderly	Delayed Transition Disorderly	Nationally Determined Contributions Hot House World
Socio-economic assumptions, based on SSP2	World population peak: 2070 World population in 2100 (million): 9,019 Real GDP growth 2020-2100 (CAGR): 2.0%				
Carbon price					
Carbon price in 2030, in US\$ 2010/tCO ₂	184.07	278.40	57.89	2.49	9.97
Carbon price in 2050, in US\$ 2010/tCO ₂	672.71	783.16	193.38	621.92	34.06
Electricity generation by fuel source					
2030 Fuel mix					
% renewables	72%	71%	58%	41%	46%
% nuclear	6%	6%	6%	6%	5%
% gas	17%	18%	22%	26%	25%
% coal	4%	5%	14%	28%	23%
2050 fuel mix					
% renewables	94%	93%	92%	94%	80%
% nuclear	3%	4%	4%	4%	3%
% gas	3%	3%	5%	3%	16%
% coal	0%	0%	0%	0%	1%
Low-carbon fuel sources in transport					
2050 low carbon fuel sources (%)	26.46%	45.70%	18.37%	25.72%	14.00%
Carbon sequestration (Mt CO ₂ /yr)					
Year uptake surpasses 5000 Mt/yr	2037	2045	2050	2050	2090
Carbon sequestration peak (Mt/yr)	8,779	7,645	7,498	5,926	5,342
GHG emissions					
Peak year	2020	2020	2020	2030	2025
90% reduction achieved by	2045	2045	2055	2059	n/a
Zero emissions achieved by ⁴²	2055	2055	2100	2060	n/a
Annual change, 2020-2030 (CAGR)	-7.1%	-7.1%	-3.5%	+0.7%	+0.2%
Annual change, 2020-2050 (CAGR)	-11.7%	-10.6	-4.7%	-8.1%	-1.2%
Global warming temperature					
Temperature in 2100	1.56°C	1.53°C	1.77°C	1.71°C	2.46°C

⁴¹NGFS Scenarios Portal, ([Link](#))

⁴²Achieving net-zero CO₂ emissions by 2050 is often seen as synonymous with keeping warming below 1.5°C. The transition scenarios are developed to limit warming to 1.5°C above pre-industrial levels. However, this does not necessarily mean that CO₂ emissions must reach exactly net zero by 2050. In the NGFS Net Zero 2050 scenario, global net CO₂ emissions are not exactly at zero by 2050, but in fact 900 MTCO₂. Source: NGFS Scenario Portal, Frequently Asked Questions ([Link](#))

Climate scenario analysis of portfolios

Value at risk due to transition impacts, by sector

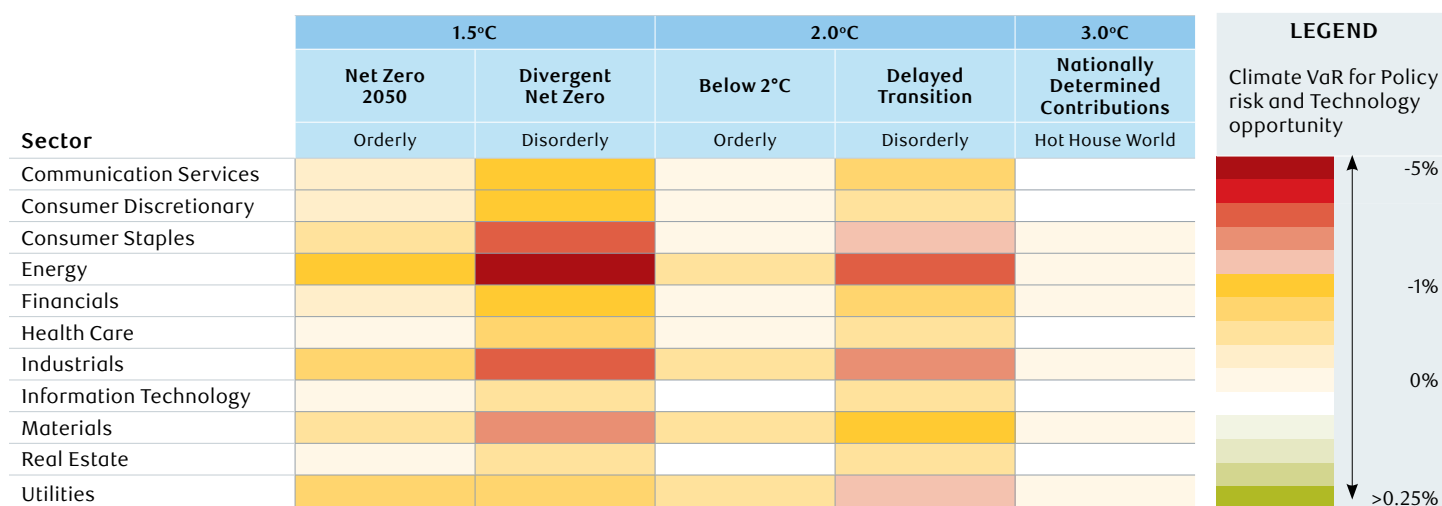
RBC GAM supports the global goal of achieving net-zero emissions by 2050 or sooner. We also recognize and support the need to achieve a just and orderly transition to net-zero that promotes widely shared economic prosperity. An orderly transition is important in that it can minimize potential financial risk due to climate change. Disorderly transition scenarios pose a higher financial risk than orderly transition scenarios, with carbon-intensive sectors facing the greatest

relative negative impact (see Figure 18). This is primarily due to the fact that policy action in disorderly scenarios is delayed until 2030, and due to the higher cost of policy action for carbon-intensive sectors.

The NGFS Divergent Net Zero scenario has the most significant impact on Climate VaR for AUM in the scope of this analysis.

Figure 18: Climate VaR from transition impacts for NGFS scenarios, by sector⁴³

Based on portfolios in scope of analysis, as at December 31, 2021



These values represent sector averages; as a result, within each sector there is significant variation in issuer-level Climate VaR, which presents potential opportunities for investors to reduce financial risks associated with transition scenarios. Given the assumptions required in order to conduct this type of analysis, and the long time frames involved, this analysis does not take into account actions issuers may take to reduce the financial cost of transition scenarios. Due to simplifications in modelling that are required in order to apply and scale the calculation of Climate VaR, not all climate-related financial impacts are captured (e.g., macroeconomic and socioeconomic impacts, change in commodity supply and demand, etc.).

The Energy, Industrials, Materials, and Consumer Staples sectors have the greatest Climate VaR across all NGFS scenarios.

⁴³ MSCI ESG Climate Change Metrics, December 2021, MSCI®

Value at risk due to physical impacts, by sector

Human activities (such as the burning of fossil fuels) and land-use changes (such as deforestation) are responsible for the release of GHGs into the atmosphere. As GHG emissions accumulate, they get trapped, causing global average temperatures to increase. Global average temperatures have already increased by ~1°C since pre-industrial times and climate impacts are already being felt around the world, in the form of extreme weather events, droughts, floods, and more. In 2018, the Intergovernmental Panel on Climate Change made clear that any increase in warming beyond 1.5°C by the end of the century would have significant implications.

The physical impacts of climate change will be more significant at higher levels of global warming, and these impacts will be most severe several decades into the future. This poses a challenge when modelling the financial risk of acute and chronic climate events, as future costs must be discounted to present day values, which renders the Climate VaR lower than might be intuitively expected. In this case, assessing the relative materiality of physical risks by sector and hazard type can often provide more useful input than focusing on absolute values. Additional factors that may impact Climate VaR due to physical impacts, but which are

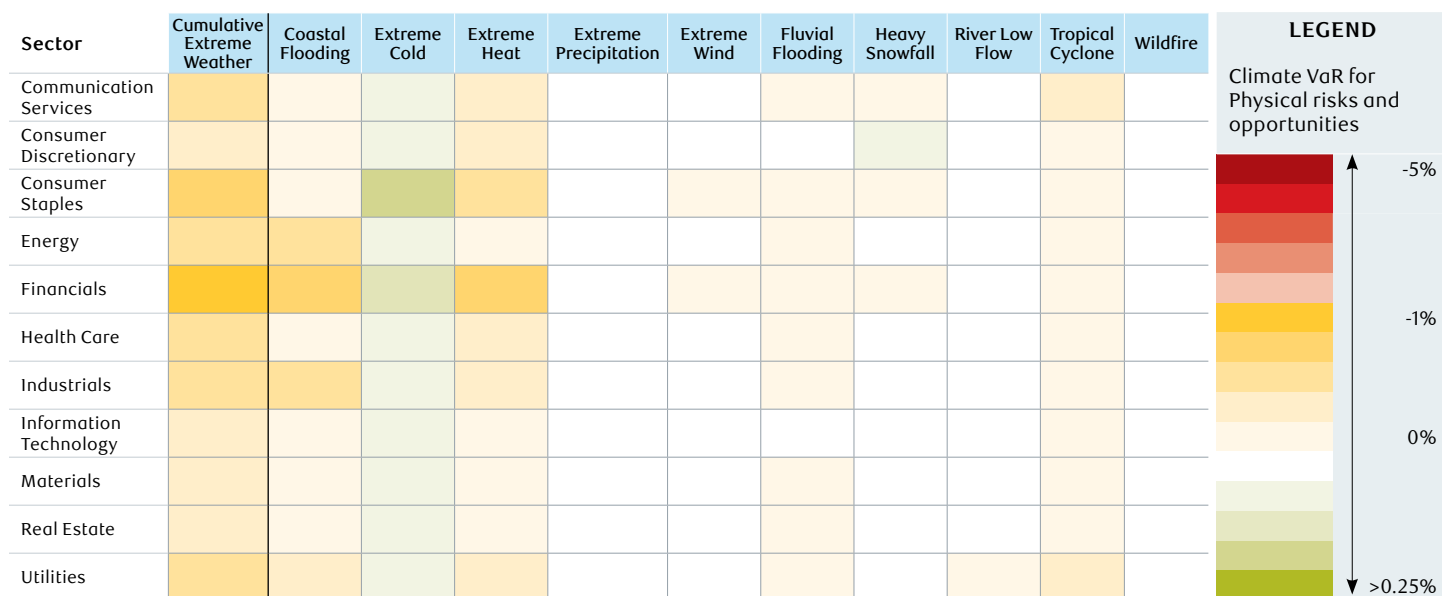
not currently included in the model, are the role of insurance in covering asset damage costs, resilience and adaptation measures by issuers, supply chain disruption, and other socio-economic impacts due to natural disasters.

Coastal flooding and extreme heat have the most significant Climate VaR for AUM in the scope of this analysis, with the insurance industry (within the Financials sector) facing the greatest negative impact.

RBC GAM currently evaluates physical Climate VaR under a high-emissions, “business as usual” scenario (RCP 8.5) with a temperature target in the 4°C range.⁴⁴ Sectors that are resource- or asset-based generally face a higher relative Climate VaR due to physical risks under this scenario (see Figure 19). The Financials sector’s exposure to physical risks is largely concentrated in the insurance sub-sector, whose risk-return profile is more closely linked to the ability to effectively price in the cost of physical risks.

Figure 19: Climate VaR from physical impacts for RCP 8.5 (aggressive) scenario, by sector⁴⁵

Based on portfolios in scope of analysis, as at December 31, 2021



⁴⁴ Representative Concentration Pathway (RCP) is a greenhouse gas concentration trajectory adopted by the IPCC and used for climate modeling and research for the IPCC fifth Assessment Report (AR5) in 2014.

⁴⁵ MSCI ESG Climate Change Metrics, December 2021, MSCI®

Value at risk due to transition and physical impacts, by portfolio

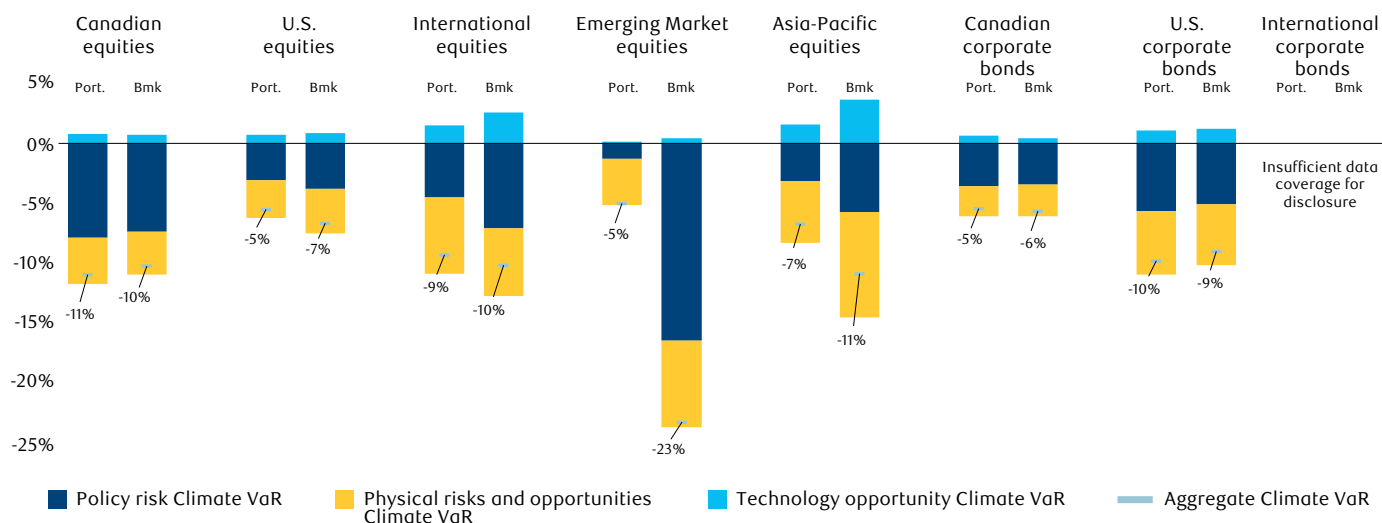
RBC GAM tracks and monitors the aggregated Climate VaR⁴⁶ for 100+ core equity and fixed income strategies on a quarterly basis. This metric provides an indication of potential value at risk for portfolios due to climate change, under different scenarios and due to different climate factors (e.g., policy, technology, physical impacts). All sectors and geographies will be affected by efforts to transition to net-zero emissions. It is for this reason that we include the NGFS Net Zero 2050 scenario as one of the future pathways in our climate scenario analysis, and why we have provided transparency on potential Climate VaR under this scenario for portfolios in scope of this analysis (see Figure 20). The Aggregated Climate VaR for all NGFS scenarios is provided in Section 4.1.

The NGFS Net Zero 2050 scenario poses higher policy risk to portfolios that have a higher relative weighted average carbon intensity. This is to be expected, as the model applies each scenario's carbon price to projected carbon emissions for each issuer (the NGFS Net Zero 2050 scenario assumes a carbon price of US\$672.71 2010/tCO₂ in 2050). The modelling of Climate VaR does not take into consideration any actions that issuers may take to manage or mitigate risks, nor does it take into consideration actions that investors may take in portfolio construction or portfolio management to reduce material climate-related risks, where appropriate. The NGFS Net Zero 2050 scenario also assumes rapid expansion of clean technologies, such that a positive Climate VaR due to technology opportunities exists across all portfolios, which may present additional opportunities for investors.

Most portfolios have an aggregated Climate VaR that is less than the benchmark in the NGFS Net Zero 2050 scenario.

Figure 20: Aggregate Climate VaR for NGFS Net Zero 2050 scenario, by portfolio⁴⁷

As at December 31, 2021



⁴⁶ Aggregate Climate VaR = Policy risk Climate VaR + Technology opportunity Climate VaR + Physical risk and opportunity Climate VaR.

⁴⁷ See Box 2 for portfolio and benchmark information. ESG data coverage for fixed income securities continues to be low across regions, which results in low data coverage for corporate bond portfolios. As calculating some climate metrics when there is low data coverage may skew the results, in this report we have applied a minimum data coverage threshold of 65% for disclosures. MSCI ESG Climate Change Metrics, December 2021, MSCI®

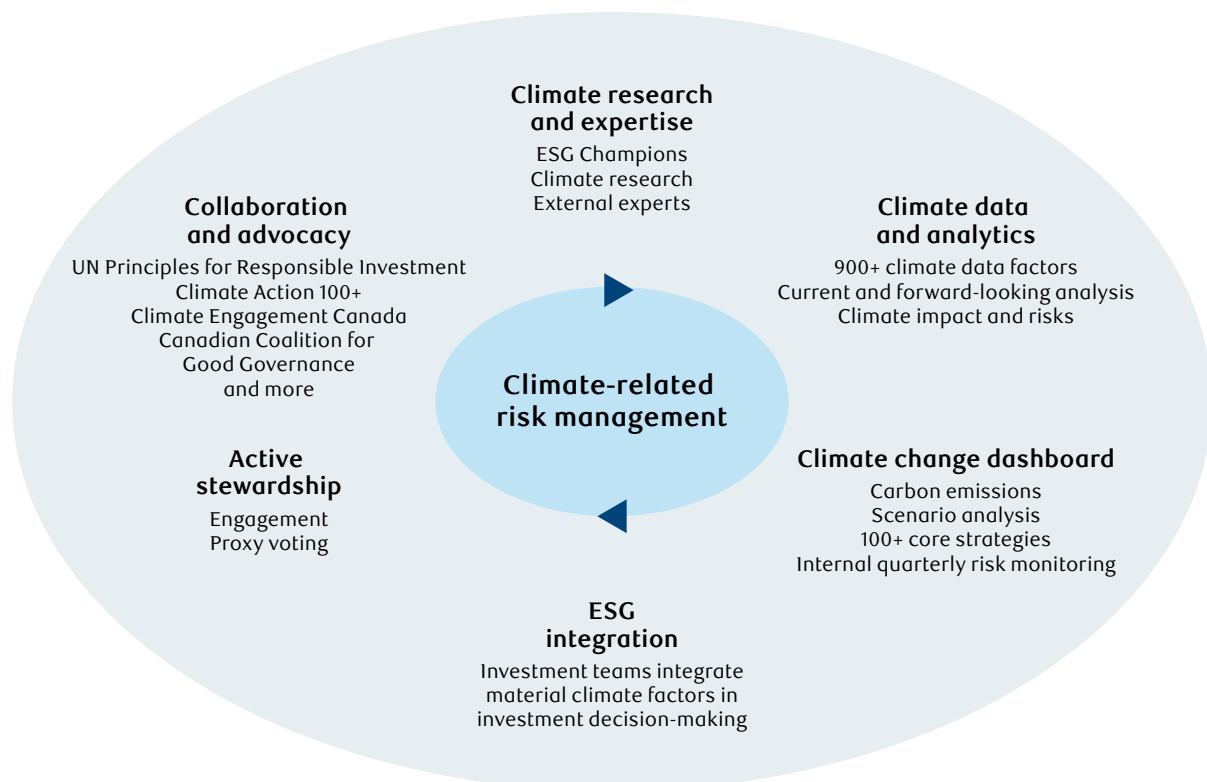


3. Risk Management

Disclose how the organization identifies, assesses, and manages climate-related risks.

RBC GAM identifies, assesses, and manages climate-related risks across our investments and portfolios as described below in Figure 21. We categorize transition and physical risks according to the TCFD framework and consider these within the context of the asset class and relevant time horizons.

Figure 21: Overview of climate risk management activities



3.1 Identification and assessment of climate risks

Climate change is a systemic risk that has the potential to affect the global economy. It is also a cross-cutting risk that may both impact and amplify other principal risk types, such as investment risk and operational risk. The impact of climate change on specific markets, regions, and investments are complex, varied, and uncertain. Risks are deemed material if they have the potential to impact the risk-adjusted returns of our investments.

Climate research and expertise

In order to assess the impact of climate risks and opportunities on individual issuers and portfolios, deep expertise on climate change is required both within RBC GAM's CGRI team and across investment teams. An integrated approach to building climate knowledge and expertise is supported by our:

- **Climate Education Series** that brings together investment and distribution teams across RBC GAM to learn from external experts about current and emerging research, insights, and best practices on climate-related topics.
- **ESG Champions** network that enables knowledge sharing on ESG and climate-related topics across investment teams.
- **Climate research** and guidance documents that are distributed internally to investment teams. These include climate engagement guides for key sectors impacted by climate change, and dedicated research papers on topics such as sector exposure to climate risks, climate impact measurement, scenario analysis, and more.
- **ESG insights** and thought pieces that are prepared by the CGRI and investment teams and published for clients and other stakeholders on the RBC GAM website. These cover a range of topics and in 2021 included over a dozen articles and thought pieces on topics such as carbon markets, the COP26 climate conference, biodiversity and climate change, net-zero emissions, the energy transition, addressing climate change through active stewardship vs. divestment, and more (view all ESG Insight articles [here](#)).

Climate data and analytics

Climate change is a complex issue. Identifying and assessing the direct and indirect impact of climate change on issuers and portfolios is equally complex. To do so requires knowledge and understanding of how climate-related risks and opportunities affect different sectors, geographies, and issuers. It also requires high-quality and broad coverage climate data in order to assess the financial impacts of climate change.

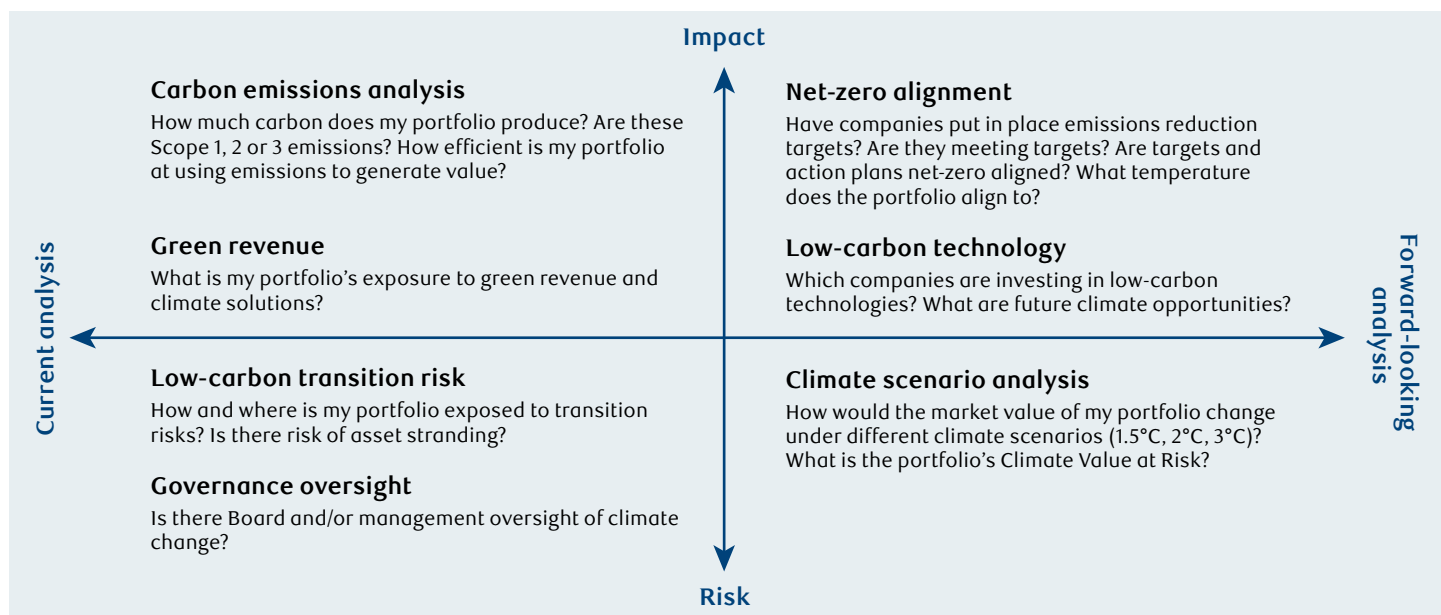
All investment teams have access to a range of climate data at an issuer and portfolio level. This includes over 900 data points that allow them to assess how a security, issuer, portfolio, or sector may be affected by key climate impact drivers – policy risk, technology opportunities, and both physical risks and opportunities. This includes climate data that is directly reported by companies as well as data collected from external datasets (e.g., global patents), third-party research, and/or estimated and modeled data. Where possible, independently verified and reported data is used, and supplemented by direct research collected through due diligence and engagements. Some examples of climate data used by investment teams are listed below:

- **Carbon emissions data** for Scope 1, 2, and 3. This includes reported and estimated data, time series data, and both economic activity and physical activity based data.
- **Company-level revenue breakdowns** to identify carbon-related revenue and sustainable revenue contributions (e.g., energy efficiency, green building, sustainable water, pollution control).
- **A low-carbon patents dataset** to identify companies that are investing in technology opportunities related to the low-carbon transition.
- **Company-level climate targets** including the scope, type and timeline of emission reductions targets, and whether the target is science-based or net-zero aligned.
- **Quality of governance on climate change** based on governance structures, executive oversight of climate strategies, risk management, and establishment of carbon reduction targets.

Climate metrics and analytics continue to develop and evolve. To effectively measure climate change, it is useful to apply a suite of climate metrics. It should also take into consideration current impacts and risks as well as those that may occur in the future under different climate scenarios, such as a 1.5°C, 2°C, or 3°C scenario. See Figure 22 on the next page for an overview of climate metrics used by investment teams when assessing climate-related risks and opportunities.

We believe that climate factors – both risks and opportunities – can be material to long-term risk-adjusted returns. By building knowledge, integrating climate data, and conducting deep analytics, investment teams can identify potential risks as well as opportunities.

Figure 22: Climate metrics used to assess climate risks and opportunities



RBC GAM Climate Change Dashboard

Investment teams assess and monitor climate-related risks and opportunities on an ongoing basis through the RBC GAM climate change dashboard, which is a risk-monitoring tool provided quarterly for over 100 core equity and fixed income

strategies. The dashboard includes a suite of climate metrics, detailed breakdowns by sector and top holdings, and value spreads, with key metrics provided in the dashboard summary (see Figure 23). As new data becomes available, additional metrics and insights are included in the dashboard for investment teams.

Figure 23: Example of climate change dashboard summary (sample data for illustrative purposes)

Part I – Current analysis			Part II – Forward-looking analysis			
Carbon emissions analysis			Climate Value at Risk (%)			
Scope 1 and 2 emissions	Portfolio	Benchmark	Aggregate Climate VaR	Portfolio	Benchmark	
Weighted average carbon intensity (tCO ₂ eq./\$M Sales)	30.7	117.9	1.5°C scenario	-4.0	-6.3	
Weighted average carbon intensity (tCO ₂ eq./EVIC)	8.6	38.7	2.0°C scenario	-3.7	-5.1	
Scope 3 emissions			3.0°C scenario	-3.2	-3.8	
Weighted average carbon intensity (tCO ₂ eq./\$M Sales)	318	594	1.5°C scenario	Technology Climate VaR	1.2	2.2
Weighted average carbon intensity (tCO ₂ eq./EVIC)	78	230		Policy Climate VaR	-2.1	-4.9
Fossil fuel revenue exposure (%)			2.0°C scenario	Technology Climate VaR	0.5	1.1
Fossil fuel revenue exposure (total)	0.05	1.14		Policy Climate VaR	-1.1	-2.5
Conventional oil and gas	0.00	0.58	3.0°C scenario	Policy Climate VaR	0.5	0.1
Unconventional oil and gas	0.00	0.37		Technology Climate VaR	-1.1	-0.3
Thermal coal extraction	0.00	0.02	Aggressive scenario	Physical Climate VaR	-3.1	-3.6
Thermal coal power generation	0.05	0.17	Average scenario	Physical Climate VaR	-2.5	-2.9
Green revenue exposure (%)			Temperature alignment (°C)			
Green revenue exposure (total)	4.08	4.32	Portfolio temperature alignment (°C)		2.1	2.3
Climate data coverage						
Alternative energy	1.00	0.49	Data coverage (%)		100.0%	99.7%
Energy efficiency	2.58	3.27				
Green building	0.00	0.31				
Pollution prevention	0.09	0.16				
Sustainable water	0.43	0.10				
Low-carbon transition risk						
Exposure to low-carbon transition risk (%)	2.8	12.7				
Exposure to low-carbon transition opportunities (%)	7.7	7.0				
Low carbon transition management (top quartile score %)	66.1	78.2				
Carbon emissions reduction target (% with target)	66.6	62.7				

3.2 Management of climate risks

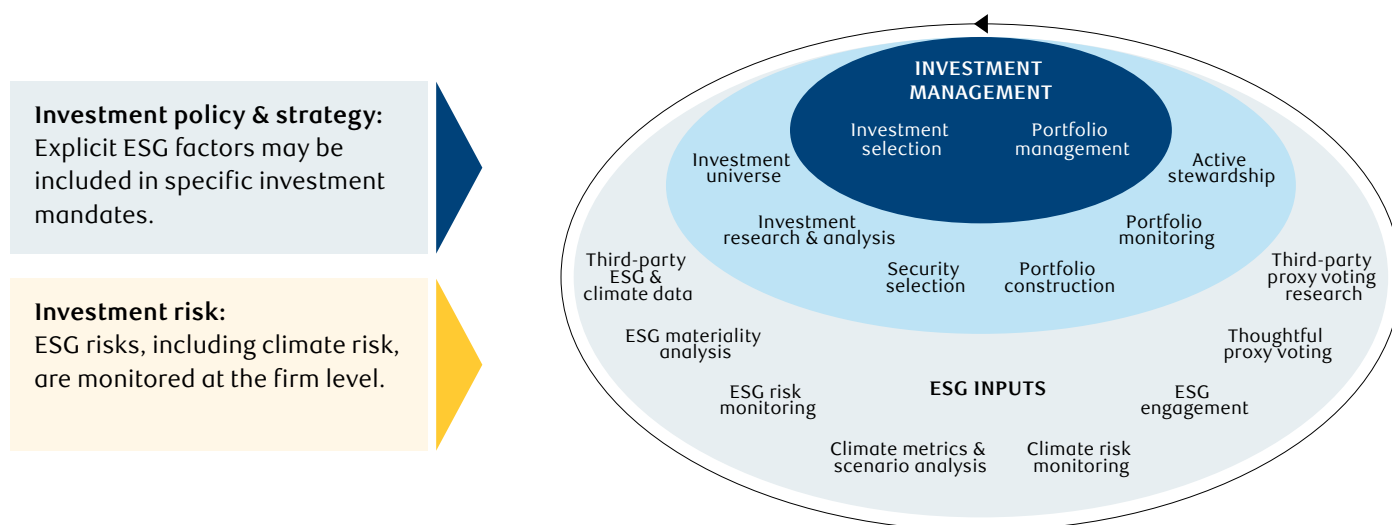
ESG integration in investment decision-making

RBC GAM's investment teams prioritize those ESG and climate change factors that are considered to be most material to each investment decision. The extent to which an ESG factor is considered material depends on the issuer, the industries and geographies in which it operates, and the nature of the investment vehicle for which it is purchased.

Each investment team has its own process for integrating ESG factors and for determining materiality, drawing from tools like the Sustainability Accounting Standards Board (SASB) materiality matrix and both internal and external research and expertise. Investment teams receive input from the CGRI team on their integration approach, and the quality of their approach is reviewed on an annual basis. An overview of how investment teams across the firm integrate ESG factors is described in Figure 24.

Figure 24: ESG integration in our investment approach

This diagram illustrates how material ESG factors and responsible investment activities contribute to our overall decision-making in our investment approach, complementing our investment teams' fundamental and systematic investment approaches.



Active stewardship

As an active manager and steward of our clients' assets, RBC GAM uses active stewardship, including engagement and proxy voting, to communicate with issuers our views and expectations on climate actions, outcomes, and disclosures. We actively engage with companies and regulators, where appropriate, to encourage climate mitigation and adaptation, and report on our activities and outcomes.

In 2021, our investment teams completed 1,650+ ESG-related engagements that focused on various ESG factors, including climate change.⁴⁸ We also work collaboratively with other investors through initiatives such as Climate Action 100+, to share our views and discuss the risks and opportunities of climate change with the boards and management of the companies in which we invest on behalf of our clients.

As an asset manager, RBC GAM has a responsibility to exercise voting rights attached to securities in the portfolios we manage. We vote proxies in line with our RBC GAM [Proxy Voting Guidelines](#), and review and update our guidelines on

an ongoing basis as corporate governance and ESG best practices evolve. The guidelines are applied in Canada, the United States, the United Kingdom, Ireland, Australia, and New Zealand. In all other markets, RBC GAM utilizes the local proxy voting guidelines of a research provider. In all cases, RBC GAM reviews each meeting and proposal to ensure votes are submitted in the best interests of our clients. Our guidelines refer to climate-related proposals, which we evaluate on a case-by-case basis. In general, we will support proposals requesting: establishment of emissions reduction targets and action plans, disclosure of the alignment of climate lobbying activities, and disclosures in line with the TCFD. When evaluating climate-related shareholder proposals, we take into consideration the issuer's industry and materiality of climate change, existing practices, policies and disclosures, and involvement in recent climate-related controversies. The proxy voting records of all of our funds (with the exception of client segregated accounts) are publicly available on our regional websites and are updated quarterly.⁴⁹

⁴⁸ This figure may include instances where our investment teams engaged with the same issuer multiple times











⁴⁹ Proxy voting records: [RBC GAM Inc.](#), [RBC GAM \(U.S.\) Mutual Funds](#), [RBC Funds \(Lux\)](#)

Collaboration and advocacy

RBC GAM believes that collaboration across the investment community is essential to advancing efforts to address climate change and support a just and orderly transition to a net-zero economy. It is for this reason that RBC GAM is a member of collaborative investor initiatives that seek to: expand knowledge and understanding of ESG issues; establish best practices in ESG integration; and/or focus on collaborative engagement with issuers (see Figure 25).

In 2021, RBC GAM became a founding signatory to the [Canadian Investor Statement on Climate Change](#), along with 35 other Canadian institutional investors. This statement confirms our support for achieving the global goal of net-zero emissions by 2050 or sooner, and the actions that Canadian investors will take. RBC GAM also became a founding member of a new collaborative initiative called Climate Engagement Canada that brings together investors to engage collaboratively with Canadian companies that are significant emitters. Moving forward we will continue to use collaboration and advocacy to advance our climate change commitments and actions.

Figure 25: Climate-related collaborative initiatives to which RBC GAM is a member or signatory⁵⁰

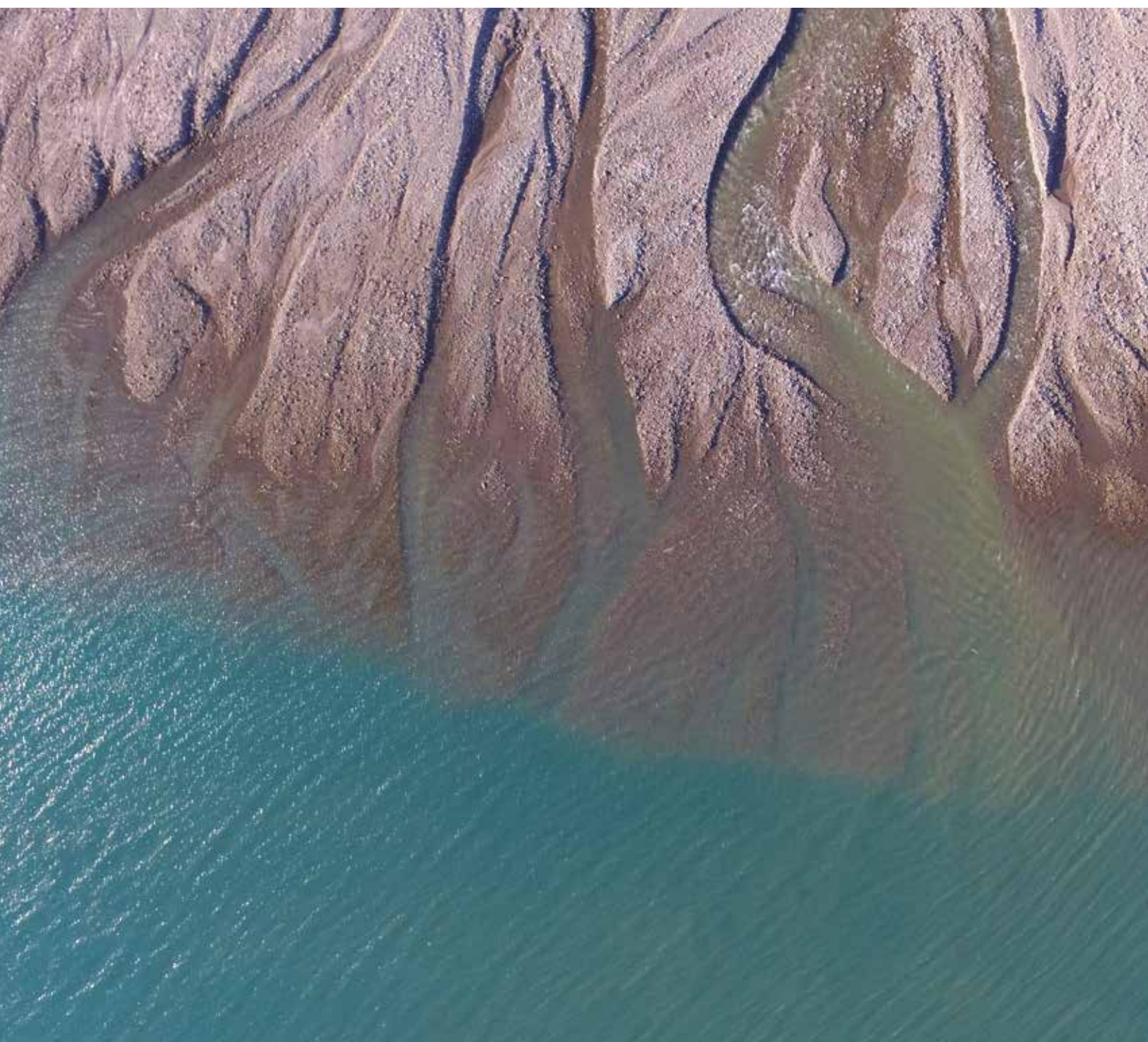
	<p>Canadian Coalition for Good Governance (CCGG)</p> <p>RBC GAM is a member of Canadian Coalition for Good Governance (CCGG) since 2003. CCGG represents institutional investors and promotes good governance practices in Canadian public companies. In 2021, the Head of CGRI served as a member of the Policy Committee, and another member of the CGRI team served on the Environmental and Social Committee.</p>
	<p>Canadian Investor Statement on Climate Change</p> <p>RBC GAM became a founding signatory of the Canadian Investor Statement on Climate Change in 2021. The statement identifies the actions we, as Canadian institutional investors, are taking to support the transition to a net-zero economy.</p>
	<p>CDP</p> <p>RBC GAM is a signatory to the CDP, formerly known as the Carbon Disclosure Project. The CDP runs the global disclosure system that enables entities to measure and manage their environmental impacts and strives to advance environmental disclosure. BlueBay is also a signatory to CDP.</p>
	<p>Climate Action 100+</p> <p>RBC GAM is a signatory to the Climate Action 100+ since 2020. Climate Action 100+ is an investor-led initiative that engages with the largest global GHG emitters (167 focus companies in total) with the objective of seeking action on climate change. As a signatory to Climate Action 100+, RBC GAM participates in four engagements. The purpose of these engagements is to encourage companies to take actions to reduce GHG emissions, improve governance oversight of climate change, and enhance climate-related disclosures. BlueBay is also a signatory to Climate Action 100+.</p> <p>Please see the RBC GAM Proxy Season Overview 2021 for examples of Climate Action 100+ shareholder proposals.</p>
	<p>Climate Engagement Canada (CEC)</p> <p>RBC GAM became a founding participant in Climate Engagement Canada in 2021. CEC is a collaborative engagement initiative that brings together Canadian institutional investors with Canadian companies to encourage a just and orderly transition to a net-zero economy.</p>
	<p>International Corporate Governance Network (ICGN)</p> <p>RBC GAM is a member of the International Corporate Governance Network (ICGN) and the Head of CGRI is on the Global Governance Committee. The ICGN aims to promote effective standards of corporate governance and investor stewardship to advance efficient markets and sustainable economies worldwide.</p>
	<p>Investor Stewardship Group (ISG)</p> <p>RBC GAM is a founding member of the ISG and sits on the Board. ISG works to establish a framework of basic standards of investment stewardship for institutional investors and corporate governance principles for U.S. listed companies.</p>
	<p>Responsible Investment Association (RIA)</p> <p>RBC GAM is a sustaining member of the Responsible Investment Association (RIA) since 2003. The RIA is Canada's industry association for responsible investment. The Head of CGRI is the Vice Chair of the Board of the RIA and Chair of the Governance Policy Committee.</p>
	<p>Task Force on Climate-Related Financial Disclosures (TCFD)</p> <p>RBC GAM is a formal supporter of the TCFD since 2020. The TCFD recommendations are a reporting framework that seeks to improve disclosure of climate-related risks and opportunities. We support and encourage TCFD disclosures from issuers and produce our own annual TCFD disclosure, as of 2020. BlueBay is also a formal supporter of the TCFD.</p>
	<p>UN Principles for Responsible Investment (PRI)</p> <p>RBC GAM is a signatory to the PRI since 2015. BlueBay has been a signatory to the PRI since 2013. The PRI is a United Nations-supported network of investors, works to promote sustainable investment through the incorporation of environmental, social, and governance factors.</p>

⁵⁰ For a full list of our collaborative initiatives, refer to our website: www.rbcgam.com/cgri

3.3 Investment risk management and climate change

The impact of material climate-related risks on principal risk types is considered as part of our investment risk process. The Investment Risk team, which reports into the Chief Investment Officer (CIO), is responsible for measuring risks at both a firm and portfolio level. The RBC GAM Investment Risk Committee (GIRC), chaired by the CIO, is responsible for monitoring the firm's risk profile, including ESG and climate risks when material. Risk appetite is established by the CIO.

The RBC GAM Investment Strategy Committee (RISC) is also chaired by the CIO and reviews assessments of global fiscal and monetary conditions, projected economic growth and inflation, as well as the expected course of interest rates, major currencies, corporate profits, and stock prices. From this global forecast, the RISC develops specific guidelines that can be used to manage portfolios. Where material, this may include ESG risks, including climate change. Results of the RISC deliberations are published quarterly in [The Global Investment Outlook](#).





4. Metrics and Targets

Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities.

4.1 Climate-related metrics

We recognize that there are multiple disclosure frameworks and that the metrics used to measure climate-related risks and opportunities are evolving, as discussed in the [TCFD Guidance on Metrics, Targets and Transition Plans](#) (October 2021). RBC GAM endeavors to provide the most relevant climate-related metrics, while also seeking to align with established and emerging best practice. See Figure 26

We fully support efforts to advance and standardize credible, comprehensive, and comparable approaches to quantifying the impact of climate change. As a member or signatory to the PRI, TCFD, and SASB we continue to work with experts and investors to advance these efforts and move towards a more standardized approach. This will require action to improve data quality, coverage and comparability; agreement on methodologies and metrics for measuring the financial impact of climate change; and the ability to model the complex direct and indirect impacts of climate change on corporate and sovereign issuers, and the economies and markets within which they operate.

Figure 26: Climate-related metrics⁵¹

		Canadian equities		U.S. equities		International equities		Emerging Market equities		Asia-Pacific equities		Canadian corporate bonds		U.S. corporate bonds		International corporate bonds ⁵²	
		Port.	Bmk	Port.	Bmk	Port.	Bmk	Port.	Bmk	Port.	Bmk	Port.	Bmk	Port.	Bmk	Port.	Bmk
Data coverage		98%	99%	97%	98%	99%	97%	77%	87%	88%	94%	73%	80%	82%	87%	54%	67%
AUM in scope of analysis (US\$ billions)		60.7	-	63.4	-	24.0	-	2.9	-	25.7	-	47.3	-	26.4	-	10.5	-
Carbon emissions analysis	Weighted average carbon intensity (tCO ₂ eq./\$M Revenue)	345.8	311.0	91.2	128.1	97.6	110.0	34.7	409.6	88.7	193.5	258.0	227.1	265.5	323.6	Not provided due to low data coverage	
	Weighted average carbon intensity (tCO ₂ eq./EVIC)	95.3	83.6	24.7	32.7	31.2	56.3	18.7	261.9	33.4	77.3	46.4	37.1	60.9	44.0		
	Carbon emissions/\$M invested (tCO ₂ eq./\$M)	91.9	82.1	25.2	33.3	31.6	58.1	22.8	295.8	37.6	82.3	59.9	81.0	71.6	50.0		
	Financed emissions (MtCO ₂ eq.)	5.46	N/A	1.55	N/A	0.75	N/A	0.05	N/A	0.85	N/A	2.06	N/A	1.55	N/A		
Net-zero alignment	% AUM invested in portfolio companies with SBTi verified targets	7%	7%	26%	27%	39%	43%	0%	4%	6%	11%	2%	3%	16%	17%	7%	13%
	% AUM aligned with an ITR below 2°C	44%	45%	57%	58%	53%	52%	63%	35%	39%	40%	34%	42%	39%	44%	23%	34%
	Implied Temperature Rise (°C)	4.0°	4.2°	2.5°	2.6°	2.1°	2.6°	1.8°	4.9°	2.6°	3.0°	4.0°	4.2°	2.9°	3.0°	Not provided due to low data coverage	
Climate scenario analysis	Aggregated Climate VaR (%), NGFS Net Zero 2050	-11%	-10%	-5%	-7%	-9%	-10%	-5%	-23%	-7%	-11%	-5%	-6%	-10%	-9%	Not provided due to low data coverage	
	Aggregated Climate VaR (%), NGFS Disorderly Net Zero	-37%	-37%	-16%	-17%	-27%	-22%	-14%	-47%	-13%	-18%	-17%	-20%	-24%	-21%		
	Aggregated Climate VaR (%), NGFS Below 2°C	-5%	-5%	-4%	-4%	-7%	-7%	-4%	-11%	-5%	-9%	-3%	-3%	-6%	-6%		
	Aggregate Climate VaR (%), NGFS Delayed Transition	-24%	-23%	-11%	-13%	-20%	-19%	-8%	-34%	-9%	-13%	-11%	-12%	-18%	-16%		
	Aggregate Climate VaR (%), NGFS NDC	-4%	-4%	-3%	-4%	-7%	-7%	-4%	-8%	-5%	-9%	-3%	-3%	-5%	-5%		

4.2 Net-zero operations

The performance, goals, and reporting of operational GHG emissions is established as part of the climate change program of RBC.⁵³ In 2017, RBC became carbon neutral and committed to a goal of net-zero carbon emissions in its global operations, which includes RBC GAM.⁵⁴ This is accomplished through energy and emissions reduction programs in the RBC property network, and its information technology infrastructure, by procuring renewable energy through a power purchase agreement and by sourcing renewable energy credits (REC) and high quality carbon offsets to account for emissions RBC cannot eliminate. RBC aims to be less reliant on carbon offsets each year. To this end, RBC has set two key goals that drive the net-zero operations strategy: reduce absolute GHG emissions by 70% with a baseline year of 2018, and an increased sourcing of

electricity sourced from renewable and non-emitting sources to 100%, both by 2025.

RBC has reported annually on key climate-related performance metrics since 2003, including multi-year data calculated in accordance with the GHG Protocol. RBC receives third-party limited assurance of the following climate-related metrics: Scope 1 and 2 emissions, Scope 3 emissions (business travel), GHG emissions from energy use, GHG reductions from green power purchases, and carbon credits purchased. RBC GAM's operational GHG emissions are included in RBC disclosure.⁵⁵

RBC GAM maintains net-zero emissions in our global operations annually.

⁵¹ Data provided by MSCI ESG Climate Change Metrics, December 2021, MSCI® and SBTi Companies taking action, as at January 25, 2022.

⁵² ESG data coverage for fixed income securities continues to be low across regions, which results in low data coverage for corporate bond portfolios. As calculating the weighted average carbon intensity, implied temperature rise, and Climate VaR at a portfolio level when there is low data coverage may skew the results, in this report we have applied a minimum data coverage threshold of 65% for disclosures. Climate metrics that do not require a weighting of the underlying assets (e.g. % of AUM invested in companies with SBTi targets) are included but may be an under-representation due to low data coverage.

⁵³ See [RBC Climate Blueprint](#)

⁵⁴ BlueBay is not currently included in this commitment. They will be included by the end of 2022.

⁵⁵ [RBC TCFD Report 2021](#)

4.3 Climate-related targets

[Our Net-Zero Ambition](#) and [Our Approach to Climate Change](#) describe the commitments and actions we are taking to address climate-related risks and opportunities. This includes our net-zero operations, goals, and commitments related to our investment approach and transparent disclosures.

RBC GAM may include climate-related targets for specific strategies, and we conduct emissions analysis, net-zero alignment, and climate scenario analysis across 100+ core strategies on a quarterly basis. Considerations when establishing climate-related targets include: limitations in climate data quality and coverage, methodologies for

establishing portfolio-level climate targets that are still undergoing public consultation, and the alignment of portfolio-level climate targets with our fiduciary duty to clients. RBC GAM will continue to measure, monitor, and annually disclose the carbon emissions intensity and net-zero alignment of our assets under management. All of our global investment teams integrate material climate-related factors into their investment decision-making approach on a daily basis. We are also focused on providing new and expanded solutions to clients that meet their climate-related objectives. RBC GAM is committed to reviewing our approach and updating it as necessary.





Looking ahead

As we look ahead to 2022, RBC GAM will continue to deliver transparency on climate change impacts, to integrate climate change considerations into our investment approach, and to employ active stewardship and collaborate with investors and issuers to advance the global goal of achieving net-zero emissions by 2050 or sooner. We believe that this approach aligns with our fiduciary duty and will help enable us to deliver long-term investment performance to our clients.

As we continue to implement [Our Net-zero Ambition](#) and [Our Approach To Climate Change](#), through the course of the coming year we will focus on the following areas:



Delivering on our net-zero ambition

We will focus on enhancing our ability to measure, monitor, and disclose issuer alignment to net-zero, in line with emerging standards and best practices.



Explore transition pathways

We will continue to explore transition pathways to net-zero by expanding our climate scenario analysis program and the tools and resources available to investment teams.



Climate research and analysis

We will build our capabilities in climate research and analysis to continue to support the integration of climate change factors into our investment approach.



Climate solutions and client engagement

We will work with clients to expand the climate-related solutions that are available to them, and continue to provide advice, guidance, and disclosures that meet clients' needs and emerging best practices.

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