

Royal Bank of Canada

Climate Report 2022

Guided by the recommendations of the Task Force
on Climate-related Financial Disclosures



Caution regarding forward-looking statements

From time to time, Royal Bank of Canada and its subsidiaries (RBC, we, us or our) make written or oral forward-looking statements within the meaning of certain securities laws, including the “safe harbour” provisions of the United States Private Securities Litigation Reform Act of 1995 and any applicable Canadian securities legislation. We may make forward-looking statements in this 2022 Climate Report (Climate Report or this Report) in other filings with Canadian regulators or the U.S. Securities and Exchange Commission (SEC), in other reports to shareholders and in other communications. Forward-looking statements in this 2022 Climate Report include, but are not limited to, statements relating to our economic, environmental (including climate), social and governance-related objectives, vision, commitments, goals, metrics and targets, including our initial 2030 interim financed emissions reduction targets (interim targets) as well as our impacts, our intention to publish a transition plan to achieve our interim targets, an orderly transition to a net-zero economy, our commitments to help our clients transition to net-zero and the importance of their emissions reduction commitments, that the transition to a net-zero economy will require unprecedented cooperation, action, and collaboration from many parties, that the baselines we have set in connection with certain commitments may require revisions, our financed emissions measurements and disclosures, our use of estimates, our beliefs about future data availability, the causes and impacts of climate change globally, including our economies and communities in which RBC and our clients operate, our strategies to identify, mitigate and adapt to climate-related risks, and our approach to climate-related opportunities. The forward-looking information contained in this 2022 Climate Report is presented for the purpose of assisting our stakeholders in understanding the ways we intend to address climate-related governance, strategy, risks, opportunities, and metrics and targets, and may not be appropriate for other purposes.

Forward-looking statements are typically identified by words such as “believe”, “expect”, “expectation”, “aim”, “achieve”, “foresee”, “forecast”, “anticipate”, “predict”, “intend”, “estimate”, “commit”, “goal”, “plan”, “strive”, “objective”, “target” and “project” and similar expressions of future or conditional verbs such as “will”, “may”, “should”, “could” or “would”.

By their very nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties, which give rise to the possibility that our predictions, forecasts, projections, expectations or conclusions will not prove to be accurate, that our assumptions may not be correct, and that our objectives, vision, commitments, goals, targets, and strategies to mitigate and adapt to climate-related risks and opportunities will not be achieved. Moreover, many of the assumptions, standards, metrics and measurements used in preparing this Report continue to evolve and are based on assumptions believed to be reasonable at the time of preparation, but should not be considered guarantees. We caution readers not to place undue reliance on these statements as a number of risk factors could cause our actual results to differ materially from the expectations expressed in such forward-looking statements.

These factors – many of which are beyond our control and the effects of which can be difficult to predict – include: the need for more and better climate data and standardization of climate-related measurement methodologies, climate-related conditions and weather events, our ability to gather and verify data regarding environmental impacts, our ability to successfully implement various initiatives throughout the company under expected time frames, the risk that initiatives will not be completed within a specified period or at all or with the results or outcomes as originally expected or anticipated by RBC, the compliance of various third parties with our policies and procedures and their commitment to us, the need for active and continuing participation and action of various stakeholders (including governmental and non-governmental organizations, other financial institutions, businesses and individuals), technological advancements, the evolution of consumer behaviour, varying decarbonization efforts across economies, the need for thoughtful climate policies around the world, the challenges of balancing emission reduction targets with an orderly, and inclusive transition and geopolitical factors that impact global energy needs, the legal and regulatory environment, and regulatory compliance (which could lead us to being subject to various legal and regulatory proceedings, the potential outcome of which could include regulatory restrictions, penalties and fines), strategic, reputation, competitive, legal and regulatory environment and systemic risks and other risks. Additional factors that could cause actual results to differ materially from the expectations in such forward-looking statements can be found in the risk sections of our Annual Report for the year ended October 31, 2022 (2022 Annual Report) and the Risk management section of our Quarterly Report for the three-month period ended January 31, 2023 (Q1 2023 Report to Shareholders).

We caution that the foregoing list of risk factors is not exhaustive and other factors could also adversely affect our results. When relying on our forward-looking statements to make decisions with respect to us, investors and others should carefully consider the foregoing factors and other uncertainties and potential events.

Material economic assumptions underlying the forward-looking statements contained in this 2022 Climate Report are set out in the Economic, market and regulatory review and outlook section and for each business segment under the Strategic priorities and Outlook headings in our 2022 Annual Report as updated by the Economic, market and regulatory review and outlook section of our Q1 2023 Report to Shareholders. Except as required by law, none of RBC nor its affiliates undertake to update any forward-looking statement, whether written or oral, that may be made from time to time by us or on our behalf.

Additional information about these and other factors can be found in the Risk management sections of our 2022 Annual Report and in the Risk management section of our Q1 2023 Report to Shareholders.

Important notice regarding this Report

This Report provides a summary of our progress in advancing how we manage climate-related risks and opportunities and in implementing the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). This Report is provided solely for informational purposes, and does not constitute an offer or a solicitation to buy or sell any security, product or service in any jurisdiction; nor is it intended to provide investment, financial, legal, accounting, tax or other advice, and such information should not be relied upon for providing such advice. Nothing in this Report shall form the basis of or be relied upon in connection with any contract, commitment or investment decision whatsoever. The recipient is solely liable for any use of the information contained in this Report, and neither RBC nor any of its affiliates nor any of their respective directors, officers, employees or agents shall be held responsible for any direct or indirect damages arising from the use of this Report by the recipient.

Climate metrics, data and other information contained in this Report, including but not limited to information relating to our net-zero related commitments, goals, and targets, including our interim targets, scenario analysis, financed emissions, carbon-related assets, and emissions from our own operations are or may be based on assumptions, estimates and judgements. In addition, as discussed herein, some of the information provided, including regarding financed emissions, the baseline for setting interim targets and the interim targets, is based on estimated data with very limited supporting documentation. For example, we have not independently verified or assessed the assumptions underlying the data we have obtained from our clients and other third parties that we use to set, track and Report on our progress towards meeting our interim targets. Moreover, the data needed to define our pathway towards reaching our interim targets may be limited in quality, unavailable or inconsistent across the sectors we choose to focus on. Given their inherent uncertainty and complexity, and the significant issues with some of the underlying data, assumptions, estimates and judgements believed to be reasonable at the time of the preparation of this Report may subsequently turn out to be inaccurate, and our goals and interim targets set forth in this Report may need to be changed. In addition, many of the assumptions, estimates, standards, methodologies, scenarios, metrics and measurements used in preparing this Report continue to evolve and may differ significantly from those used by other companies and those that may be used by us in the future. Legislative and regulatory changes, market developments and/or changes in data availability and reliability could also materially affect these assumptions, estimates, standards, methodologies, scenarios, metrics and measurements used by us and/or other companies, and could therefore materially affect the comparability of the information and data across industries or companies and from one reporting period to a subsequent reporting period, as well as our ability to achieve our commitments, goals and targets. Any commitments, goals and targets discussed in this Report, including but not limited to our net-zero related commitments, goals and targets, as well as our interim targets are aspirational and may need to be changed or recalibrated as available data improve and as climate science, transition pathways and market practices regarding standards, methodologies, metrics and measurements evolve. In setting our interim targets, we recognize that there are significant gaps between our baselines and our targets. The achievement of our interim targets set forth in this Report, any of our future emission reduction targets and our ultimate goal of achieving net-zero in our lending by 2050 will depend on the collective efforts and actions across a wide range of stakeholders outside of our control, and there can be no assurance that they will be achieved. See “Caution regarding forward-looking statements”.

RBC’s commitment to achieving net-zero emissions in our lending by 2050 is not inclusive of the activities of and the assets under management by RBC Global Asset Management and RBC Wealth Management as defined in endnote 1.

This report and the information contained within it is unaudited. Certain metrics and data contained in this report have been subject to limited assurance. The remainder of the information contained within this Report was not subject to the limited assurance engagement. You can read more about the scope of this work, including the metrics and data in scope of the assurance on page 109 of our 2022 ESG Performance Report.

This Report is intended to provide information from a different perspective and in more detail than is required to be included in mandatory securities filings and other regulatory reports, including filings with Canadian securities regulators and the SEC. While certain matters discussed in this Report may be of interest and importance to our stakeholders, the use of the terms “material”, “significant”, “important” or similar words or phrases should not be read as necessarily rising to the level of materiality used for the purposes of securities or other laws and regulations. We have no obligation to update the information or data in this Report.

All data and examples in this Report reflect activities undertaken during fiscal year 2022 (November 1, 2021 – October 31, 2022), unless otherwise noted. All amounts in this document are in Canadian dollars unless otherwise noted. U.S. dollars and British pounds are converted using the spot exchange rate, as at October 31, 2022 (C\$1.00 = US\$0.734; C\$1.00 = 0.640€). Measurements used in this Report are metric.

This Report includes information about Royal Bank of Canada and certain of its subsidiaries, as appropriate and as stated herein. On September 27, 2022, RBC completed its acquisition of Brewin Dolphin Holdings PLC, a UK-based wealth management company. Information, including data, regarding Brewin Dolphin Holdings PLC and its subsidiaries is not included in the scope of the 2022 Climate Report unless otherwise specified.

All references to websites are for your information only. The content of any websites referred to in this Report, including via website link, and any other websites they refer to are not incorporated by reference in, and do not form part of, this Report.

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Message from our CEO



As the world grappled with energy security issues that were magnified by war and other geopolitical conflicts, this past year served as a powerful reminder to all of us of the opportunities, challenges and imperative of climate action.

Tackling the climate challenge has remained at the forefront of international discussion and debate as governments and organizations continue to map pathways to reach net-zero by 2050. While net-zero is the clear goal, getting there will be difficult and require coordination, cooperation, and above all, perseverance.

It is essential that our society has an orderly transition to a net-zero economy. I believe that to do this and successfully reposition our economies and societies for the future, businesses, governments and individuals must work together with greater focus and more ambition.

At RBC, we have a climate strategy that can help make this progress possible. Throughout this Report, you can read about how we're progressing against our four climate pillars, which guide our focus as an organization and where we believe we can make the most difference towards positive climate action. This includes helping clients as they transition to net-zero, holding ourselves accountable, informing and inspiring a sustainable future, and advancing net-zero leadership in our own operations.

There is arguably no area where we can have a greater impact in addressing climate change than by partnering with our clients to reduce their emissions. I am incredibly proud of the collective effort of our teams across the bank collaborating with our clients to reach their goals.

This year, we made progress on a number of fronts. We supported cleantech companies in bringing solutions to market and scale; we advised clients on large renewable energy projects; and we provided advice and insights to clients mapping pathways to decarbonize their businesses. Within this Report you will find case studies that highlight some of this important work with our clients.

Another major milestone for RBC was the release of our initial set of interim emissions reduction targets. We took a measured, thoughtful and deliberate approach to target-setting, aligned with science and industry best practices, and considered the immediate needs of our clients and communities, as well as government commitments and policies to reach net-zero emissions by 2050.

We also developed our interim targets with input from business partners across the bank to account for the complexities and challenges specific to each sector. Part of the strength of RBC is our ability to adapt to the many needs of our clients because we know there is no "one size fits all" approach to this challenge.

There is no denying that people and communities all over the world are experiencing subtle as well as overt effects of climate change. At the same time, the transition to net-zero cannot occur overnight without risking significant harm and disruption to lives and livelihoods everywhere. An orderly transition necessitates that many forms of energy have an important role to play.

Businesses, governments and individuals can – and must – better collaborate on the journey to tackle the transition to net-zero while balancing the needs of people and the planet.

At RBC, we'll continue to make every effort to ensure that our approach addresses the environmental and economic imperatives of climate action.

A handwritten signature in black ink that reads "Dave McKay". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Dave McKay
President & Chief Executive Officer, Royal Bank of Canada

Introduction

RBC has a goal to achieve net-zero in our lending by 2050,¹ while balancing the needs of people and the planet. Climate change poses a significant risk to our business, our clients and the communities where we live and work. Supporting our clients and the economy in the transition to a net-zero future can provide environmental benefits as well as long-term financial returns for our shareholders.

A balanced approach is especially critical for the energy transition. We believe that society must shift demand towards clean energy as quickly as possible – for example, by accelerating the deployment of electric vehicles – while ensuring there are sufficient, reliable and affordable sources of clean energy to meet the increased demand. This transition will not happen overnight. In the interim, our communities will continue to need energy from a wide variety of sources, including fossil fuel-based sources, to meet energy needs and achieve the orderly and inclusive transition that is required.

We recognize this is a large and complex challenge and are committed to playing our part. The greatest impact RBC can make in the transition to net-zero is by supporting our clients. We will:

- **Continue to lend to our clients and support their decarbonization plans**, in line with our approach of balancing people and planet and in a manner consistent with our goal to achieve net-zero in our lending by 2050
- **Finance innovation and the scale-up of technologies** that can help accelerate both the demand for and supply of clean energy
- **Measure and report on our progress**, including against the initial 2030 interim emissions reduction targets¹ (interim targets) we have set, as well as our commitment to provide \$500 billion in sustainable finance by 2025.²

As RBC is one of Canada's largest banks,³ our lending and financed emissions are reflective of Canada's economy. We believe all of society – government, businesses and individuals – have an important role to play in this economy-wide transition. Most importantly, we need a policy environment that supports the transition by helping scale up solutions such as wind and solar power and electric vehicles, while fostering nascent solutions such as hydrogen and carbon capture, utilization and storage (CCUS).

We are committed to transparency around our climate commitments and our 2022 Climate Report is a reflection of this. The climate transition is a multi-decade journey and we are still at the relatively early stages, with many uncertainties and variables that we will have to navigate. We know our journey and our progress will not be linear. That is why transparency with our communities, clients, shareholders and employees is a key element of our approach.

This 2022 Climate Report provides a summary of our progress and performance in advancing how we manage climate-related risks and opportunities in line with our enterprise climate strategy, the [RBC Climate Blueprint](#), and in implementing the recommendations of the TCFD.⁴ In line with our commitment to transparency, we are pleased to have included additional information this year, including on how climate considerations have been built into our design of the executive compensation program, and on our investments in climate funds to help scale climate solutions.

Our net-zero roadmap

2022 Progress Highlights

- Provided \$84.8 billion in sustainable finance as part of our commitment to provide \$500 billion in sustainable finance by 2025 to support clients' ESG objectives²
- Released our **Sustainable Finance Framework**, which defines our approach and methodology for classifying, tracking and disclosing our performance towards our sustainable finance commitment^{2,5}
- Disclosed **initial 2030 interim targets for lending in three key sectors**: oil & gas, power generation and automotive¹
- Worked with our Capital Markets clients in key high-emitting sectors⁶ for clients representing 79% of the available loan balances⁷ to report their Scope 1 and 2 emissions⁸ to RBC, and clients representing 59% of the available loan balances to disclose a plan to reduce GHG emissions to RBC
- Published timely thought leadership to advance decarbonization in key sectors, such as **The Next Green Revolution** series on emissions from Canada's agrifood systems and strategies to reduce them
- Signed our **second long-term renewable energy Power Purchase Agreement**, helping us to advance towards our emissions reduction and renewable and non-emitting electricity goals in our operations⁹

By 2025

- Provide \$500 billion in sustainable finance²
- Reduce GHG emissions from our operations by 70%¹⁰ from our 2018 baseline
- Increase our sourcing of electricity from renewable and non-emitting sources to 100%¹¹
- Provide \$100 million in support to universities and charities that are developing technology solutions to solve pressing environmental challenges through RBC Tech for Nature™¹²
- Work with our Capital Markets clients in key high-emitting sectors⁶ to endeavour to have clients representing 80% of the available loan balances⁷ to report their Scope 1 and 2 emissions⁸ to RBC, and clients representing 65% of the available loan balances to disclose a plan to reduce GHG emissions to RBC

By 2030

- Target date to achieve our initial 2030 interim emissions reduction targets for lending in the oil & gas, power generation, and automotive sectors¹
- Target date to achieve interim emissions reduction targets for lending for additional high-emitting sectors in line with our Net-Zero Banking Alliance (NZBA) commitment^{1,14}
- Review and revise interim emissions reduction targets as needed (and at minimum every five years until 2050) based on the latest available data, market practice and climate science¹⁵

By 2050

- Target date to achieve net-zero in our lending¹

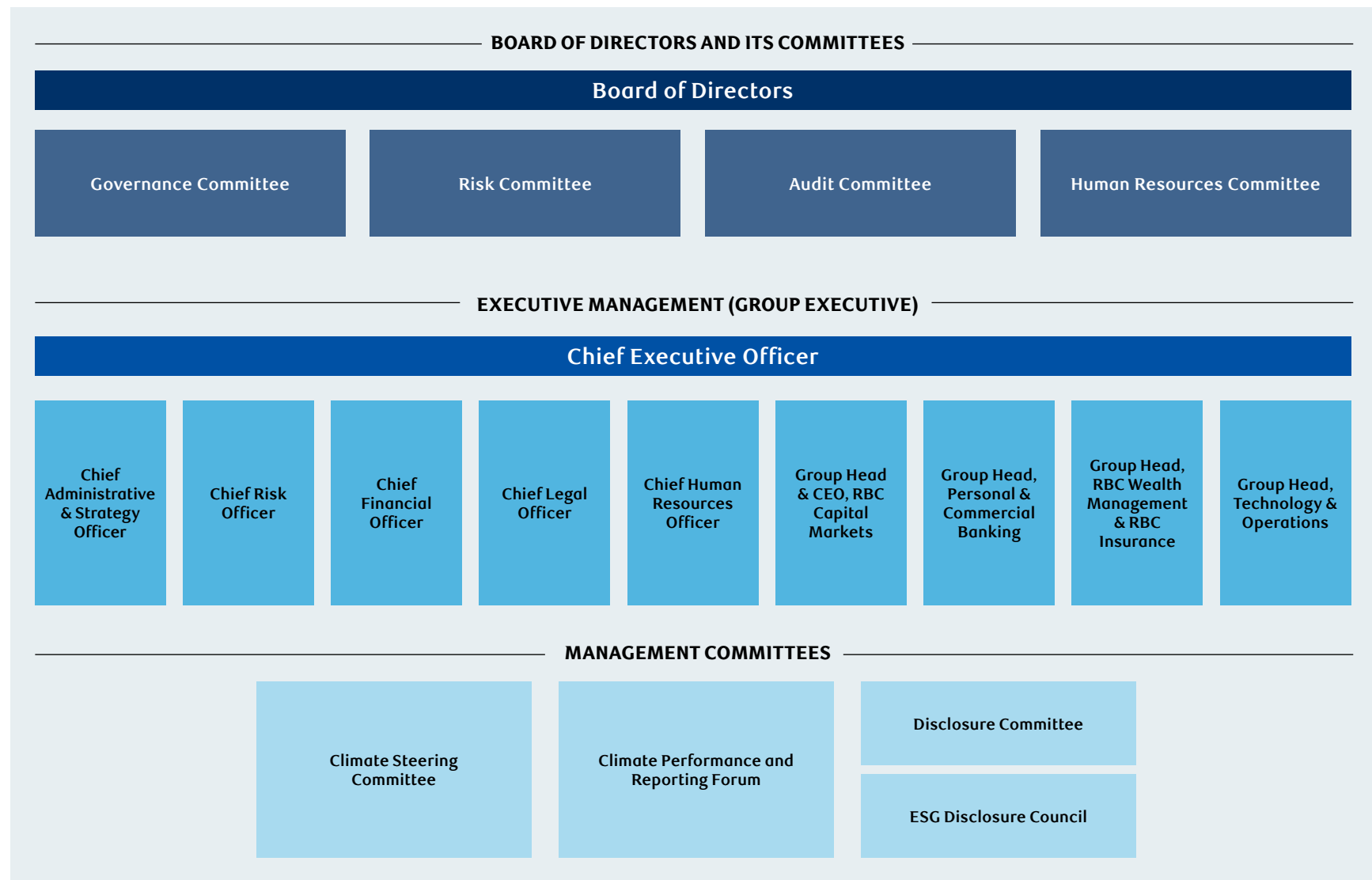
Governance



Governance

We are committed to high standards of governance that are consistent with regulatory expectations and evolving best practices. Figure 1 below summarizes the oversight of climate-related risks and opportunities by the Board of Directors of Royal Bank of Canada (the bank) and management of RBC, with additional detail provided on the following pages.

Figure 1: Overview of the organizational structure for the governance of climate-related risks and opportunities



Board oversight

Climate strategy and oversight

The Board of Directors of Royal Bank of Canada (the Board) is responsible for overseeing and approving RBC's strategic plan and monitoring its implementation and effectiveness within its risk appetite. The Board provides oversight of RBC's strategic approach to climate change, which includes how it manages climate-related risks and opportunities.

Climate change was an important area of focus for the Board again in 2022. It approved the [RBC Climate Blueprint](#) – our strategy for accelerating the pace of climate action – as well as monitored and measured progress against it. It also evaluated the bank's plans and progress towards meeting our commitment to achieving net-zero emissions in our lending by 2050, which is part of our commitment as a member of the NZBA.¹⁴ The Board carefully assessed whether management's climate commitments and plans appropriately balanced strategic opportunities with risk discipline, and aligned with our Purpose – to help clients thrive and communities prosper.

The Board actively engaged with management on climate-related topics throughout the year, including with the CEO, who discussed climate-related issues, successes and challenges. Early in 2022, the Board participated in an education session on understanding the measurement of financed emissions, climate scenario analysis and the journey to net-zero. The Board had in-depth discussions on the guiding principles and process in setting RBC's interim targets¹ for our lending and management's iterative process of review, discussion and debate undertaken, and reviewed disclosures leading up to the release of the bank's interim targets in late 2022. The Board engaged with management on climate-related developments in the UK and Europe, with a focus on the evolving regulatory and reporting landscape, as well as the bank's climate initiatives in the region. The Board also discussed the bank's [Sustainable Finance Framework](#), which refers to financial activities that consider ESG and defines the bank's approach and methodology to classify, track and disclose its performance towards its commitment to provide \$500 billion in sustainable finance by 2025.²

Committee oversight

Climate change and the transition to a net-zero economy is overseen by all four Committees of the Board. Throughout 2022, the Committees engaged with management on climate-related topics that related to their respective areas of oversight responsibility.

The **Governance Committee** advises the Board on ESG matters, including climate change, and provides oversight and coordination of ESG for the Board and its Committees. It also advises on the status and adequacy of RBC's efforts to meet high standards of conduct and environmental and social (E&S) responsibility. The Committee oversees ESG reporting for the Board, including reviewing and approving annually its Climate Report (formerly our TCFD Report) and its ESG Performance Report. The Governance Committee also reviewed and considered emerging perspectives on oversight of ESG by boards of directors and approaches to ESG governance frameworks, as well as discussed stakeholder engagement including the Board's response to climate-related shareholder proposals. The Committee also oversees RBC's corporate citizenship strategy, which includes RBC Tech for Nature.¹²

The **Risk Committee** oversees significant and emerging risks to RBC, including climate risks. Our Enterprise Risk Appetite Framework¹⁶ is approved by the Board annually, which requires consideration of E&S risks, including climate, when making risk management decisions. The Committee engaged with the Chief Risk Officer and discussed the evolution of climate risks, increased regulatory focus and how climate-related risks are embedded in RBC's risk frameworks, policies, and procedures. The Committee received reporting on changes to RBC's enterprise policy on environmental and social risk which reflect our enterprise-wide approach to managing E&S risks, including climate change. In 2022, the Committee also had discussions on the evolving climate risk landscape and trends, regulatory developments and the bank's actions in response. The Risk and Audit Committees also met jointly to discuss the results of RBC's annual stress testing, which included climate-related physical¹⁷ and transition¹⁸ risk events.

Board oversight

The **Audit Committee** oversees our financial reporting, internal controls over financial reporting and disclosure controls and procedures. It oversees, and reviewed and recommended for Board approval, the bank's [2022 Annual Report](#), which includes climate-related disclosures informed by the pillars of the TCFD.⁴ In 2022, the Committee also engaged with management on RBC's ESG and climate-related reporting, including work underway to continue building out controls and governance processes supporting ESG-related disclosures, and on proposed mandatory climate-related disclosure requirements and standards.

The **Human Resources Committee** oversees RBC's compensation principles, policies and programs, and recommends for approval by the Board, CEO and Group Executive (GE) compensation. In addition to financial and client objectives, the Committee members considered environmental sustainability, and social and governance practices as part of their evaluation of CEO and GE performance against risk and strategic objectives in the CEO and GE 2022 Short-Term Incentive (STI) program. For 2023, the Committee recommended, and the Board approved, inclusion in the Mid-Term Incentive (MTI) and Long-Term Incentive (LTI) programs for the CEO and GE of a medium-term climate-based objective related to progress towards the strategic priorities of the RBC Climate Blueprint. See the Executive Compensation section on page 14 of this Report and page 76 of our [Proxy Circular](#).

Directors' expertise in ESG and climate education

To best support RBC in achieving its Purpose to help clients thrive and communities prosper, all director nominees are required to have experience in ESG matters, which they have acquired in a variety of ways, including through their professional experience or their educational background. More specifically, our directors have acquired this experience as senior leaders in major organizations or as directors and board and committee chairs of public, private and not-for-profit entities. Experience in environmental matters is derived from positions as senior executives, directors or advisors of large utility, energy or natural resources companies, or at organizations focused on climate- or sustainability-related matters. See page 23 for director skills and competencies in our [Proxy Circular](#).

Effective climate oversight and board engagement require directors to keep pace with the rapidly evolving and complex climate change landscape. To that end, in addition to participating in climate-related education sessions at RBC and regularly engaging with management on climate-related topics, a number of directors also attended external conferences and seminars on climate in 2022, including those presented by the U.S. National Association of Corporate Directors, the Bank Governance Leadership Network and the Economic Club of Canada.

For more information on Board governance of ESG and climate-related matters, see Skills and competencies on page 23 and Environmental, social and governance matters on page 35 of the [Proxy Circular](#).

Executive management oversight

The RBC GE is responsible for implementing our enterprise climate strategy, the [RBC Climate Blueprint](#). The GE comprises the President and CEO, and the Chief Officers and Group Heads, who report directly to the CEO. The GE continues to make progress towards further integrating climate-related responsibilities into our management structure and business models throughout the enterprise. Each key business has an executive who is responsible for climate-related matters and is structured to address the client needs associated with the net-zero transition as it applies to their businesses. The GE meets frequently to discuss business strategy, financial planning, risk management, operations and performance. These discussions also include climate-related matters when applicable.

Below is a description of the GE members who have specific oversight of and management responsibility for climate-related matters:

President & Chief Executive Officer (CEO)

The CEO is responsible for setting the enterprise strategy and integrating climate-related matters as appropriate. The CEO is also responsible for ensuring meaningful progress towards our RBC Climate Blueprint commitments and providing updates to the Board on the management of risks and opportunities, including those that are climate-related.

Chief Administrative & Strategy Officer (CAO)

The CAO is responsible for the implementation of RBC's enterprise climate strategy and the coordination of our enterprise-wide climate-related and ESG reporting, stakeholder engagement, and communications on climate change. The Climate Strategy and Governance team sits within the Chief Administrative Office and is responsible for driving RBC's enterprise climate strategy and reporting annually on its progress. Corporate Real Estate and Procurement are also key functions that report to the CAO and are responsible for implementing key aspects of our net-zero operations strategy.

Chief Risk Officer (CRO)

The CRO oversees the management of E&S risk, including climate risk, and has a dedicated E&S Risk team within Group Risk Management that is responsible for identifying, assessing, measuring, managing, mitigating, monitoring and reporting E&S issues that may pose a risk to RBC, and for developing and maintaining policies on a regular basis to manage E&S risk. The E&S Risk team embeds climate risk assessments in our existing risk management framework, and expands our climate risk measurement and analysis capabilities to enable us to monitor our progress towards achieving net-zero in our lending by 2050.

Chief Financial Officer (CFO)

The CFO oversees the preparation of RBC's Annual Report, which includes disclosure of our environmental and social risks (including climate change). Together with the CEO, the CFO is responsible for establishing and maintaining adequate internal controls over financial reporting, supported as applicable by GE members and other senior management.

Chief Legal Officer (CLO)

The CLO is responsible for advising on legal, regulatory, governance and reputational matters arising across all jurisdictions in which RBC operates. The CLO oversees the Law Group's advice related to mitigating climate risks to RBC and advancing its climate opportunities. This includes advising on products and services that help clients transition to net-zero, RBC's engagement with stakeholders, RBC's operations and suppliers, as well as climate-related disclosure and reporting.

Chief Human Resources Officer (CHRO)

The CHRO is responsible for developing compensation policies to support senior management in making progress related to RBC's strategic priorities, including climate priorities. The CHRO also oversees talent management and employee learning & development to support our climate priorities.

Group Head & CEO, RBC Capital Markets

The Group Head and CEO of RBC Capital Markets (CM) is responsible for overseeing the integration of ESG, including climate-related factors, into CM's core businesses, which includes integrating ESG in the advisory services and client solutions offered by the CM Sustainable Finance Group.¹⁹

Executive management oversight

Group Head, Personal & Commercial Banking

The Group Head of Personal & Commercial Banking (P&CB) is responsible for overseeing the integration of ESG, including climate-related factors, into P&CB's lines of business, including product offerings and advisory services across the segment.

Group Head, Technology & Operations

The Group Head of Technology & Operations is responsible for advancing RBC's enterprise climate data strategy and capabilities together with the CAO, and ensuring that the bank's data and technology infrastructure is sufficient to meet current and future regulatory requirements and business needs.

Group Head, RBC Wealth Management and RBC Insurance

The Group Head of RBC Wealth Management and RBC Insurance is responsible for overseeing RBC Wealth Management,²⁰ RBC Global Asset Management (GAM),²¹ and RBC Insurance. In our wealth and asset management businesses, material²² ESG factors, which may include climate change, are integrated into investment processes for applicable types of investments.²³ Our wealth and asset management businesses may also consider climate-related factors in our product offerings, advisory services and client reporting.

Management committees with climate-related oversight responsibility

RBC has executive-level committees that oversee and deliver on RBC's climate strategy and commitments. These committees take an enterprise approach to overseeing our climate strategy, targets, commitments, goals and disclosures, working with a broad set of leaders across RBC to promote alignment and coordination.

Climate Steering Committee (CSC)

The CSC is an advisory body under the CAO, with senior representation from the business segments, Group Risk Management, Climate Strategy and Governance, and Communications. The CSC generally meets on a monthly basis and is responsible for leading the enterprise climate strategy and supporting its execution across key businesses and functions. The CSC makes recommendations and provides regular updates to the GE and business leaders on climate-related priorities.

Climate Performance and Reporting Forum (CPRF)

The CPRF is an advisory and governance forum with senior representation from the business segments, Group Risk Management, Finance and the Law Group. The CPRF generally meets on a bi-weekly basis and is responsible for aligning and supporting management's decision-making on key topics related to RBC's climate strategy. This includes decisions related to financed emissions reporting, interim targets and related disclosures.

ESG Disclosure Council (ESG DC)

The ESG DC is a governance body with senior representation from Finance, Corporate Citizenship, Group Risk Management, the Law Group, Investor Relations, Corporate Communications, Climate Strategy and Governance, Diversity & Inclusion and Internal Audit (non-voting). The ESG DC is a subcommittee of the Disclosure Committee. It is responsible for providing executive direction on and overseeing ESG disclosures, including climate-related disclosures, and supporting controls, strategy alignment and integration of disclosures across the organization.

Executive compensation

As a global bank, it is important that we identify, understand and respond to the ESG risks and opportunities that matter most to our stakeholders and our business. In support of our Purpose, the Board, the Human Resources Committee and our leadership team are fully committed to contributing to growing sustainable, vibrant and inclusive communities.

Our approach to executive compensation, including our CEO compensation, is aligned with our ESG strategic priorities, which include climate change. We have built climate-related considerations, among other ESG-related considerations, into our design of the executive compensation program to drive leadership accountability in advancing positive change. Individual performance objectives for the CEO and GE in our STI program are tied to RBC's financial performance, client outcomes and contribution to our risk and strategic objectives, including environmental sustainability, and social and governance practices. Our STI program, which includes a 30% weighting for risk and strategic objectives, is highlighted on page 74 in our [Proxy Circular](#).

We recognize that climate change is an increasingly important consideration for our shareholders and other stakeholders. In 2023, we plan to include a medium-term climate-based objective related to progress against the strategic priorities of the RBC Climate Blueprint in the senior executive MTI and LTI programs. This new climate-focused assessment will operate as an additional incentive for the CEO and GE to accelerate RBC's progress on these key priorities through innovation and engaging with governments, businesses and individuals to facilitate meaningful global progress towards net-zero over the short, medium and long term.

The introduction of the climate modifier will be embedded into our MTI and LTI programs in order to give the Board flexibility to make modifications to executives' MTI and LTI awards, taking into consideration their actions supporting our climate strategy. The climate modifier will also align the time horizons of our climate objectives with those of our MTI and LTI programs.

Our risk and strategic objectives scorecard, incorporated in the [Proxy Circular](#) on pages 80-82, highlights ESG matters, reflecting the focus placed on these initiatives by the Human Resources Committee.

Strategy



Strategy



We are taking a coordinated approach on climate change that harnesses the capabilities and strengths of our organization. Taking action helps accelerate further support for our clients and communities. Climate change remains a strategic imperative to the bank, and an area where we see potential to grow our business.

Christoph Knoess, Chief Administrative & Strategy Officer, Royal Bank of Canada

The [RBC Climate Blueprint](#) (Blueprint) is our enterprise climate strategy to accelerate the pace of climate action and support our clients in an orderly and inclusive transition to a net-zero economy. The Blueprint defines the role that RBC is playing in the climate transition and identifies four strategic priorities with supporting actions and commitments. Each of these priorities is anchored by our strengths in finance, investment, risk management, innovation, economic and policy research, and community investment. The Blueprint also provides a framework for identifying and managing climate-related risks and opportunities over the short, medium and long term.

- **Help clients as they transition to net-zero:** We believe an orderly and inclusive transition to net-zero is important to achieve a more sustainable economy. Financial institutions are uniquely positioned to help align financial flows with net-zero pathways,^{24,25} and we are supporting our clients as they transition to net-zero. We have made a commitment to provide \$500 billion in sustainable finance by 2025.² In 2022, we provided \$84.8 billion towards this commitment and released the [RBC Sustainable Finance Framework](#) to enhance transparency around how we measure our performance⁵ (see pages 17-20).
- **Hold ourselves accountable:** We intend to achieve net-zero in our lending by 2050¹ – one of the most impactful steps that we can take to address climate change as we support our clients in their transition. In 2022, we took a critical step on our journey to net-zero and set our interim targets for lending in three key sectors: oil & gas, power generation, and automotive¹ (see pages 21-22).
- **Inform and inspire a sustainable future:** We believe all stakeholders have a role to play in an orderly and inclusive transition to net-zero. We are providing timely research and insights to inform public policy and decarbonization plans, and investing in partners that are focused on innovative solutions to encourage meaningful climate action. Building on [The \\$2 Trillion Transition](#), which laid out six pathways for Canada to reach net-zero by 2050, in 2022 we released sector-specific research, including [The Next Green Revolution](#), which focused on agriculture (see pages 23-25).
- **Advance net-zero leadership in our own operations:** We are advancing progress towards our goals to reduce our own global emissions by 70%¹⁰ and source 100% of our electricity from renewable and non-emitting sources by 2025.¹¹ In 2022 we signed our second Power Purchase Agreement, helping us move towards meeting these goals. We also continue to maintain carbon neutrality in our operations (see pages 26-28).

In the sections that follow, we provide an update on our progress against the RBC Climate Blueprint and how we are managing climate-related risks and opportunities.


Help clients as they transition to net-zero

Climate-related products, services, thought leadership and advice

Helping clients achieve their climate goals by providing products, services and advice across key business segments is an important part of our climate strategy (see Figure 2 below). Opportunities to support clients include providing sustainable debt, equity and advisory services; providing capital for companies creating new green technologies²⁶; financing energy transition projects, such as renewable energy; and offering investment solutions that integrate material²² ESG factors.²³






More broadly, we see sustainable finance as a growth opportunity for our clients and our business. We also believe there is tremendous potential for financial markets to contribute to solving some of the biggest social and environmental challenges that we collectively face – including mitigating climate change. That’s why RBC has committed to providing \$500 billion in sustainable finance by 2025,² which includes financing for eligible green and social activities.²⁷ Details on our progress can be found on page 19 and examples of how we have supported our clients are in the case studies on page 20. Figure 2 provides examples of the climate-related products, services and advice across our businesses and client segments, which are expanded on, on pages 18-19.

Figure 2: Examples of climate-related products, services, advice and thought leadership across our businesses and client segments

Capital Markets Large corporations, governments and institutional investors	Business Banking²⁸ Businesses from small to mid-sized corporations	Personal Banking²⁸ Individual retail clients	Wealth Management Individual clients and institutional investors
 Sustainable debt Structuring and implementing sustainable finance products such as green bonds, green loans and sustainability-linked loans (SLLs)			
 ESG advisory services Integrating ESG factors and analysis into mergers & acquisitions (M&A) and initial public offering (IPO) engagements, ²⁹ and advisory services on integrating ESG into business strategy and disclosures			
 Environmental commodities Carbon credit trading and hedging	 Home and auto finance Lending for electric vehicles, hybrids and home retrofits		
 Financing & advisory services for green & energy transition clients, technologies & projects Financing for cleantech and renewable energy as well as other solutions	 Responsible investment³⁰ Providing clients with responsible investment options that meet their needs		
 Advice, thought leadership & ESG research Providing insights on ESG topics, including climate-related risks and opportunities, that are tailored to client segments to support clients on their net-zero journey. See Inform & Inspire on page 23.			


Help clients as they transition to net-zero

Table 1: Climate-related products, services and advice, capabilities and performance highlights

Products, services and advice	Our capabilities	2022 performance highlights
 Sustainable debt  ESG advisory services	<ul style="list-style-type: none"> The Capital Markets (CM) Sustainable Finance Group supports the business in delivering advice and solutions to clients, including structuring green, social, sustainability and sustainability-linked (GSSS) financial products and advising on best practices in ESG integration in corporate strategy and investment management. Business Banking²⁸ has expanded its capabilities to support clients with sustainable finance products and advisory services, including green loans. 	<ul style="list-style-type: none"> Ranked tenth overall and first among Canadian banks in GSSS bond volumes by bookrunner,³¹ and fifth overall in SLL volumes by bookrunner in our core currencies.³² Launched a pilot with Export Development Canada in November 2022 to provide up to US\$1 billion in financing over three years to support Canadian businesses in their transition towards greener business operations through Business Banking.³³
 Environmental commodities	<ul style="list-style-type: none"> The CM Environmental Commodities Desk, established in 2008, enabled RBC to be the first Canadian bank to participate in the carbon markets, and continues to be active in the North American and European carbon markets. 	<ul style="list-style-type: none"> Traded over 500 million tonnes of CO₂-equivalent credits.
 Financing & advisory services for energy transition & green clients, technologies & projects	<ul style="list-style-type: none"> RBC's financing of emerging and more widely adopted climate solutions spans many parts of our enterprise, including: <ul style="list-style-type: none"> The national cleantech practice, through RBCx™, which offers our cleantech clients a full-service platform with access to capital solutions, innovative products and services, and expert advice The dedicated Global Energy Transition Expert Group in Capital Markets, which provides cross-sector insights and expertise to clients in different industry verticals on raising capital and investments to support the energy transition The CM Community Investments Group, which provides equity for renewable energy technologies through tax credit programs in the U.S. 	<ul style="list-style-type: none"> Continued to grow our national cleantech practice with a team of 10 RBCx professionals distributed coast to coast in Canada. Through the Global Energy Transition Expert Group, engaged with clients on over 50 mandates focused on renewable energy and cleantech solutions, such as renewable natural gas, hydrogen, carbon capture and energy storage. Financed over 2.9 gigawatts of energy capacity through the CM Community Investments Group since its inception in 2015.
 Home and auto finance	<ul style="list-style-type: none"> The Personal Banking²⁸ business has a number of solutions to support individuals in making lower-carbon choices, including: <ul style="list-style-type: none"> Competitive financing options available to Canadians under our Clean Energy Vehicle Finance Program for hybrid and electric vehicles (EVs) Financing to help homeowners invest in making their home more energy-efficient, for example the RBC Energy Saver Loan 	<ul style="list-style-type: none"> Increased financing for hybrids and EVs by more than 2.5x since the program was launched in 2019, with annual originations increasing by over 60% over the same period.

Help clients as they transition to net-zero

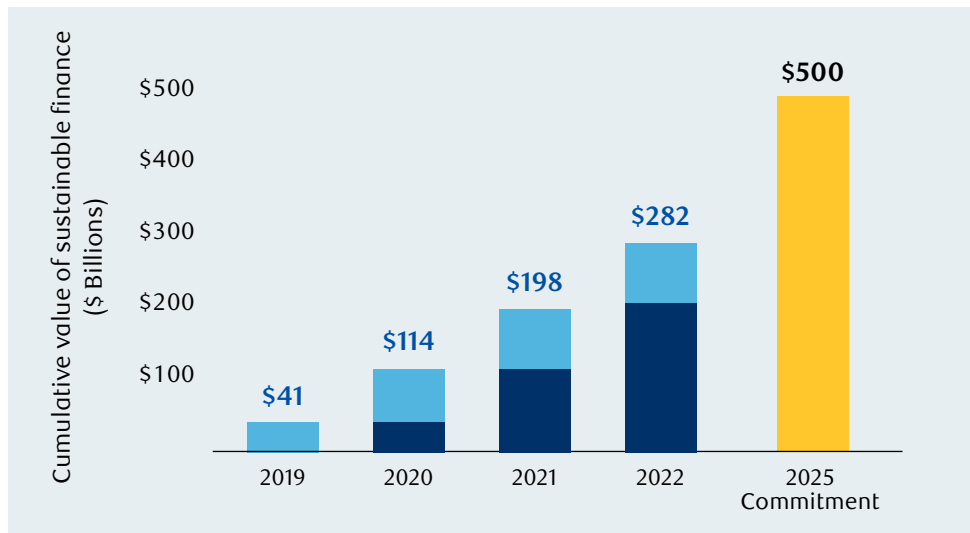
Table 1: Climate-related products, services and advice, capabilities and performance highlights (continued)

Products, services and advice	Our capabilities	2022 performance highlights
 <p>Responsible investment</p>	<ul style="list-style-type: none"> The Wealth Management (WM) business, including RBC GAM, continues to advance investment capabilities to meet evolving client needs, including their climate-related goals. RBC GAM has outlined their commitments in Our Approach to Climate Change and Our Net-Zero Ambition. WM, including RBC GAM, have a number of solutions for clients to invest in that consider ESG issues, including climate change. 	<ul style="list-style-type: none"> Built an ESG scoring model to provide WM investment teams with a tool to integrate ESG factors into portfolio and investment decisions for certain portfolios.²³ Built an expanded internal ESG data infrastructure within RBC GAM to enhance the use of ESG data as part of the investment process for applicable types of investments.²³ It is used to distribute a climate dashboard for some strategies to investment teams.

Progress on our sustainable finance commitment

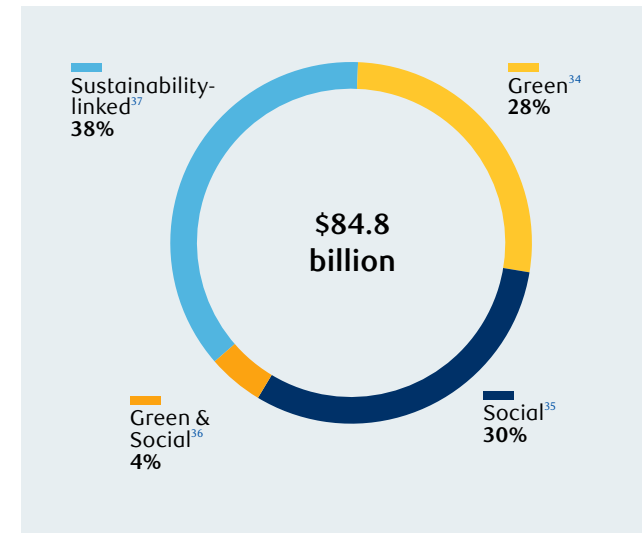
The [RBC Sustainable Finance Framework](#) provides an overview of the approach and methodology we use to classify, track and disclose our progress towards our sustainable finance commitment, and serves as a tool to identify new opportunities for RBC to advance sustainable finance.⁵ We track progress annually on our commitment to provide \$500 billion in sustainable finance by 2025 as one measure of our ability to unlock climate-related opportunities. In 2022, we supported clients with \$84.8 billion in sustainable finance, up from \$83.8 billion in 2021. Figure 3 describes our progress towards our commitment, and Figure 4 provides a breakdown by outcome category. More details can be found in the 2022 ESG Performance Report on page 53.

Figure 3: Cumulative progress towards our 2025 sustainable finance commitment



■ Sustainable finance value for the fiscal year ■ Sustainable finance value from prior year(s)

Figure 4: Sustainable finance by category in 2022



Help clients as they transition to net-zero

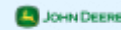
Case studies //

We are helping our clients achieve their climate and ESG goals by providing products, services and advice. Below are a few examples of how we are working together.



Creating PSP's Green Bond Framework and bringing PSP's inaugural green bond to market

RBC supports companies seeking to align their financing with their sustainability goals and objectives. Green bonds are one tool that clients can use to finance assets with environmental benefits including renewable energy, green buildings and clean transportation. In 2022, RBC worked with Public Sector Pension (PSP) Investments to help them identify eligible green assets, establish their Green Bond Framework and successfully bring their inaugural \$1 billion green bond to market. PSP Investment's green bond had nearly 50 investors, which is a testament to the strong investor demand for sustainable debt products like green bonds.



Supporting John Deere Capital Corp on its inaugural sustainability-linked notes offering

RBC is working with companies to help them meet their sustainability goals, including reaching their emissions reduction targets. In 2022, RBC served as Joint Active Bookrunner on John Deere Capital Corp's first sustainability-linked notes. Sustainability-linked bonds (SLBs) provide a financial incentive for companies to hit defined ESG targets in their operations. The John Deere Capital Corp notes included performance targets to reduce John Deere's Scope 1 and 2 greenhouse gas emissions by 20% by 2025. As the Joint Active Bookrunner on the transaction, RBC provided guidance on best practices for SLB issuance, including target selection and structuring, to help create an offering that appealed to a broad investor base. John Deere Capital Corp's inaugural sustainability-linked notes garnered strong interest with an order book that was nearly 3x oversubscribed.



Supporting Moment Energy's vision of providing worldwide access to clean, reliable and affordable energy storage

RBCx works with startups that are tackling some of the most pressing environmental challenges and helps these companies scale their operations and impact. Startup Moment Energy is working with automakers to repurpose end-of-life electric vehicle batteries into stationary second-life energy storage solutions. In 2022, RBCx introduced a venture debt financing solution and provided the startup with \$1 million in venture debt capital. This funding provided Moment Energy with additional runway to help the company realize its vision of providing worldwide access to clean, reliable and affordable energy storage.



Working with Athabasca Chipewyan First Nation to help advance their clean energy transition

RBC is committed to building meaningful and lasting Reconciliation with Indigenous people and communities across Canada. This includes supporting Indigenous communities in their economic development and environmental goals. In 2022, RBC provided a \$32 million loan to the Athabasca Chipewyan First Nation (ACFN) to support their direct equity participation in the development of three solar farm projects through their partnership with Concord Pacific. ACFN's direct equity participation created the largest direct Indigenous solar project investment completed thus far in Canada. To expand the impact of this initiative, 50% of labour was provided by the local Blood Tribe and a number of Indigenous subcontractors also contributed to the success of the project. RBC's loan supports the generation of 140 GWh of renewable electricity annually, while also supporting job creation and economic development for ACFN and other First Nations communities.

Hold ourselves accountable

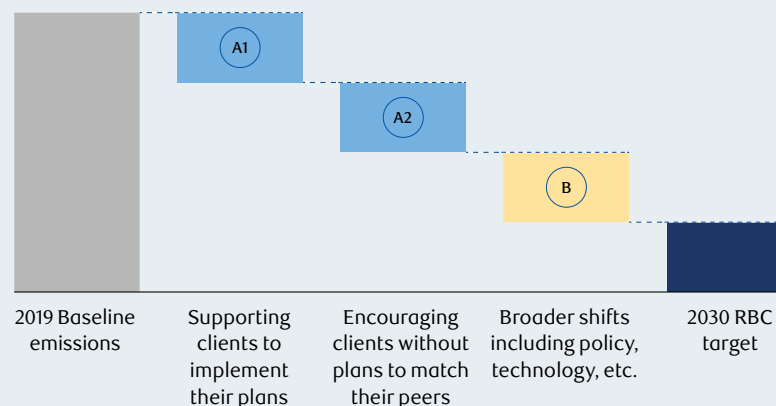
Net-zero lending strategy

RBC intends to achieve net-zero emissions in our lending by 2050. By joining the NZBA, we have joined global peers in setting common standards and frameworks that will help our society achieve a net-zero economy.¹⁴ In 2021, we reported initial estimates of our financed emissions for all six Partnership for Carbon Accounting Financials (PCAF)³⁸ asset classes in our lending portfolio and published these measurements in our [2021 TCFD Report](#) (see page 24).³⁹ These initial estimates of financed emissions helped us understand which of our asset classes had the highest financed emissions, and informed our decision, along with other factors, to prioritize and set initial interim emissions reduction targets for lending for the oil & gas, power generation, and automotive sectors which were disclosed in our [2022 Net-Zero Report](#) (pages 9 to 11). See page 22 for a summary of our interim targets.

Meeting these targets will require action by RBC, our clients and other stakeholders, including policymakers. We continue to be encouraged by some of our clients who have already established decarbonization plans and set emissions reduction targets and others who are taking steps to do so. RBC intends to support these clients in following through on their plans (lever A1 in Figure 5). Where clients have not yet done so, RBC intends to work with them to establish and implement decarbonization plans (lever A2 in Figure 5).

In some instances, achieving these interim targets will require additional action beyond the control of RBC and our clients. Success will depend on broader changes in the economy driven by policy action, such as incentivizing clean energy sources for power generation, as well as technological breakthroughs such as new battery technology and green hydrogen. While RBC is committed to contributing to these broader shifts through actions such as thought leadership, support for scaling key technologies, policy advocacy and sharing research and perspectives, many of these factors remain outside of our direct control. This includes factors discussed on page 8 of the [2022 Net-Zero Report](#) (lever B in Figure 5).

Figure 5: Key levers for progressing towards targets (for illustrative purposes only)⁴⁰






In setting our targets, we are encouraged by signs of increasing policy commitment and action in key jurisdictions. For example, both Canada and the United States have announced a goal to achieve net-zero by 2050 and established 2030 interim targets. These have been followed up with concrete policy actions such as the Canadian Emissions Reduction Plan (ERP) and the U.S. Inflation Reduction Act.

In alignment with our commitments as a member of the NZBA, we intend to set interim targets for additional carbon-intensive sectors and sub-sectors that represent significant sources of emissions in our lending portfolio within 36 months of joining the NZBA. In future disclosures, we also intend to publish a high-level transition plan detailing key milestones and the categories of actions we plan to take to achieve our emissions reduction targets. We plan to review and revise our targets at least every five years as new data become available and as assumptions, methodologies, requirements and standards evolve to align with market practices and climate science.¹⁵ As we undertake this work, we plan to continue to engage with our clients to understand and support their transition plans, and work to expand our products, services, investment options and client solutions to help our clients meet their climate goals and objectives.

Hold ourselves accountable

Table 2 provides a summary of our initial 2030 interim emissions reduction targets released in October 2022. For more information on our approach to target setting, please see the [2022 Net-Zero Report](#). We intend to disclose progress towards our targets in future reports. The Metrics & Targets section provides an overview of our PCAF financed emissions for lending activities and other key performance metrics (see page 37).

Table 2: 2030 Interim emissions reduction targets for high-emitting sectors

	Emission Scope ⁸ Inclusion	2030 Target (as % reduction from 2019 baseline)	2030 Target (as the portfolio measurement)	RBC 2019 Baseline	Sub-Sector Inclusions & Exclusions	Metric Used	Unit	Scenario Used
 Oil & Gas	Scopes 1, 2	35% reduction	4.9 g CO ₂ e/MJ	7.6 g CO ₂ e/MJ	Include: Upstream, downstream, integrated Exclude: Midstream, services	Physical Emissions Intensity ⁴¹	g CO ₂ e/MJ	Canada ERP ⁴²
	Scope 3	11 - 27% reduction	61.1 - 50.2 g CO ₂ e/MJ	68.6 g CO ₂ e/MJ			g CO ₂ e/MJ	IEA NZE ⁴³
 Power Generation	Scope 1	54% reduction	156 g CO ₂ e/kWh	340 g CO ₂ e/kWh	Include: Electricity generation Exclude: Clients involved in transmission, distribution, non-generation	Physical Emissions Intensity	g CO ₂ e/kWh	IEA NZE
 Automotive	Combined target for Scope 1, Scope 2 & Scope 3 tank-to-wheel	47% reduction	102 g CO ₂ e/km	192 g CO ₂ e/km	Include: Manufacturing, ⁴⁴ financing Exclude: Retail motor vehicle loan, new vehicle dealer, trucking rental and leasing, railway, and other ⁴⁵	Physical Emissions Intensity	g CO ₂ e/km	IEA NZE

Inform and inspire a sustainable future

We believe all stakeholders have a role to play in an orderly and inclusive transition to net-zero. We are providing timely research and insights to inform public policy and decarbonization plans, and investing in partners that are focused on innovative solutions to encourage meaningful climate action.

Informing the transition

Develop economic forecasts and analysis on important issues to inform national and sector-specific decarbonization plans

In 2021, we published [The \\$2 Trillion Transition: Canada's Road to Net Zero](#) (the “\$2 Trillion Transition”), which laid out six pathways for Canada to reach net-zero by 2050. In 2022, our research papers explored specific sectors in depth, including [The New Climate Bargain \(oil and gas\)](#), [The Price of Power \(electricity\)](#) and [The Next Green Revolution \(agriculture\)](#).

We also focused on how Canada can support an inclusive transition with research on the importance of [Indigenous capital](#) and the [skills revolution](#) needed to reach net-zero.

[RBC Disruptors](#)[®], an RBC podcast series, featured a number of conversations with Canadian business leaders and innovators on climate-related topics ranging from biodiversity to global collaboration on climate action. We also hosted dialogues to drive forward discussion on key topics, such as [The RBC Climate-Smart Food Roundtable](#) on how Canada can produce more food with fewer emissions.

We shared thought leadership across a range of ESG topics, including climate change, to inform our clients' business and investment decisions. Key publications for clients included WM's [SusTech](#) and CM's [RBC ESG Stratify](#)[™].



Investments in innovation

Provide investment capital and philanthropic support to help solve pressing environmental challenges

Climate investments: The global net-zero transition will require capital to be deployed across a range of industries and technologies. We have committed \$95 million to venture capital and growth equity funds that are investing in early-stage innovators focused on climate and decarbonization in Canada and globally. Together with our fund partners, we seek to support entrepreneurial companies to develop and scale solutions and technologies that have the potential to accelerate the net-zero transition and reduce global emissions. Our fund commitments in 2022 included:

- **ArcTern Ventures Fund III:** Canadian fund focused on North American and European technology investments that achieve measurable reductions in carbon emissions. Key areas of focus include electrification and energy, clean industry, mobility, and food systems.
- **Evok Innovations Fund II:** Canadian fund focused on carbon capture, low-carbon fuels, electrification, critical minerals and industrial innovation companies in North America.
- **General Atlantic BeyondNetZero Fund I:** Global fund focused on growth equity investment opportunities in decarbonization, energy efficiency, resource conservation and emissions management.

RBC Tech for Nature: Innovative solutions based on technologies such as blockchain, artificial intelligence and machine learning also offer immense potential to address complex environmental challenges. Launched in 2019, **RBC Tech for Nature is our commitment to provide \$100 million by 2025** to support innovation, data and technologies for our shared future through philanthropic support. In 2022, we provided over \$12 million to more than 100 universities and charities that are working on solutions to pressing environmental challenges like climate change by leveraging technology and innovation. This brings our total investment through RBC Tech for Nature to date to over \$39 million since 2019. See [RBC Tech for Nature](#) for more information about key partnerships in 2022.

Inform and inspire a sustainable future



Spotlight // How Canada can lead the next Green Revolution

Global food demand, already high, is set to soar as the global population rises to 9.7 billion by 2050 – a 26% jump from 2022.⁴⁶ Canada can help meet the food needs of a growing global population. But to do so, we must find ways that minimize environmental impacts. Canada’s agriculture and food systems currently produce 93 megatonnes or just over 10% of the country’s greenhouse gas emissions. Increasing production to meet rising global demand could see these emissions rise to 137 megatonnes under current farming practices.⁴⁶ In 2022, RBC led research and convened discussions to uncover answers to the question: *How can Canada produce more food and fewer emissions?*

- The Next Green Revolution research series:** Building off the [\\$2 Trillion Transition](#) and the earlier [Farmer 4.0](#), RBC Economics & Thought Leadership partnered with [BCG Centre for Canada’s Future](#) and [Arrell Food Institute](#) at the University of Guelph on a multi-part thought leadership series. The first report, [The Next Green Revolution](#), maps out the main sources of emissions in Canada’s agrifood supply chain and the practices and technologies that are critical to reducing them. The report also identified four key pillars – policy, technology, economics and people – that will be needed to develop a low-emissions agriculture sector. Each of these pillars will be explored in subsequent reports, with the first, [Seven Technologies That Can Drive Canada’s Next Green Revolution](#), examining the technical innovations that can kick start Canada’s agricultural transformation.
- RBC Disruptors special miniseries: [The Growing Challenge](#):** This series of conversations tackles Canada’s ambitions (and obligation) to feed a growing world, all while reducing emissions.
- RBC Climate-Smart Food Roundtable:** RBC convened a select group of leaders, including senior government officials, from across Canadian agriculture for an interactive session on how to make the sector a strategic driver of Canada’s efforts to address climate change and stimulate sustainable economic growth.
- Canadian Agrifood Net Zero Alliance:** Royal Bank of Canada CEO Dave McKay began working with leaders of other Canadian businesses in 2022, including Maple Leaf Foods and Loblaws, to advance high impact initiatives to reduce emissions in Canada’s agriculture sector.



Inform and inspire a sustainable future



Spotlight // RBC's action on nature and biodiversity

We recognize the importance of advancing action to address nature-related impacts and biodiversity loss. Although early in our journey, RBC has already taken several concrete steps in this direction.

RBC's environmental and social risk management policies and procedures include consideration of nature and biodiversity-related risks such as deforestation, land and resource use, and water quality and availability. Our [Policy Guidelines for Sensitive Sectors and Activities](#) address our financing activities with clients and projects operating in the Arctic ecosystem, Arctic National Wildlife Refuge and UNESCO⁴⁷ World Heritage Sites.⁴⁸ RBC has also adopted the Equator Principles.⁴⁹

[RBC's Sustainable Finance Framework](#) describes the methodology we use to measure and report on progress towards our sustainable finance commitment to provide \$500 billion by 2025², and includes several eligible activities that support or contribute to the enhancement or conservation of terrestrial or aquatic biodiversity; sustainable water and wastewater management; and the environmentally sustainable management of living natural resources and land use.

As part of our commitment to maintain carbon neutrality in our operations, we have leveraged **carbon offsets**⁵⁰ as a market-based tool that can help channel private capital towards nature-based solutions, such as improved forest management practices, that both help address climate change and preserve nature and biodiversity.

RBC Tech for Nature is another way RBC is inspiring new ideas, technologies and partnerships to solve pressing environmental challenges impacting our natural ecosystem. The program provides funding to support projects that use technology to measure areas that are most impactful in climate stabilization and encourages local community involvement in the important work of restoration, conservation and protection of wildlife habitats. You can read more about our RBC Tech for Nature partners [here](#).

RBC has **produced thought leadership** to help highlight nature- and biodiversity-related challenges and opportunities for our clients and broader society. These include our report [The Next Green Revolution](#), which outlines a path for sustainable growth in Canada's agriculture sector; publications on why nature and biodiversity are the next frontier for sustainability (see [RBC CM Sustainability Matters](#)); and the intrinsic links between biodiversity and climate change (see [RBC GAM Insights](#)).

This is a relatively nascent and complex area of work for the financial sector, and we look forward to continued dialogue and collaboration with stakeholders on this important topic.

Advance net-zero leadership in our own operations

Net-zero operations strategy

We are committed to the goal of achieving net-zero in our operations. To advance towards this ambition, we set two goals in 2020: to reduce GHG emissions by 70% with a baseline year of 2018¹⁰ and to increase our sourcing of electricity from renewable and non-emitting sources to 100%,¹¹ both by 2025.

To make progress on these goals, we are focused on:

- Procuring renewable electricity:** To reduce emissions associated with the electricity we purchase, and to meet our renewable and non-emitting electricity goal, we procure renewable electricity through long-term power purchase agreements (PPAs) and other sources of renewable energy credits (RECs).⁵¹ This is an important part of our strategy because we believe it accelerates the decarbonization of electricity grids in select areas where we operate and stimulates the market for renewables. See below for a case study on our most recent PPA.
- Increasing electrification and energy efficiency:** We have established energy reduction plans for both leased and owned buildings in our property portfolio. We make investments in smart building technologies and other energy efficiency measures annually, and aim to upgrade our heating, ventilation and air conditioning (HVAC) equipment with systems that rely on electricity, as these systems need to be replaced and where we have the opportunity to select this equipment. In addition to investments in the properties we own, we have specifications for the properties where we lease space, such as green building certification schemes and energy performance reporting. These measures are intended to help reduce emissions from our energy consumption.

Case studies //

RBC signs second renewable energy power purchase agreement (PPA)

In 2022, RBC entered into its second renewable energy PPA, alongside Shopify Inc. and Bullfrog Power Inc., to support the construction of Berkshire Hathaway Energy Canada's wind project in Alberta. A PPA is a long-term financial agreement between a renewable energy buyer and a renewable energy seller where the buyer guarantees the seller a fixed price for renewable energy from the project. Entering into a PPA before the project is finalized helps the energy seller secure financing and supports the growth of renewable energy projects. RBC agreed to offtake 30,000 MWh per year, helping advance our commitment to source 100% of our electricity from renewable and non-emitting sources by 2025.

New RBC U.S. WM headquarters seeks LEED Platinum designation

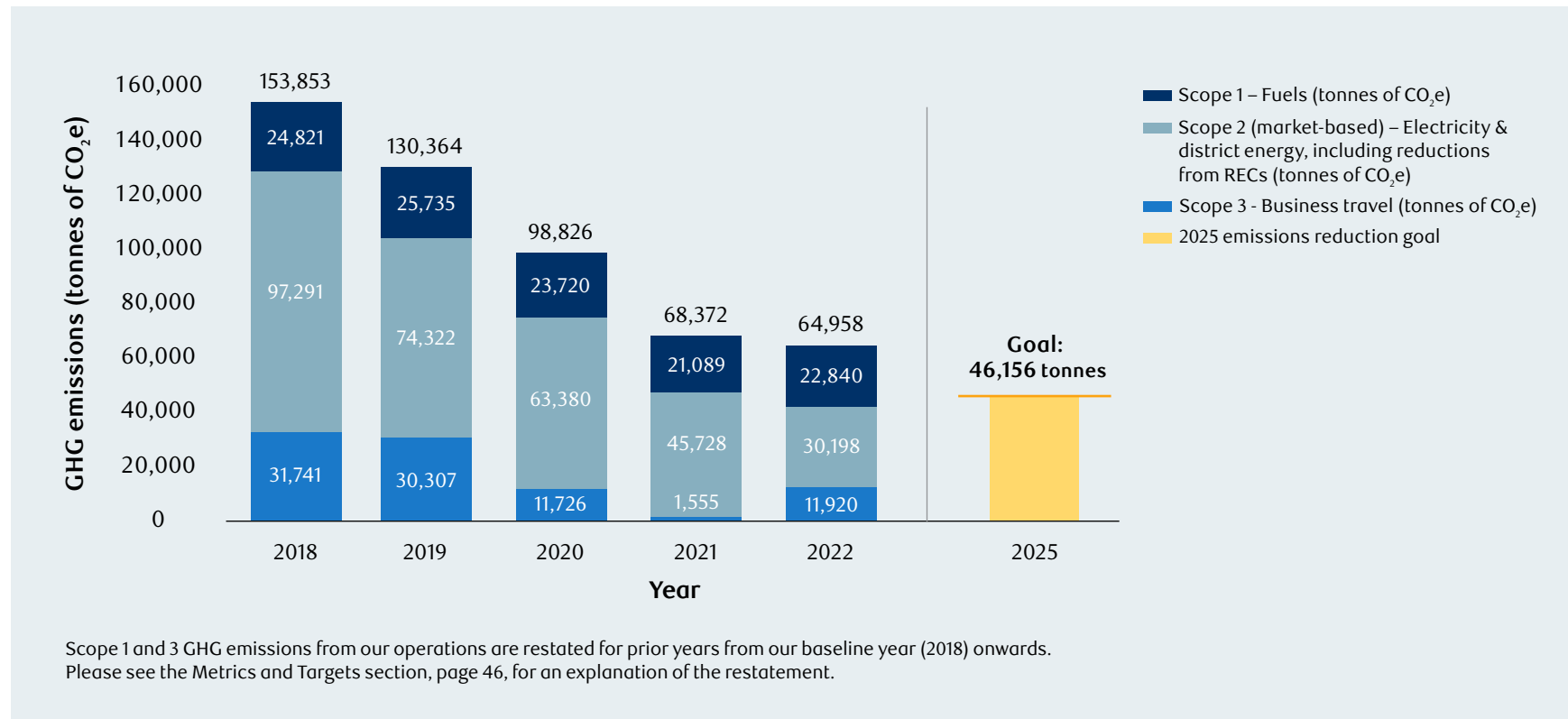
RBC moved its U.S. WM headquarters, located in Minneapolis, to a new 37-storey office tower that is aiming to achieve the LEED Platinum designation. The space, known as RBC Gateway, aims to have an EnergyStar score of 89 out of 100, which is 39% better than the average building in the United States. Using natural daylight to illuminate the space, integrating smart building sensors to optimize desk usage and using sub-level metering to monitor energy usage, RBC Gateway is helping to advance RBC's net-zero ambitions.

Advance net-zero leadership in our own operations

In 2022, we saw a 58% reduction in GHG emissions in our operations compared to our 2018 baseline, and 90% of our electricity consumption was sourced from renewable and non-emitting sources of electricity for our global operations. The renewable electricity generated by the wind and solar projects from our two PPAs are important contributors to our progress towards both goals. The pandemic-related restrictions on travel in the early half of 2022 also contributed to reductions. Year-over-year our fuel-related emissions (Scope 1) and business travel (Scope 3) emissions increased relative to our 2021 performance, as the prior year reductions were influenced by reduced occupancy and travel during the pandemic. See Figure 6 below and the Metrics & Targets section, page 46, for more details on our performance.

We also continue to maintain carbon neutrality annually by reducing our emissions and compensating for remaining emissions with the purchase of high quality certified carbon offsets. We believe the annual purchase of offsets provides valuable support for decarbonization technologies and projects (see Spotlight: Carbon offsets on page 28 for more details).

Figure 6: Scope 1, 2 (market-based) and 3 (business travel) GHG emissions from our operations



Advance net-zero leadership in our own operations

In addition to the levers we are using to advance toward our 2025 goals, we continue to pursue initiatives to unlock emissions reductions against a longer time-frame, for example, investments in select on-site solar projects, where viable, and our work with owners of the buildings we lease to reduce our emissions. However, we recognize that achieving these reductions will not be easy or swift, and the extent of the reductions is still uncertain.

We also note that stakeholder expectations and standards regarding the definition of net-zero continue to evolve. As a result, our net-zero operations strategy will need to continue to evolve as accepted standards develop in this area, and we intend to update our disclosures to reflect changes in our practices. For additional clarity, we are defining carbon neutral in our operations as counterbalancing emissions from our operations with purchased carbon offsets in a given reporting year. We define net-zero in our operations as the state where we have taken steps to minimize our emissions from our operations to the extent we are able to do so, and then for any remaining emissions from our operations, removing an equivalent amount of those emissions from the atmosphere.



Spotlight // Carbon offsets

We recognize the need for deep, broad-ranging and rapid action to reduce GHG emissions across the economy. Globally, the path to net-zero requires the widespread adoption of mitigation activities, and the scaling of new technologies and natural carbon sinks. This means organizations must decarbonize their own operations, but investments in offsets can also be beneficial. Carbon offsets can channel private capital towards impactful, cost-effective climate mitigation activities. They improve access to finance for activities that help avoid emissions (such as renewable energy projects) as well as those that remove emissions (such as nature-based solutions and emerging technologies like direct air capture).

While the market for carbon offsets is still maturing, we believe purchasing offsets that can demonstrate key qualities, such as additionality and permanence, can provide an important market signal. We are also supportive of efforts to strengthen the voluntary carbon markets, including the work of the Integrity Council for the Voluntary Carbon Market, and we look to incorporate emerging best practices into our own assessment of offset purchases.

RBC has been carbon neutral in our global operations since 2017 by reducing emissions and purchasing certified offsets. We buy and retire offsets annually to cover all reported Scope 1, 2 and 3 (business travel) emissions in that fiscal year. The carbon offsets we purchase are verified by third parties and fulfill the methodologies of the carbon offset registries⁵² to demonstrate additionality and permanence. We conduct due diligence as part of our procurement process and take into account location, technology, vintage and additional community/environmental benefits and impacts.

Risk Management

An aerial photograph of a glacier system. A prominent turquoise-colored meltwater stream flows through a channel carved into the white and grey ice. The surrounding ice is textured with small rocks and debris. The overall scene is a mix of white, grey, and vibrant turquoise.

Risk management



We enhanced the depth and breadth of our climate risk capabilities in 2022, helping us to advance how we manage climate risk in what is a dynamic and evolving landscape. We will continue to develop our expertise in this critical area to support the bank's climate strategy.

Graeme Hepworth, Chief Risk Officer, Royal Bank of Canada

The ability to manage risk is a core competency of RBC, and is supported by our risk-aware culture and risk management approach. We identified climate risk as an emerging risk to RBC in 2018; and subsequently in 2020, we identified climate risk as a top and emerging risk to RBC. In 2021 we joined PCAF³⁸ to further our ability to measure and monitor our financed emissions and measured the emissions from our lending for the first time. In 2022, we improved our data quality and measurement for our financed emissions from our lending activities, as defined by PCAF, for three key sectors: oil & gas, power generation, and automotive.

As a global financial institution with a diversified business model, we actively manage a variety of risks to help protect and enable our business, and have integrated climate considerations into our qualitative risk appetite framework, risk measurement and risk policies. We regard climate risk as a transverse risk, which impacts all of our principal risk types in different ways and to varying degrees, and requires us to consider how financial and non-financial factors may impact us and our clients. We continue to advance our capabilities and approach to climate risk management:

- We conduct portfolio, client and scenario analysis to assess our exposure to, and the impact of, climate-related risks.
- We have committed to refining our climate risk appetite and delivered a key milestone in our commitment to achieving net-zero in our lending portfolio by 2050 with the release of our interim targets for lending in three key sectors: oil & gas, power generation and automotive.¹
- We are building our climate-related scenario analysis and stress testing capabilities. As part of our annual stress testing and analysis, we incorporated components of climate risk through transition and physical risk stress factors and assessed their impact on our key portfolios.
- We updated our primary Enterprise Policy on Environmental and Social Risk (E&S Risk Policy) to reflect our enhanced climate commitments and objectives (see page 31).
- With the potential for climate risk to translate into increased credit risk, we have done work to identify those sectors within our wholesale lending portfolio that are most affected by physical and transition risks, which allows us to better monitor climate risk on an ongoing basis.
- We are expanding our climate data inventory and enhancing our data governance processes to improve our climate risk analysis capabilities.

We continue to embed climate change in our approach to E&S risk management, which is articulated in our enterprise-wide and business-specific E&S risk management policies. Roles and responsibilities related to E&S risk management are governed by the three lines of defense governance model and the Enterprise Risk Management Framework. The E&S Risk team is focused on embedding climate risk assessment into this Framework. Business segments and corporate functions are responsible for incorporating E&S risk management requirements in their operations.

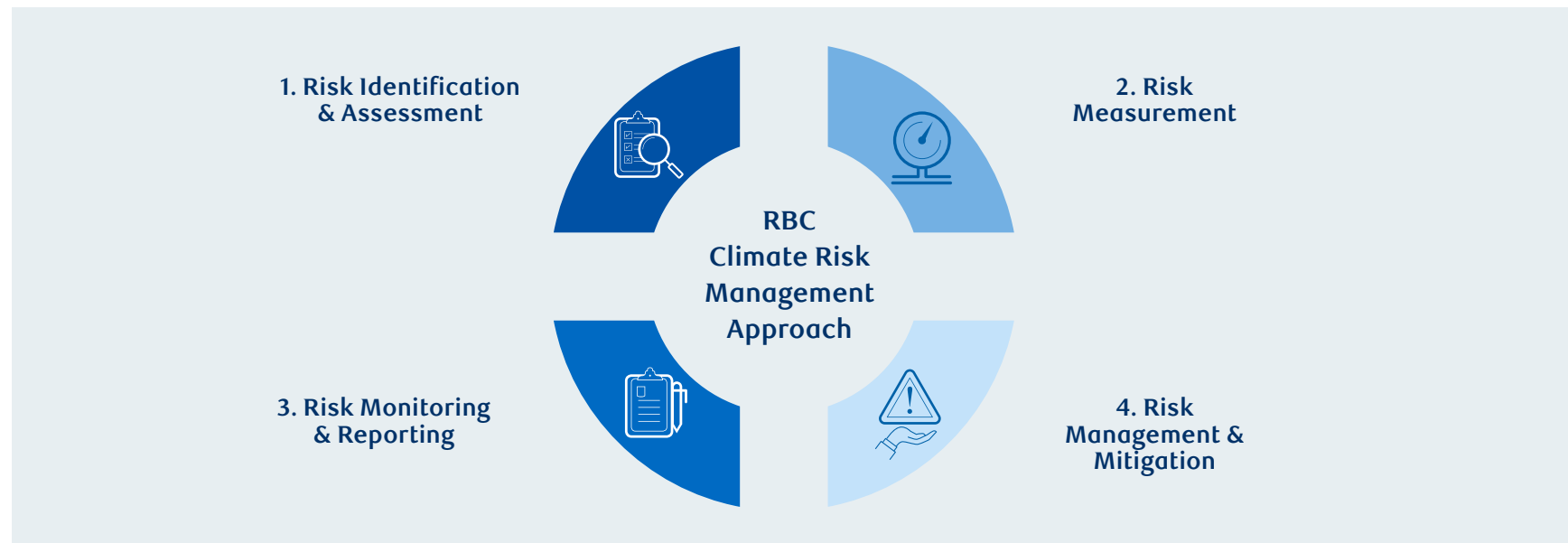
Risk management framework

Our Enterprise Risk Management Framework serves as the foundation for RBC’s approach to risk management and provides an overview of our enterprise-wide programs for identifying, assessing, measuring, controlling, monitoring and reporting significant risks. In 2022, we expanded our risk management principles to reflect our aim to continue to educate ourselves and our clients about the risks and opportunities posed by evolving risk trends, including climate change.

Our Enterprise Risk Appetite Framework articulates our quantitative and qualitative risk appetite statements alongside their supporting measures and constraints. We have integrated climate into our Enterprise Risk Appetite Framework as a qualitative statement, which requires consideration of climate when making thoughtful and future-focused risk decisions. Climate risk is also captured in a number of our quantitative enterprise risk appetite measures in our Enterprise Risk Appetite Framework. Our E&S Risk Policy serves as the foundation for our approach to managing E&S risks arising from our activities. It outlines our principles for E&S risk management, as well as the minimum requirements on how E&S risks arising from our activities are identified, assessed, measured, managed, mitigated, monitored and reported.

In 2022, we updated our primary E&S Risk Policy to reflect our enhanced climate commitments and objectives, describe the strategic choices we are already making towards these goals and outline our principles-based approach to managing climate risk. The E&S Risk Policy also requires that borrowing clients operating in industries of elevated environmental risk be subjected to an environmental and social review. The E&S Risk Policy is supported by additional policies and procedures on E&S risk management for business segments. We also have the [Policy Guidelines for Sensitive Sectors and Activities](#) in place, which address our financing activities with clients and projects operating in the coal-fired power and coal mining sectors, the Arctic ecosystem, the Arctic National Wildlife Refuge and the UNESCO World Heritage Sites.⁴⁸

Figure 7: RBC’s climate risk management approach⁵⁴



Identification, assessment and management of climate risks

Approach to transition and physical risk analysis

We define climate risk as risk related to the global transition to a net-zero economy (transition risk) and risk related to the physical impacts of climate change (physical risk), which include both chronic and acute risks.^{17,18} RBC identifies and measures the relative sensitivity of sectors that we finance to climate-related risks. This provides us with a better understanding of sector sensitivity to climate-related risks, the ways these risks might affect our clients and the appropriate measures to manage these risks for RBC. In 2022, we further developed our capabilities relating to transition risk at a client level, taking into consideration factors such as geography, GHG emissions data, client transition plans and mitigation strategies. We are working to combine sector and client-specific information to further our understanding of the impact of climate risks on our clients and our business. The chart below details some of the climate-related risks that relate to our enterprise risk drivers and examples of the actions we are taking to manage and mitigate the risks that we have identified. For more information on our principal risks,⁵³ please see our 2022 Annual Report starting on page 60.

Table 3: Principal risks, climate-related impacts and examples of actions to mitigate risks

Principal risks	Examples of RBC’s actions to mitigate risk
<p>Systemic May be impacted by a disorderly transition, increasing/worsening physical impacts from climate change, and/or geopolitical risks from differing climate policies.</p>	<ul style="list-style-type: none"> • We continue to develop climate risk measurement and monitoring capabilities with a focus on assessing climate impact on the risks that underlie systemic risk (e.g. credit, market and liquidity risks). • We continue to integrate components of climate risk through transition and physical risk stresses and assess their impact on our key portfolios.
<p>Reputation May be impacted by our ability to meet our climate commitments or balance stakeholder expectations, and/or result from increased scrutiny around our climate-related disclosures.</p>	<ul style="list-style-type: none"> • We continue to proactively and clearly communicate with clients, stakeholders and the broader public regarding RBC’s contribution to combating climate change. • We continue to collaborate with policymakers (governments, regulators and central banks), peers and others to ensure we participate in, and stay apprised of, climate-related developments; commit to expanding and being transparent in our climate-related disclosures; and build our climate strategy.
<p>Strategic and competitive May be impacted by our ability to articulate our climate strategy, balance it with stakeholder expectations, and/or engage and rapidly respond to clients in high-emitting sectors.</p>	
<p>Legal and regulatory environment May be impacted by increasingly complex and rapidly evolving climate-related laws and regulations in applicable jurisdictions, divergent requirements across jurisdictions as well as increasing regulatory enforcement and litigation risks.</p>	<ul style="list-style-type: none"> • We continue to review and update our policies and procedures to align with climate-related laws and regulations as applicable in the jurisdictions in which we operate. • We continue to build on a robust governance process through the management committees as outlined on page 9 to review climate-related disclosures.

Identification, assessment and management of climate risks

Table 3: Principal risks, climate-related impacts and examples of actions to mitigate risks



Principal risks	Examples of RBC’s actions to mitigate risk
<p>Operational May be impacted by more frequent and intense weather events as well as the pricing or availability of inputs such as energy, water and insurance.</p>	<ul style="list-style-type: none"> • We identify properties that we lease or own that have business processes and supporting applications that require enhanced facility infrastructure to mitigate site disruptions, such as those caused by extreme weather events. • We classify critical environment sites based on our business risk tolerance for site-specific downtime and, among other things, site location, power supply, exposure to flooding, geological stability and other hazards. • As required, we assess the impact of climate-related events (e.g. floods, hurricanes) on our businesses. • RBC’s Operational Resilience and Enterprise Business Continuity Management teams, together with the first line of defense, have collaboratively taken a risk-based approach to identify and prioritize a preliminary ranking of RBC’s services and products based on severe but plausible scenarios to avoid intolerable harm to clients, the marketplace, organization safety and soundness, and financial stability.
<p>Regulatory Compliance May be impacted by the complex and rapidly evolving climate regulatory environment, coupled with data availability.</p>	<ul style="list-style-type: none"> • As regulations evolve, we continue to monitor such developments and update our processes, policies, procedures and disclosures as necessary. • We continue to participate in industry associations, standard setting bodies, government consultations and work with other stakeholders to advance, for example, shared methodologies, accounting frameworks and other best practices.
<p>Credit – transition and physical risks May be impacted by a disorderly transition or clients and sectors not aligned with the transition to a net-zero economy.</p>	<ul style="list-style-type: none"> • We continue to manage and monitor environmental risk as set out in our E&S Risk Policy so our provision of capital and liquidity continue to be informed by environmental risk factors as part of our credit risk adjudication processes. • We continue to expand our climate scenario analysis capabilities, focusing on high risk sectors and considering a range of climate scenarios. • We maintain a diversified lending portfolio, which improves our resilience to geographic or sectoral downturns, and monitor portfolio exposures to effectively manage and limit concentrations of credit exposure to climate risk.
<p>Market and liquidity May be impacted by price volatility for energy and commodities, as well as debt, equity and other securities in industries where climate risk is not yet captured in pricing.</p>	<ul style="list-style-type: none"> • We continue to develop our scenario analysis and stress testing capabilities to help us identify and understand potential systemic risks arising from climate change. • We have implemented an “energy crisis” scenario that captures the beginning of a prolonged transition to a low-carbon economy, informed by the historical energy sell-off of 2015-2016, with adjustments for transition-related risk factors, and is run daily against our positions for limit monitoring.

Climate scenario analysis

Our approach



Scenario analysis is an important tool to provide forward-looking assessments of climate risks and opportunities in the absence of historical precedents. Climate scenarios are qualitative or quantitative descriptions about possible futures for a given system(s) (e.g. aspects of the climate or economy or a scenario that models aspects of both together). Scenarios can vary in their economic or geographical scope and their timeframe, assumptions, constraints and level of detail. Scenario analysis assesses the impacts a particular scenario could have on a portfolio, business strategy or operations. Table 4 provides an overview of the analysis carried out by RBC both as a component of its existing stress testing programs and on a stand-alone basis. Advances in our methodologies and approach made during 2022 included broader coverage of the portfolios assessed – for example, growing the geographic areas assessed for physical risk – and expanding the proportion of the wholesale lending portfolios covered by transition risk scenario analysis. Additionally, for the first time, we ran an operational risk scenario analysis program focused on physical risk.

Table 4: Stress testing and climate scenario analysis in 2022

Program	 Methodology	 Results
<p>Enterprise-wide stress testing and comprehensive capital analysis and review</p> <ul style="list-style-type: none"> ✓ <i>Transition risk (acute)</i> ✓ <i>Physical risk (acute)</i> 	<p>RBC runs comprehensive stress testing exercises as an important component of our Enterprise Risk Management Framework. This includes our Enterprise-Wide Stress Testing (EWST)⁵⁵ and the Comprehensive Capital Analysis and Review (CCAR).⁵⁶ The EWST and CCAR exercises both use distinct core economic and financial scenarios for two to five years in the forecast horizon.⁵⁷ We included climate risk assessments (focusing on short-term, acute risks) in both cases through overlays, which are add-ons to the impact from the core scenarios.</p> <p>One overlay we included in our EWST in 2022 was a transition risk scenario. This looked at the impacts to our business if we had to downgrade the energy, automotive, transportation, utilities and services sectors in RBC’s wholesale loan portfolio. Another overlay we included in our EWST was a physical risk scenario. This involved incorporating an elevated risk of floods and fire in portions of the Canadian home equity finance portfolio.</p> <p>For our CCAR process, we included a transition risk overlay that focused on the energy sector of RBC’s U.S. trading book. We also included a physical risk overlay of fire and flooding risk in specific regions, focused on our commercial and industrial, home equity finance, and commercial real estate portfolios in our U.S. banking business.</p>	<p>Overall, these climate risk overlays showed the potential financial impact from the specific events being modeled, as well as indicated how our inclusion of climate risk in these stress tests could be improved in the future. In the EWST, we did not find that the combined impact of physical and transition risk overlays was a significant driver of capital depletion. In the CCAR, the overall impact was moderate, with physical risk being more significant than transition risk due to the nature of U.S. portfolios and the relatively shorter horizon. We also identified several data quality challenges, such as the difficulty in isolating the impact of historical incidents to assess the severity of the physical risk overlays.</p>

Climate scenario analysis

Table 4: Stress testing and climate scenario analysis at RBC in 2022

Program	 Methodology	 Results
<p>Operational risk: Greater Toronto Area flood scenario</p> <p>✓ <i>Physical risk (acute)</i></p>	<p>One of the impacts of climate change in Canada is an increase in average annual rainfall. For this reason, the purpose of the operational risk stress test⁵⁸ was to assess RBC’s business resiliency to a 1 in 100 year flooding event impacting RBC assets, employees and operations in portions of the Greater Toronto Area. We used historical event scenarios to calculate a range of potential quantitative impacts of such an event to gain insights into how our operational risk would be impacted.</p>	<p>This exercise highlighted our areas of strength, such as our business continuity playbook, and opportunities to be explored, such as reliance on critical infrastructure such as power and telecommunications, which would impact employees working both on-site and at home if significant flooding occurred.</p>
<p>Market risk: Energy crisis scenario</p> <p>✓ <i>Transition risk (acute)</i></p>	<p>Our market risk stress testing program is used to identify and control risk due to large changes in market prices and interest rates. We conduct stress testing daily on positions that are marked-to-market. For this specific scenario, we model potential market shocks driven by transition risk, which are based on both historical events (e.g. the oil slump induced market sell-off of 2015-16) and hypothetical climate risk themes (e.g. surging prices for alternative energy).</p>	<p>We run an energy crisis scenario in our daily stress testing against the positions in our trading book, which means that these results vary daily. As with other market risk stress tests, we use the information gleaned from these tests to monitor the trading limits that are part of our Board-approved risk appetite.</p>

In 2022, RBC conducted standalone climate scenario analysis of RBC’s U.K. and European business focused on long-term (chronic) transition and physical risk scenarios. See page 48 for Appendix A which provides an overview of RBC Europe Limited’s management of climate risk, including climate scenario analysis.

Metrics & Targets



Metrics and targets



Tackling climate change is essential and while there is a clear objective – to decarbonize the global economy and transition to net-zero by 2050 – there are multiple pathways and complex decisions that must be made. At RBC, we’re committed to sharing the approach we are taking to achieve our climate commitments, and how we measure our progress. We believe transparency and engagement with our stakeholders will be key in advancing towards these common goals.

Jennifer Livingstone, Vice President, Climate, Royal Bank of Canada

The transition to net-zero is a multi-decade journey and we are still at the relatively early stages, with many uncertainties and variables to navigate. We expect our journey and progress to net-zero will not be linear. RBC is committed to being transparent in the progress we are making, and our 2022 Climate Report is a reflection of this commitment. RBC tracks and reports performance against key metrics that reflect the priorities within the RBC Climate Blueprint. See Table 5 below for an index of where this information can be found within the 2022 Climate Report.

Climate performance reporting is still a relatively nascent practice and involves challenges such as limited data availability and quality, temporal lags in reporting and evolving methodologies.⁵⁹ We continued to invest in our climate data and capabilities to improve the quality, accuracy and coverage of our climate performance reporting. These efforts have led to meaningful improvements in our measurement over the past year. Notably, we have been able to significantly improve the accuracy of our financed emissions estimates, and as a result we restated our financed emissions for 2021 (see page 39 for more details). This restatement is important because it provides more accurate disclosure, which allows for better comparability year-over-year and also provides transparency. We will continue to reflect improvements in our financed emissions measurements in our future disclosures. We recognize the role we can play to help advance data availability and quality, including partnering with clients, data providers, industry associations and our peers to identify solutions to these challenges, which are industry-wide.

In this section, we provide additional details on the performance metrics for two strategic priorities of the RBC Climate Blueprint to outline our progress on decarbonizing our lending portfolio and our operations. We will continue to review the metrics we disclose and intend to include progress against our interim targets released in October 2022 in future reports.

Table 5: Key climate-related performance metrics

Performance Metrics	
Help clients as they transition to net-zero	<ul style="list-style-type: none"> • Sustainable finance: Our commitment to provide \$500 billion in sustainable finance by 2025² (page 19)
Hold ourselves accountable	<ul style="list-style-type: none"> • Net-zero lending: Our initial 2030 interim emissions reduction targets, released October 2022¹ (page 22) • Financed emissions: An overview of year-over-year changes based on the PCAF methodology (page 38) • Exposure to carbon-related assets: The share of our assets that are most impacted by the risks of climate change (page 43) • Client emissions reporting: Our aim for Capital Markets clients in key high-emitting sectors⁶ reporting Scope 1 and 2 GHG emissions and GHG reduction plans (page 45)
Inform and inspire a sustainable future	<ul style="list-style-type: none"> • RBC Tech for Nature: Our commitment to provide \$100 million by 2025 to universities and charities developing solutions to address pressing environmental challenges¹² (page 23)
Advance net-zero leadership in our own operations	<ul style="list-style-type: none"> • Emissions from operations: Our goal to achieve a 70% reduction in GHG emissions by 2025¹⁰ relative to 2018 (page 46) • Renewable and non-emitting sources of electricity: Our goal to reach 100% from renewable and non-emitting sources by 2025¹¹ (page 46)

PCAF financed emissions from lending activities

Approach and methodology

We released our first estimated measurement of financed emissions across all six PCAF asset classes⁴² in our [2021 TCFD Report](#). This allowed us to better understand the breadth of emissions across the enterprise and to identify where in our portfolio our financed emissions were higher – aiding us to refine our net-zero lending strategy.

In 2022, we narrowed our focus and are reporting on our PCAF financed emissions (financed emissions) from lending for the sectors for which we set interim targets.¹³ We have chosen to report on only those sectors because we have improved their data quality, making our financed emissions numbers for these sectors difficult to compare with the measurements we completed last year. A restatement of the financed emissions numbers for the remaining portion of our portfolio reported last year would primarily be at PCAF data quality Score 5 (see Figure 8 below) and consequently may not accurately reflect the relative weight of those sectors and asset classes versus those where we have improved data quality. We intend to further refine our approach and extend the scope of our financed emissions measurement in future years, as we identify data sources for improved measurement and data quality across industry sectors and our portfolios.

Financed emissions calculated using the PCAF methodology differ from how we calculated our emissions baseline for the interim targets that we set and published in October 2022. A summary of key differences is provided in Box 2 on page 39. It is also worth noting that for the oil & gas sector, our 2022 financed emissions measurement includes the midstream sub-sector. We did not include midstream as part of our interim targets in part due to limited data and methodology options available for setting physical emissions intensity targets. We have included the midstream sub-sector for our financed emissions reporting as the PCAF methodology is well-developed for this sub-sector and it provides a more holistic measurement of our financed emissions for the oil & gas sector.

Box 1: PCAF methodology for measuring financed emissions

We have calculated our financed emissions estimates in this Report using the Partnership for Carbon Accounting Financials (PCAF) Standard for the Financial Industry (2020). Key components of the PCAF methodology are:

- It provides a method to calculate financed emissions for six asset classes: listed equity and corporate bonds, business loans and unlisted equity, project finance, commercial real estate, mortgages, and motor vehicle loans.
- It is based on varying levels of data accuracy. Figure 8 sets out the five data quality scores, which range from 1 (more certain) to 5 (less certain).
- The accounting standard (see Figure 9) uses an attribution principle whereby a portion of a borrower's or investee's annual emissions are attributed to RBC, as determined by the ratio of (a) the outstanding amount of loans and investments of a financial institution (numerator) to (b) the total equity and debt of the company, project, etc. that the financial institution is invested in (denominator). For example, if RBC extends a mortgage to a homeowner where the home value is \$500,000 and the outstanding amount of the mortgage is \$250,000, the value of the emissions attributed to RBC as financed emissions would equal 50% of the total emissions for the home.

Figure 8: PCAF general data quality scorecard⁶⁰

PCAF data scores	Description
Score 1	Audited GHG emissions data or primary energy data
Score 2	Non-audited GHG emissions data or other primary data
Score 3	Averaged data that is peer/(sub-)sector specific
Score 4	Proxy data on the basis of region or country
Score 5	Estimated data with very limited support

Figure 9: General approach to calculate financed emissions

$$\text{Financed emissions} = \sum_i \text{Attribution factor}_i \times \text{Emissions}_i$$

(where i = borrower or investee)

PCAF financed emissions from lending activities

Restatement of 2021 financed emissions

As we improved our data quality, we observed significant changes in our financed emissions for 2022 compared to our initial measurements in 2021, particularly for the oil & gas, and power generation sectors. Given the significance of these changes, we have restated our 2021 financed emissions which reflects improved accuracy, and allows for comparability year-over-year. Figure 10 illustrates the drivers of change for oil & gas⁶¹ and Figure 11 shows the drivers of change for power generation. For both sectors, changes to data sources and considerations were key drivers, including better availability of client reported data and the decision to use internally developed emission factors.⁶² We give a detailed explanation on page 42 for how we improved our data quality scores and accuracy. For our lending to the automotive sector, financed emissions went from approximately 2,200 tonnes of CO₂e to 6,500 tonnes of CO₂e when we remeasured our 2021 Scope 1 and 2 financed emissions. Given the small relative scale of the financed emissions for the automotive sector compared to oil & gas and power generation sectors, we have not detailed the change in automotive further. We will continue to update our financed emissions measurement in subsequent years as data quality and methodologies improve.

Figure 10: Restated 2021 measurement for oil & gas Scope 1 and 2 financed emissions

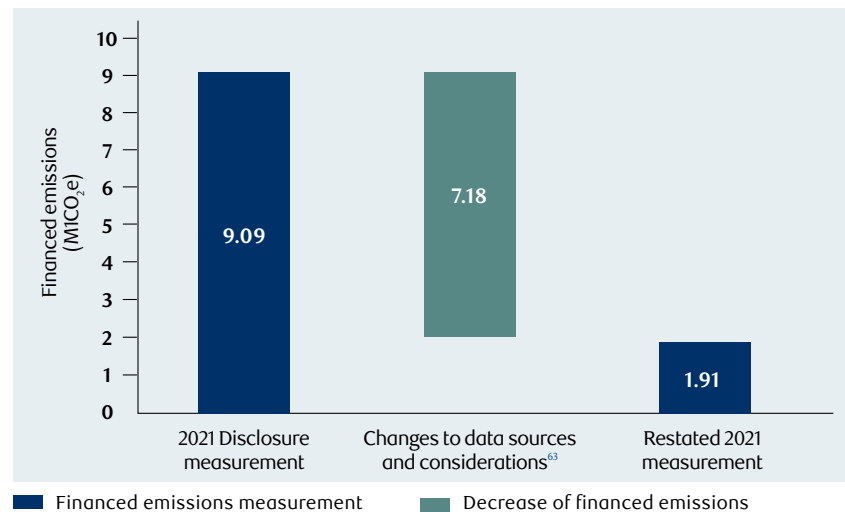
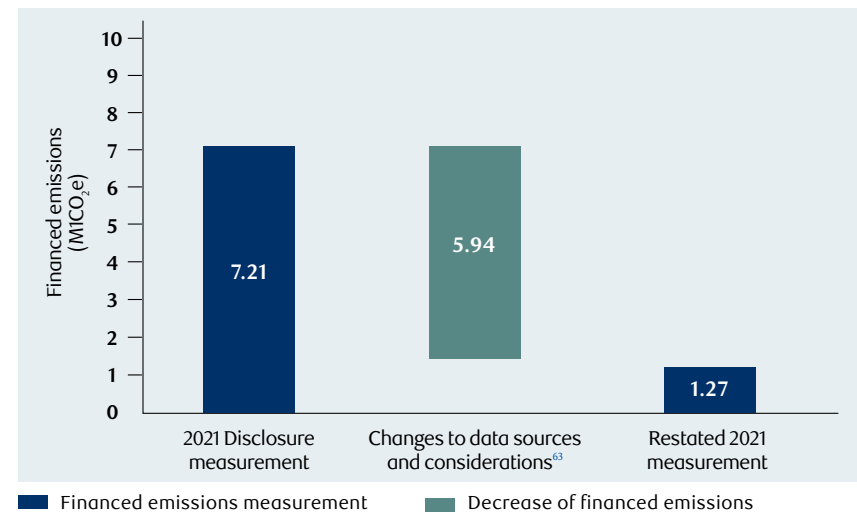


Figure 11: Restated 2021 measurement for power generation Scope 1 and 2 financed emissions



Box 2: PCAF methodology for calculating financed emissions vs. target-setting methodology

Financed emissions calculated using the PCAF methodology differ from the approach we used to calculate our emissions baseline for the interim targets. Some of the key differences in approach are summarized below:

- **Scope of lending products:** Using on-balance sheet loans to calculate our financed emissions under the PCAF methodology vs. using on- and off-balance sheet commitments for target setting.
- **Lending commitments:** Using drawn balances to calculate our financed emissions under the PCAF methodology vs. using authorized credit amounts⁶⁴ for calculating our emissions baseline for target setting.
- **Output metrics:** Using absolute emissions for our financed emissions under the PCAF methodology vs. using a physical emissions intensity calculation for our targets.

Details on our rationale can be found in the Key Decisions section of the [2022 Net-Zero Report](#) starting on page 9.

PCAF financed emissions from lending activities

2022 Figures

Our financed emissions represent our clients' Scope 1, 2 and 3 emissions that are attributed to our lending activity calculated using the PCAF methodology. In 2022, we measured our financed emissions for our clients' Scope 1 and 2 emissions in the sectors for which we set interim targets. We also measured and disclosed our financed emissions related to our clients' Scope 3 emissions for the oil & gas and automotive sectors. Year-over-year our combined Scope 1 and 2 financed emissions for lending activities increased in 2022 for the oil & gas and automotive sectors, and decreased for the power generation sector. Table 6 on page 41 details the measurement of our financed emissions from lending in each of the three sectors for 2021 and 2022.

The three drivers that impact the financed emissions are:

- **New lending facilities:** This includes new lending facilities for existing clients as well as lending facilities for net-new clients.
- **Closed lending facilities:** This includes lending facilities closed or terminated by our clients or RBC.
- **Changes in client activity:** This includes clients drawing on existing facilities, resulting in an increase or decrease in outstanding balances, as well as changes in the client's enterprise value including cash (EVIC)⁶⁶ or reported emissions.

A breakdown of the drivers of change in the oil & gas sector financed emissions are shown in Figure 12 and the drivers in the power generation sector are shown in Figure 13. Drivers of change in the automotive sector are not provided below given the small amount of financed emissions in RBC's portfolio relative to the other two sectors.

Figure 12: Change in oil & gas scope 1 and 2 financed emissions

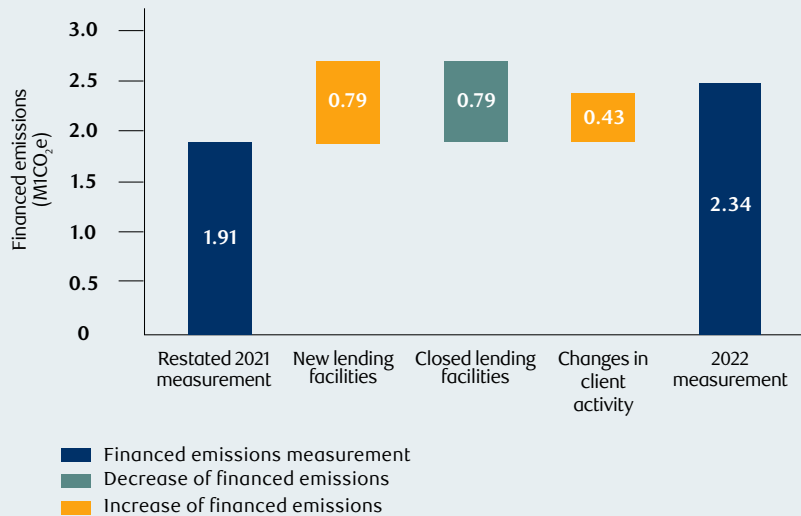
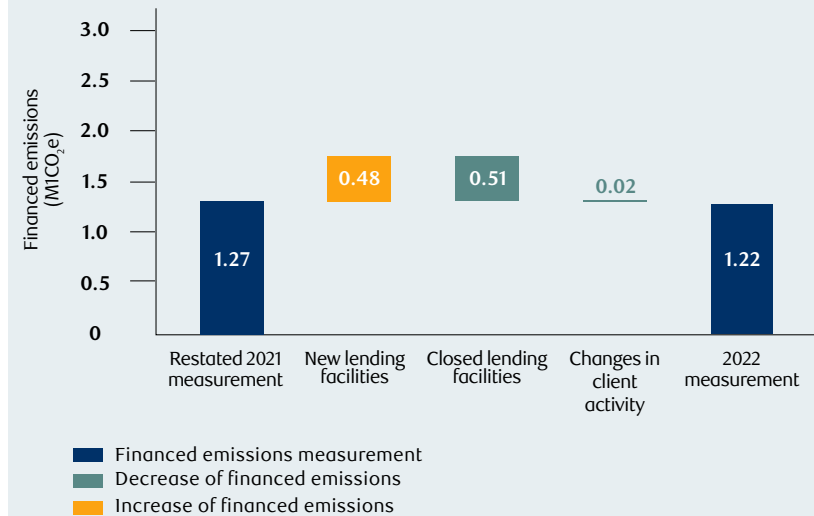


Figure 13: Change in power generation scope 1 and 2 financed emissions



PCAF financed emissions from lending activities

The comparison between our 2021 financed emissions (initial and restated) and 2022 financed emissions measurements for oil & gas,⁶¹ power generation and automotive⁶⁵ alongside our 2022 Scope 3 measurement is set out in Table 6 below.⁷⁰ We restated our initial estimates of our 2021 financed emissions for the reasons we described on page 39.

Our 2022 financed emissions measurement represents our first disclosure of financed emissions that includes our clients' Scope 3 emissions. We included our measurement of Scope 3 for the oil & gas and automotive sectors to align with our target-setting approach and PCAF expectations around inclusion of Scope 3 data. In line with PCAF expectations, we intend to update and expand our coverage of client Scope 3 emissions in our financed emissions disclosures in future years.

Table 6: 2021 Initial, 2021 restated and 2022 financed emission measurement for oil & gas, power generation and automotive

Sector	2021 Measurement (initial)	2021 Measurement (restated)			2022 Measurement			
	Total Scope 1 and 2 emissions (MtCO ₂ e)	Scope 1 emissions (MtCO ₂ e)	Scope 2 emissions (MtCO ₂ e)	Total Scope 1 and Scope 2 emissions (MtCO ₂ e)	Scope 1 emissions (MtCO ₂ e)	Scope 2 emissions (MtCO ₂ e)	Total Scope 1 and Scope 2 emissions (MtCO ₂ e)	Scope 3 emissions (MtCO ₂ e)
Oil & Gas	9.09	1.60	0.31	1.91	1.97	0.37	2.34	35.73
Power Generation	7.21	1.26	0.015	1.27	1.22	0.005	1.22	N/A ⁶⁷
Automotive	0.002	0.002	0.004	0.006	0.003	0.006	0.009	0.38

Table 7: 2021 Initial, 2021 restated and 2022 data quality scores⁶⁸ for oil & gas, power generation and automotive

Sector	2021 Measurement (initial)	2021 Measurement (restated)	2022 Measurement	
	Scope 1 and 2 data quality score	Scope 1 and 2 data quality score	Scope 1 and 2 data quality score	Scope 3 data quality score
Oil & Gas	4.16	3.29	3.15	4.48
Power Generation	4.67	3.73	4.03	N/A ⁶⁷
Automotive	4.14	2.01	2.01	4.00

PCAF financed emissions from lending activities

Data sources and considerations

We aim to continue to improve the quality of the data we use to calculate our financed emissions to enhance the accuracy of our reporting. The availability, quality and reliability of data differ considerably by sector, sub-sector and scope of emissions. For example, while many of our clients in the oil & gas sector are disclosing their Scope 1 and Scope 2 emissions, Scope 3 emissions data is less often disclosed, and consequently, seeking client-level Scope 3 emissions data presents challenges for us. Where clients' reported emissions data is unavailable, we have relied on emission factors as proxies to estimate their emissions. Other key considerations that influence our measurement and the quality of the underlying data are outlined below.

Lags in data reporting

We aim to leverage data from the best available sources for our measurement of financed emissions, which can lead to a mismatch in the reporting year of our clients' data. For example, there are instances where we are able to leverage our clients' 2021 financial information but only have access to their emissions data from 2020. The typical time lag we have experienced for emissions reporting is approximately two years, where our 2022 reporting primarily uses emissions data from 2020. We anticipate this lag to shorten as enhanced regulations on company climate-related disclosure come into effect, allowing us to use more up-to-date data for our calculation methodology.

Data quality scores

Due to limitations in data availability, the financed emissions calculations in our 2021 TCFD Report largely used data that was PCAF data quality Score 5, which is the lowest PCAF data quality score. In 2022, we were able to improve our data quality score for the sectors for which we are reporting driven by four factors:

- **Improved access to reported data:** Many of our clients in oil & gas, power generation and automotive have started to disclose their Scope 1 and Scope 2 emissions, reducing our reliance on emission factors and proxies.
- **Change in measurement approach:** We have shifted our measurement approach to collect data at the parent company level, rather than the subsidiary level, given better availability of reported data.
- **Improved client matching:** We have improved the accuracy of our third-party data using internal matching algorithms and through direct sourcing of client reporting.
- **Internal data classification:** We have updated our internal industry classification codes to better capture client business activities.⁶⁹

For our 2022 measurement, we leveraged data from S&P Global, PCAF and other publicly available disclosures and reports that we believe are reasonable to use for the purposes of measuring financed emissions, as well as internal data sources. We anticipate using additional data providers and sources in the future as we continue to evaluate and enhance our measurement approach.

Use of internal emissions factors

A significant change we have incorporated in our measurement approach for 2022 is to use internally developed emissions factors to estimate client emissions at PCAF data quality Score 5 to improve data accuracy. Emission factors are a way to proxy the emissions of our clients. These are generally developed using a variety of third-party data sources and provide sector averages to estimate financed emissions for clients who do not report publicly or to RBC. We made the change to use the internal emission factors because:

- It provides us with a measurement of financed emissions that is more closely aligned with the quality of reported data
- It leverages more up-to-date data, better reflecting the current emission profile of the sectors for which we reported financed emissions
- Internally developed emissions factors include both upstream and downstream Scope 3 emissions⁷⁰

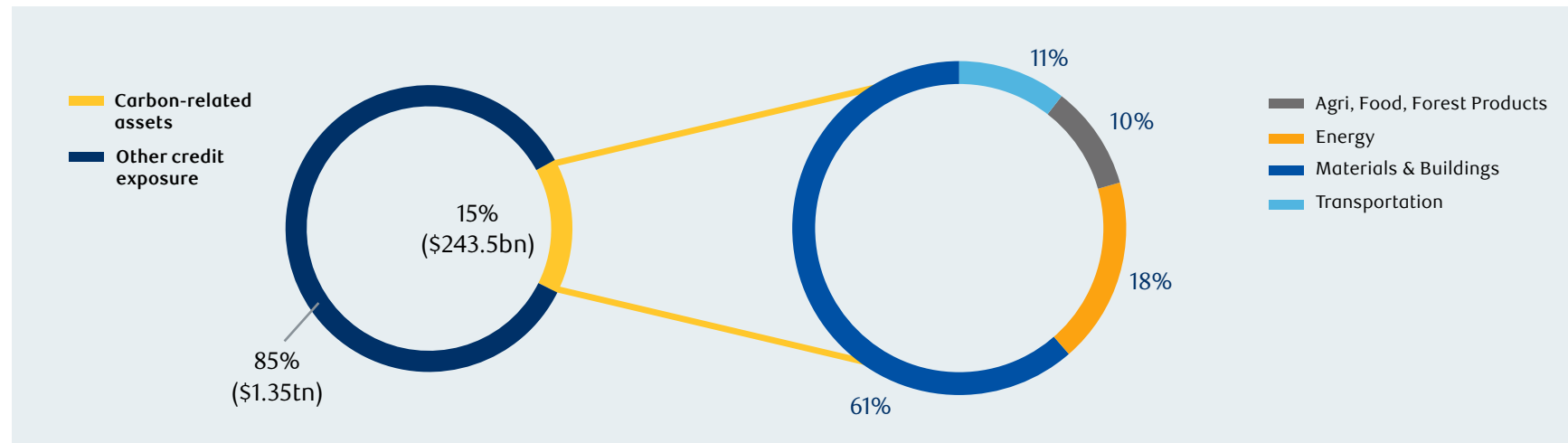
Exposure to carbon-related assets

Approach and methodology

Carbon-related assets are those most impacted by the transition risks and physical risks of climate change (for more information on the types of climate-related risk, see page 32 in the Risk Management section). We measure carbon-related assets by selecting relevant industry classification codes (SIC codes) based on the TCFD Implementation Guidelines published in October 2021. RBC's calculation of carbon-related assets in 2022 includes those assets associated with four sectors identified by the TFCF, comprising borrowers within Energy (oil & gas, coal & electric utilities⁷¹), Transportation (air, maritime, rail, trucking & automobiles), Materials & Buildings (metals & mining, chemicals, construction materials, capital goods, real estate management and development) and Agriculture, Food and Forest Products (beverages, agriculture, packaged food and meats, paper and forest products). RBC also discloses our lending to power generation by power source, which is a subset of the carbon-related assets reported in the Energy sector, see page 44.

Performance Metric	2022	2021
Percentage of carbon-related assets relative to total credit risk exposure	15%	15%

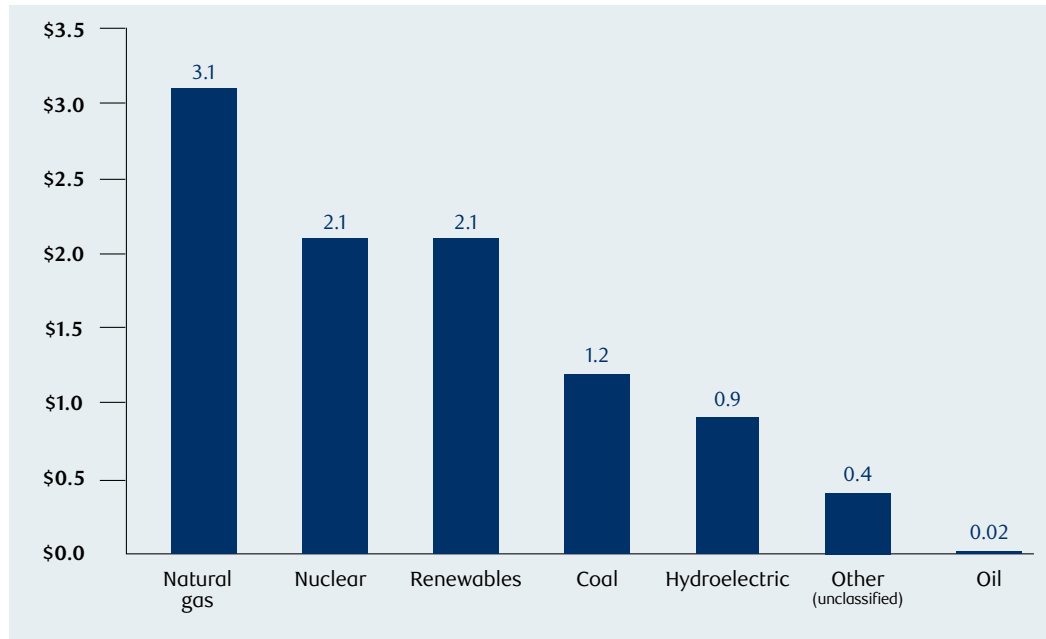
Figure 14: Credit risk exposure to carbon-related assets to total credit risk exposure



Exposure to carbon-related assets

To provide additional detail on our lending to power generation, Figure 15 provides a breakdown of our lending to this sector by power source. This includes those borrowers that generate power and excludes those that are involved in power transmission and distribution or non-power generation activities.⁷²

Figure 15: Lending to power generation by power source (\$bn)



Data sources and considerations

The majority of the data used for the identification of carbon-related assets is internal data, which classifies the sectors related to our lending. In 2022, we developed 10 new industry classification codes (SIC codes) for the power generation sector (solar, wind, tidal, hydro, geothermal, biomass, coal, oil, natural gas and nuclear) to improve our ongoing monitoring and reporting of lending to clients in the sector. These new classification codes, combined with typical business activity, resulted in shifts in reported exposure relative to our 2021 TCFD Report. In particular, there was an increase in reported lending to natural gas and nuclear power in 2022. We will continue to review our approach to measuring carbon-related assets and may make further changes to our internal classification systems or use third-party data to improve the identification of carbon-related assets within our portfolio. As a result, we anticipate our exposure to carbon-related assets and lending to power generation by power source will continue to fluctuate.

Client emissions reporting

Approach and methodology

We believe that supporting our clients in an orderly and inclusive transition to net-zero is the most impactful action we can take as a financial institution (see the Strategy section on page 16 for more information). In our 2021 TCFD Report, we outlined our intention to focus on Capital Markets clients in key high-emitting sectors⁶ within our oil & gas, power & utilities, and automotive & transportation portfolios. We set a goal to by 2025 have:

- Capital Markets clients in key high-emitting sectors representing 80% of the available loan balances⁷ reporting their Scope 1 and 2 emissions to RBC
- Capital Markets clients in key high-emitting sectors representing 65% of the available loan balances⁷ disclosing a plan to reduce their GHG emissions to RBC

Capital Markets clients within the oil & gas, power & utilities, and automotive & transportation portfolios were identified based on relevant industry classification codes (SIC codes).⁶ Clients were considered to have reported emissions if the reporting covered both Scope 1 and Scope 2 emissions.

The GHG emissions reduction plans must be provided to RBC in writing or through public disclosure, and must include specific GHG emissions reduction targets that cover the majority of their GHG emissions on an absolute or intensity basis. A methane-only commitment is not sufficient to be considered an emissions reduction plan. A reduction plan needs to include specific emission reduction initiatives to demonstrate the clients has a credible plan to achieve the commitment. It must be forward-looking and not based on previously achieved emission reductions. It is expected that clients will review and reassess their emissions reduction targets periodically.

Table 8: Client emissions reporting

Performance Metrics	Goal	2022
Percentage of Capital Markets clients in key high-emitting sectors reporting their Scope 1 and Scope 2 emissions publicly or to RBC	80% of available loan balances ⁷	79%
Percentage of Capital Markets clients in key high-emitting sectors disclosing a plan to reduce their GHG emissions publicly or to RBC	65% of available loan balances ⁷	59%

Data sources and considerations

We collected information using the relevant clients’ company websites, annual sustainability reports and client information received through the lending process. We are continuing to expand our approach and data sources, including using third-party data to help improve and automate elements of these measurements.

Emissions from operations

Approach and methodology

We report multi-year data calculated in accordance with the Greenhouse Gas Protocol⁸ for the emissions from our operations for the following scopes:

- **Scope 1 (Direct) – Fuels:** Heating fuels, such as natural gas used to heat our branches, major properties, data centres and water. We also include the fuels directly purchased for travel for company-owned modes of transportation.
- **Scope 2 (Indirect) – Electricity & District Energy:** Purchased electricity, cooling and steam used in our branches, major properties and data centres. The emissions associated with our electricity consumption depend on which source is used to produce electricity in each of the jurisdictions where we operate.
- **Scope 3 (Indirect) – Business Travel (Category 6):** Business-related travel, including by car, rail and air.

The emissions reduction goal for our global operations covers Scope 1, 2 (market-based)⁷³ and 3 (business travel) emissions, and uses a baseline of 2018. The market-based method means that we include emissions reductions from our renewable energy procurement, including those through our PPAs towards our goal.

Table 9: Operational emissions performance metrics

Performance metrics ⁷⁴	Goals	2022	2021	2020	2019	2018
Scope 1 emissions (tonnes of CO ₂ e)	–	22,840	21,089	23,720	25,735	24,821
Scope 2 emissions (tonnes of CO ₂ e)	–	65,577	70,440	77,668	89,769	102,009
Scope 3 emissions (category 6: business travel) (tonnes of CO ₂ e)	–	11,920	1,555	11,726	30,307	31,741
Total GHG emissions, location-based ⁷⁵ (tonnes of CO ₂ e)	–	100,337	93,084	113,114	145,811	158,571
GHG emissions reductions from renewable energy credits ⁵¹ (tonnes of CO ₂ e)	–	-35,379	-24,712	-14,288	-15,447	-4,718
Total GHG emissions, market-based ⁷³ (tonnes of CO ₂ e)	70% reduction by 2025 vs. 2018 ¹⁰	64,958	68,372	98,826	130,364	153,853
GHG emissions reductions from carbon credits retired (tonnes of CO ₂ e)	–	-64,958	-68,372	-98,826	-130,364	-153,853
Total net GHG emissions (tonnes of CO ₂ e)	Carbon neutral operations annually	0	0	0	0	0
GHG emissions intensity from energy use (tonnes of CO ₂ e/m ²)	–	0.025	0.032	0.041	0.046	0.055
Percentage of electricity from renewable and non-emitting sources for all properties	100% renewable and non-emitting by 2025 ¹¹	90%	84%	78%	77%	75%

In 2022, additional sources of emissions that relate to fuel purchased for company-owned transportation (Scope 1) and travel from employees (Scope 3) were identified. The data from these sources was obtained for the years from 2018 (baseline year) onwards and reported Scope 1 and 3 GHG emissions are restated in Table 9. The total sum of additional tonnes between 2018 and 2021 is 3,513 tonnes. We offset these emissions as part of the 2022 reporting cycle and the purchased offsets have been included in the year to which they relate.

Appendices

Appendix A: Overview of RBC Europe Limited’s management of climate risk

In 2020, the Bank of England, through the UK’s Prudential Regulation Authority (PRA), set a deadline for all financial institutions to understand the financial impacts of climate change and embed climate risk management in their regulated entity operations by the end of calendar year 2021. In 2022, a Dear CEO Letter from the PRA continued to highlight financial risks arising from climate change as a top 5 priority, and they started actively supervising firms based on their supervisory expectations. In 2022, RBC Europe Limited (RBC EL) continued to enhance its approach to measuring and reporting climate financial risks across the four pillars outlined by the PRA: (i) governance, (ii) risk management, (iii) scenario analysis and (iv) disclosure.

Governance

RBC EL’s governance for managing climate-related financial risks has continued to evolve, embedding a strategic planning process and the identification and management of risks to RBC EL’s business at the Board of Directors of RBC EL (RBC EL Board), executive and management levels, including:

Climate risk reporting and oversight	
Governance structure	
RBC EL Board-level committee	<ul style="list-style-type: none"> • UK Risk Committee: Receives quarterly information on the management of climate financial risks. • The independent non-executive directors of the RBC EL Board are members of the UK Risk Committee. UK Risk Committee meetings are typically attended by all directors of the RBC EL Board.
Executive committees	<ul style="list-style-type: none"> • Capital Markets Executive Committee: Receives quarterly climate financial risk reporting, before it is presented to the UK Risk Committee of the RBC EL Board. • Risk Executive Committee: Receives monthly climate-related reporting.
Risk management committees	<ul style="list-style-type: none"> • Various risk management committees are provided with monthly climate-related reporting to add a climate-focused perspective to their mandate.

RBC EL’s Chief Risk Officer, Europe is responsible for overseeing climate-related financial risk for RBC EL and is supported by the Climate Risk Management team within RBC EL. The team develops approaches to identify, assess, monitor and report on climate-related risks, as appropriate. Other teams within RBC EL also support monitoring regulatory developments and reviewing RBC EL’s implementation of regulatory requirements.

In 2022, RBC EL’s internal audit function and, separately, an external consultancy each reviewed RBC EL’s integration of climate risk into its risk management framework, and each concluded that this meets the requirements of the PRA’s Supervisory Statement 3/19.

Risk management – risk appetite

RBC EL has quantified its risk appetite for climate financial risks. RBC EL’s exposure to such risks is measured through a high-level composite risk appetite metric, which aggregates the performance of five equally weighted key risk indicators (KRIs) across the four pillars of climate risk outlined by the PRA. A summary of the underlying KRIs is presented in Table 10: Summary of climate risk dashboard, which is provided for illustrative purposes only. These KRIs are monitored monthly and reported on a quarterly basis to senior management through the RBC EL governance structure. RBC EL reviews its climate financial risk appetite annually and will continue to enhance its methodology to take into account maturing climate risk data and analysis methodologies, RBC’s risk appetite and interim financed emission reduction targets.

Appendix A: Overview of RBC Europe Limited’s management of climate risk

Risk management – reporting

The UK Risk Committee of the RBC EL Board presently receives a quarterly report, containing a climate risk dashboard, that reports on RBC EL’s climate risk appetite, financed emissions and any results of financial impacts of climate change from our scenario analysis performed during the quarter. An example is provided for illustrative purposes only in Table 10: Summary of climate risk dashboard.

Financed emissions

RBC EL’s business activities are within the scope of RBC’s initial 2030 interim emission reduction targets released in October 2022 (see page 22 for an overview). RBC EL has also progressed efforts to disaggregate financed emissions at the geographic, sector and entity levels, which will support an understanding of RBC EL’s contribution to RBC’s total financed emissions. RBC is engaging, and will continue to seek to engage with, clients to help drive reductions in financed emissions. As data availability and methodologies continue to mature, RBC EL will seek to further disaggregate at the sector and entity levels to derive RBC EL’s contribution to RBC’s total financed emissions. The quarterly reports to the UK Risk Committee of the RBC EL Board now include entity financed emissions totals and associated PCAF data quality scores.³⁸

Scenario analysis

RBC EL’s scenario analysis exercises in 2022 focused on RBC EL’s most significant climate sensitive sectoral exposures in physical risk and transition risk, and looked at short-term and long-term scenarios. RBC EL’s scenario analysis assessments are reported to the UK Risk Committee of the RBC EL Board (see Table 10: Summary of climate risk dashboard for an illustrative example) and form part of RBC EL’s Internal Capital Adequacy Assessment Process (ICAAP).

Figure 16: Summary of the scenario analysis exercises performed by RBC EL in 2022



Physical scenario analysis

Based on 2022 scenario analysis, RBC EL has concluded that there is limited risk to RBC EL’s London premises (100 Bishopsgate) from weather-driven events. In addition, RBC EL has analyzed the energy performance certificate (EPC) ratings for the UK properties in RBC EL’s real estate credit exposure, and plans to extend this analysis to properties in other countries, as and when data become available. The concentration of properties with poorly rated EPCs and properties within a flood zone form part of the KRIs used for RBC EL’s climate risk appetite metric. RBC EL has also conducted short-term and long-term flood risk analyses on RBC EL and the RBC London branch’s credit exposure to real estate, which represents the most significant physical risk exposure, to assess credit metrics such as the loan-to-value ratio and expected credit loss. For more information on the methodology and scenarios used, refer to page 39 of [RBC’s 2021 TCFD Report](#). Overall, expected credit losses for RBC EL in absolute amount or relative to the October 2022 ICAAP total are not significant. The low impact from river flooding is primarily because a small percentage of properties are located in 1-in-100 year or 1-in-500 year flood areas.

Appendix A: Overview of RBC Europe Limited's management of climate risk

Greenwashing and transition scenario analysis

In 2022, RBC EL conducted an operational risk review of those of its business lines which self-identified as marketing a product or service as taking into consideration environmental factors, in order to evaluate hypothetical exposure to greenwashing in relation to such products or services.⁷⁶ RBC EL also conducted, and continues to conduct ongoing market risk stress monitoring, which considers several scenarios, including a scenario that models risks associated with a potential transition pathway to a low-carbon economy.

In 2022, RBC EL further enhanced its long-term transition scenario analysis of its significant transition risk credit exposures by leveraging the outcomes and methodologies of RBC's participation in the Bank of Canada Climate Stress Test in 2021 (for more details of that project, refer to page 38 of [RBC's 2021 TCFD Report](#) and the [report from the Bank of Canada](#)). In particular, the analysis used the "Below 2°C immediate" and "Below 2°C delayed" scenarios developed by the Bank of Canada. RBC EL expanded its sector coverage of this transition scenario analysis to the industrial products, mining & metals and transportation sectors. This is in addition to the utilities, automotive and energy sectors covered in 2021 (see page 39 of [RBC's 2021 TCFD Report](#)). The analysis in 2022 also included exposures from the RBC London and RBC Paris branches. Overall, expected credit losses for RBC EL in absolute amount or relative to the October 2022 ICAAP total are not significant. Due to the complexity of climate change, the hypothetical nature of transition pathways and continued evolution of scenario analysis tools, this type of model has inherent uncertainty. RBC EL uses this type of analysis to help develop a preliminary view of the potential magnitude of climate transition risk on the bank's wholesale loan portfolio, and how sector-level assessment changes year-over-year.

Appendix A: Overview of RBC Europe Limited's management of climate risk

Table 10: Summary of climate risk dashboard

Measure	Measure description	Result
Risk profile		
Risk appetite	I. Value of climate-sensitive exposure II. Value of climate-sensitive exposure (without transition plans) III. Value of climate-sensitive exposure (trading book) IV. Concentration of properties with F & G rated EPCs ⁷⁷ V. Concentration of properties within flood zones	Within appetite
Financed emissions	Emissions generated from RBCEL's wholesale lending activities	Limited impact
Short-term (~1-5 years)		
Greenwashing ⁷⁶ and non-financial climate transition risks	Operational risk review of RBC EL's businesses	Low to moderate impact
Energy crisis – market risk scenario	Value of stress loss	Within appetite
Physical risk – flooding	Weather-driven assessment on RBC EL's premises	Limited impact
	Number and exposure value of properties in flood zones	Limited impact
Long-term (~10-30 years)		
Physical risk – flooding	Number and exposure value of properties in flood zones	Limited impact
Transition risk	Value of expected loss by two referenced scenarios	Limited impact

Disclosure









RBC EL is committed to providing annual disclosures on its progress towards understanding and assessing the financial impacts of climate change on its operations and balance sheet. RBC EL has done so through RBC's 2022 Climate Report, in addition to RBC EL's 2022 Annual Accounts, its 2022 ICAAP and its 2022 Pillar 3 disclosures.

RBC EL is monitoring emerging regulatory and legal disclosure requirements, in particular the developments of the UK Sustainability Disclosure Requirements incorporating the UK Green Taxonomy and associated work of the International Sustainability Standards Board.

Appendix B: RBC’s partnerships, memberships and signatory commitments

Organization		RBC’s involvement
Sustainable finance and transition pathways		
	Climate Action 100+	RBC GAM has been 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 with the objective of seeking action on climate change. As a signatory to Climate Action 100+, RBC GAM participates in five engagements to encourage companies to take actions to reduce GHG emissions, improve governance oversight of climate change and enhance climate-related disclosures.
	Climate Bonds Initiative (CBI)	RBC is a partner of the Climate Bonds Initiative, an international organization working to promote investment in projects and assets necessary for a rapid transition to a low-carbon and climate-resilient economy.
	Climate Engagement Canada (CEC)	In 2021, RBC GAM became a founding member of a new collaborative initiative, called Climate Engagement Canada (CEC), that brings together investors to engage collaboratively with Canadian companies that are significant GHG emitters. The CEC’s collaborative engagements focus on 40 Canadian companies from across sectors. A member of RBC GAM’s Corporate Governance and Responsible Investment team sits on the CEC Technical Committee.
	Global Financial Markets Association (GFMA)	RBC Capital Markets was a contributing member to the GFMA on the Climate Finance Markets and the Real Economy report, published December 3, 2020.
	Institute for Sustainable Finance	RBC became a founding contributor in 2020 to support the first ever collaborative hub to advance Canada’s sustainable finance capacity through education, training and research.
	International Capital Market Association (ICMA)	RBC Capital Markets is a member of the Climate Transition Finance Working Group of the ICMA.
	Principles for Responsible Investment (PRI)	RBC GAM has been a signatory to the United Nations PRI since 2015. The PRI is a United Nations supported network of investors that works to promote sustainable investment through the incorporation of ESG factors, including climate-related factors.
	RMI Center for Climate Aligned Finance	RBC joined RMI as a strategic partner in 2021 to work collectively on sector-based solutions together with our clients and with other financial institutions to pursue a net-zero economy.
	The Green Bond Principles (GBP)	Administered by the ICMA, the Green Bond Principles are a voluntary, international framework that seeks to support issuers in financing environmentally sound and sustainable projects that foster a net-zero emissions economy and protect the environment. In 2022, RBC participated in five ICMA Principles Working Groups.
	The Sustainable Finance Action Council (SFAC)	The SFAC was launched in May 2021 to provide advice and recommendations to Canada’s Deputy Prime Minister and Minister of Finance and the Minister of Environment and Climate Change on climate-related disclosures, climate data needs and defining green and transition investments and activities within the context of the capital markets. RBC Capital Markets is a member of SFAC and participates in the Taxonomy Technical Expert Group.

Appendix B: RBC's partnerships, memberships and signatory commitments

Organization	RBC's involvement
Climate disclosure, risk management and scenario analysis	
	<p>Canadian Bankers Association (CBA)</p> <p>RBC works with the CBA to develop industry best practices for conducting climate risk assessments and proposals for climate-related standards and regulations among our Canadian peers.</p>
	<p>CDP</p> <p>RBC GAM and BlueBay are signatories to the CDP, which runs a global disclosure system that enables entities to measure and manage their environmental impacts. RBC has submitted an annual response to the CDP Climate Change Questionnaire since 2003.</p>
	<p>Net-Zero Banking Alliance (NZBA)</p> <p>The NZBA is an industry-led, UN-convened global group of banks that are committed to aligning their lending and investment portfolios with net-zero emissions by 2050. Joining the NZBA in 2021 reinforced RBC's commitment to playing a significant role in financing the climate transition, and supporting collaborative approaches between the public and private sectors to reach the goal of net-zero emissions by 2050.</p>
	<p>Partnership for Carbon Accounting Financials (PCAF)</p> <p>RBC joined PCAF in 2021 and uses the PCAF methodology to advance the measurement of our indirect financed emissions associated with lending.</p>
	<p>The Equator Principles</p> <p>The Equator Principles are a voluntary, international framework for financial institutions to identify, assess and manage environmental and social risks associated with financing projects. RBC was the first Canadian bank to sign the Equator Principles in 2003, and we recommitted to the revised Principles in 2006, 2013 and 2020.</p>
	<p>United Nations Environment Programme Finance Initiative (UNEP FI)</p> <p>RBC joined TCFD pilot projects (Phases I and III) to advance climate scenario analysis related to physical and transition risks, and encourage consistent and comparable approaches among our global peers.</p>
Net-zero operations	
	<p>Business Renewables Centre Canada (BRC)</p> <p>RBC is a founding member of the BRC, a group for buyers to learn how to source renewable energy directly from project developers.</p>
	<p>Canadian Council for Sustainable Aviation Fuels (C-SAF)</p> <p>RBC Capital Markets is a member of the Canadian Council for Sustainable Aviation Fuels. C-SAF seeks to bring together key industry stakeholders and government to accelerate the commercial production and use of Canadian-made low-carbon and sustainable aviation fuels (SAF) in Canada.</p>

Endnotes

1. RBC's commitments to achieving net-zero emissions in our lending by 2050 and to our initial 2030 interim emissions reduction targets for lending in three key sectors, oil & gas, power generation and automotive are not inclusive of the activities of and the assets under management by RBC Global Asset Management (RBC GAM) and RBC Wealth Management (RBC WM). RBC GAM includes, but is not limited to, the following wholly owned indirect subsidiaries of RBC Global Asset Management Inc. (including Phillips, Hager & North Investment Management), RBC Global Asset Management (U.S.) Inc., RBC Global Asset Management (UK) Limited, RBC Global Asset Management (Asia) Limited and BlueBay Asset Management LLP. RBC WM includes, but is not limited to, the following affiliates: (a) RBC Dominion Securities Inc. (Member–Canadian Investor Protection Fund), RBC Direct Investing Inc. (Member–Canadian Investor Protection Fund), Royal Mutual Funds Inc., RBC Wealth Management Financial Services Inc., Royal Trust Corporation of Canada and The Royal Trust Company, which are separate but affiliated subsidiaries of the bank; and (b) Brewin Dolphin Holdings PLC and its subsidiaries. See [RBC's 2022 Net-Zero Report](#) for more information on our initial 2030 interim emissions reductions targets.
2. In April 2019, RBC announced a commitment to provide \$100 billion in sustainable finance by 2025. After two years, we surpassed that goal and in 2021, we increased our commitment to provide \$500 billion in sustainable finance by 2025. Sustainable finance refers to financial activities that take into account environmental, social and governance (ESG) factors and the eligible transactions are outlined in the [RBC Sustainable Finance Framework](#). The measurement of our sustainable finance activities under the RBC Sustainable Finance Framework currently excludes the practices of RBC GAM, RBC WM, City National Bank and Brewin Dolphin Holdings PLC and its subsidiaries. See [RBC's Commitment to Sustainable Finance](#) for more information.
3. RBC is one of Canada's largest banks and one of the largest banks in the world, based on market capitalization.
4. Task Force on Climate-related Financial Disclosures (TCFD). The TCFD developed a framework to help organizations more effectively disclose climate-related risks and opportunities through their existing reporting processes. The recommendations are structured around four thematic areas that represent core elements of how organizations operate: Governance, Strategy, Risk Management, and Metrics and Targets. For more information, see [Implementing the Recommendations of the TCFD \(October 2021\)](#).
5. The RBC Sustainable Finance Framework excludes the practices of RBC GAM. RBC WM, City National Bank and Brewin Dolphin Holdings PLC and its subsidiaries, are also not included in scope.
6. As defined by the UNEP-FI Guidelines for Climate Target Setting for Banks. As described in our 2021 TCFD Report, we reported that we chose to focus on Capital Markets clients in high-emitting sectors within our oil & gas, power & utilities, and automotive & transportation portfolios at this time because they represent a significant portion of the emissions in our overall portfolio, and client-level emissions data and transition scenarios are more readily available. As we progress along our net-zero journey, we will expand our efforts to obtain this information from other sectors and clients as part of meeting our broader commitments under the NZBA.
7. The total available loan balances is defined as the aggregate loan amounts made to clients in key high-emitting sectors in oil & gas, power & utilities, and automotive & transportation portfolios in our Capital Markets business.
8. The Greenhouse Gas Protocol (GHG Protocol) is the leading global corporate standard for measuring and managing GHG emissions. To guide companies in the task of identifying and calculating the emissions they create and contribute to across the value chain, the [GHG Protocol Corporate Accounting and Reporting Standard](#) breaks emissions down into three "Scopes". Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions not included in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions. The GHG Protocol further breaks down Scope 3 indirect emissions into 15 categories. RBC measures our Scope 3 emissions related to business travel (category 6) as part of our operational emission calculations. In 2021, we also began measuring and reporting on our Scope 3 emissions related to loans and investments (category 15), also referred to as financed emissions for the first time.
9. RBC set two goals in 2020: to reduce GHG emissions by 70% with a baseline year of 2018 and to increase our sourcing of electricity from renewable and non-emitting sources to 100%, both by 2025. The emissions reduction goal is inclusive of our global operations, Scope 1, 2 (market-based) and 3 (business travel) reported GHG emissions and uses a baseline of 2018. See endnote 74 for additional information.
10. Inclusive of our global operations, Scope 1, 2 (market-based) and 3 (business travel) reported GHG emissions, using a baseline of 2018.
11. The performance towards our goal to achieve 100% renewable and non-emitting electricity consumption by 2025 is calculated based on grid mix data and the Renewable Energy Credits we either purchase or receive from our two renewable energy PPAs.
12. RBC Tech for Nature™ is RBC's 5 year, \$100 million commitment to accelerate tech-based solutions that help preserve our natural ecosystem and solve pressing environmental challenges. See [RBC Tech for Nature](#) for more information.
13. As defined by the [UNEP-FI Guidelines for Climate Target Setting for Banks](#). In our 2021 TCFD Report, we committed to setting interim targets for three high-emitting sectors: power and utilities, and automotive and transportation. At RBC, we classify sectors based on our internal standard industry classification (SIC) codes. These SIC codes do not directly align with NZBA-defined sectors (e.g., midstream oil and gas SIC codes are classified under our utilities sector group). We have regrouped these SIC codes to better align with NZBA sector classifications, and reported our interim emissions reduction targets on oil & gas, power generation and automotive sectors. As we progress along our net-zero journey, which includes setting additional interim emissions reduction targets, we will continue our efforts to obtain this information from other sectors and clients as part of meeting our broader commitments under the NZBA.

Endnotes

14. In joining the Net-Zero Banking Alliance (NZBA), member banks commit to transition operational and attributable GHG emissions from high-emitting sectors in their lending and investment portfolios to align with pathways to net-zero by mid-century, or sooner. The NZBA requires that members shall, within 18 months of joining, set 2030 targets (or sooner) for high-emitting sectors that represent a significant portion of the member bank's financed emissions. Member banks shall also set a long-term 2050 target, with intermediate targets to be set every five years from 2030 onwards. The member bank's initial 2030 targets should focus on priority sectors where the bank can have the most significant impact (i.e., the most GHG-intensive sectors within their portfolios) with further sector targets to be set within 36 months of joining the NZBA.
15. The [UNEP-FI Guidelines for Climate Target Setting for Banks](#) state that banks shall review their targets every five years.
16. For more information on RBC's Enterprise Risk Appetite Framework, see the Risk Management section in [RBC's Annual Report 2022](#).
17. Physical risks are the chronic and acute risks related to the physical impacts of climate change. Chronic refers to long-term changes in climate patterns (e.g., higher temperatures, increased precipitation) and acute refers to extreme weather events (e.g., increased intensity and frequency of storms). For more information, see [Implementing the Recommendations of the TCFD \(October 2021\)](#).
18. Transition risks are risks related to the transition to a net-zero economy, including policy and legal, technology, market, and reputation risks. For more information, see [Implementing the Recommendations of the TCFD \(October 2021\)](#).
19. RBC's Capital Markets Sustainable Finance Group integrates ESG factors into RBC's capital markets platform, working in collaboration with partners in Global Investment Banking, Global Markets and Corporate Banking to deliver advice and solutions to clients. For more information, see [RBC Sustainable Finance](#).
20. RBC WM includes, the following affiliates: (a) RBC Dominion Securities Inc. (Member-Canadian Investor Protection Fund), RBC Direct Investing Inc. (Member-Canadian Investor Protection Fund), Royal Mutual Funds Inc., RBC Wealth Management Financial Services Inc., Royal Trust Corporation of Canada and The Royal Trust Company, which are separate but affiliated subsidiaries of the Bank; and (b) Brewin Dolphin Holdings PLC and its subsidiaries.
21. RBC GAM includes the following wholly owned indirect subsidiaries of the Bank: RBC Global Asset Management Inc. (including Phillips, Hager & North Investment Management), RBC Global Asset Management (U.S.) Inc., RBC Global Asset Management (UK) Limited, RBC Global Asset Management (Asia) Limited and BlueBay Asset Management LLP.
22. "Material" refers to ESG factors that in our judgment are most likely to have an impact on the financial performance of an issuer/security and may depend on different factors such as the sector and industry of the issuer.
23. For RBC GAM, certain investment strategies or asset classes do not integrate ESG factors, including but not limited to money market, passive and certain third-party sub-advised strategies. For RBC WM, consideration of ESG factors is only used in certain investment options.
24. The Glasgow Financial Alliance for Net-Zero (GFANZ) is a global coalition of leading financial institutions that is committed to accelerating the decarbonization of the world economy and reaching net-zero emissions by 2050. GFANZ states that financial institutions have a vital role to play in supporting the real economy to transition to net-zero by allocating capital and providing related financial services. GFANZ has identified four transition financing strategies: financing for entities and activities that develop and scale climate solutions; financing for entities already aligned to a 1.5 degrees Celsius pathway; financing for entities committed to transitioning in line with 1.5 degrees Celsius-aligned pathways; and financing to accelerate the managed phase-out of high-emitting physical assets.
25. The [Paris Agreement](#) is a legally binding international treaty on climate change that established the global goal to limit global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To keep global warming to no more than 1.5 degrees Celsius, the Paris Agreement states that emissions need to be reduced by 45% by 2030 and reach net-zero by 2050. The Paris Agreement was adopted by 196 Parties (Countries) at COP 21 in Paris, on December 12, 2015 and entered into force on November 4, 2016.
26. "Green technology" is a technology solution that is considered to reduce negative environmental impacts (e.g. protect the environment, conserve natural resources, and repair environmental damage that has already occurred).
27. The [RBC Sustainable Finance Framework](#) defines eligible green activities as those that support key environmental objectives including but not limited to climate change mitigation, climate change adaptation, biodiversity and ecosystem protection, sustainable use and protection of water and marine resources, pollution prevention and control, and the circular economy. The measurement of our sustainable finance activities under the RBC Sustainable Finance Framework currently excludes the practices of RBC GAM, RBC WM, City National Bank and Brewin Dolphin Holdings PLC and its subsidiaries.
28. Personal Banking and Business Banking are Lines of Business within our Personal & Commercial Banking business segment. Please see the [RBC Annual Report 2022](#) for more information.
29. IPO engagements are only offered by RBC Capital Markets as part of the ESG Advisory service.
30. Responsible investment (RI) is an umbrella term used to describe a broad range of approaches for incorporating ESG considerations into the investment process. These approaches are not mutually exclusive; multiple approaches can be applied simultaneously within the investment process. The approaches include: ESG integration, ESG screening & exclusion, and thematic ESG investing. See the [RBC GAM Approach to Responsible Investment](#) for more details.
31. Source: Bloomberg, as at October 31, 2022 for RBC Capital Markets. Core Currencies include CAD, USD, GBP and AUD.
32. Source: Dealogic, as at October 31, 2022 for RBC Capital Markets. Core Currencies include CAD, USD, GBP and AUD.

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33. The RBC-Export Development Canada (EDC) sustainable finance guarantee provides financial support to Corporate Client Group clients with eligible activities that address key environmental objectives, including but not limited to climate change mitigation, climate change adaptation, biodiversity and ecosystem protection, sustainable use and protection of water and marine resources, pollution prevention and control, and the circular economy. EDC will guarantee 50 per cent of an RBC term loan – up to a maximum of US\$60 million per obligor, for a period of up to seven years – providing more capacity for RBC to support its clients' low carbon transition. This guarantee was launched in November 2022. More details can be found [here](#).
34. Green represents transactions that meet the criteria for classification as eligible under the RBC Sustainable Finance Framework directed toward environmental objectives including dedicated purpose (e.g. green loan or bond) and general corporate purpose - pure play. Please refer to the [RBC Sustainable Finance Framework](#) for additional information.
35. Social represents transactions that meet the criteria for classification as eligible under the RBC Sustainable Finance Framework directed toward social objectives including dedicated purpose (e.g. eligible US municipal bonds) and general corporate purpose - pure play (e.g. affordable housing provider). Please refer to the [RBC Sustainable Finance Framework](#) for additional details.
36. Green & Social represents dedicated purpose products that are a mix of environmental and social objectives, such as Sustainability Bonds. Please refer to the [RBC Sustainable Finance Framework](#) for additional details.
37. Sustainability-linked represents transactions that meet the criteria for classification as eligible under the RBC Sustainable Finance Framework, including sustainability-linked loans and bonds. Please refer to the [RBC Sustainable Finance Framework](#) for additional details.
38. The [Partnership for Carbon Accounting Financials \(PCAF\)](#) is an industry-led partnership to facilitate transparency and enable financial institutions to assess and disclose greenhouse gas emissions of loans and investments. RBC uses the PCAF Global GHG Accounting and Reporting Standard for the Financial Industry (PCAF Standard) to calculate financed emissions for lending activities.
39. The PCAF accounting methodology covers six asset classes: Listed Equity and Corporate Bonds; Business Loans and Unlisted Equity; Project Finance; Commercial Real Estate; Mortgages; and Motor Vehicle Loans. For more information on our 2021 measurement see [Page 24 of 2021 RBC TCFD Report](#).
40. Figure 5 depicts conceptually the different levers for progressing towards our interim targets. This Figure 5 is for illustrative purposes only and is based on various assumptions, including assumptions regarding factors that are beyond our and our clients' control. The size of each lever (A1, A2 and B) in Figure 5 should not be relied upon as reflecting the expected or actual proportion of each lever compared to the other levers for any of the interim targets discussed herein and in RBC's 2022 Net-Zero Report. The actual size and proportion of each lever is expected to vary for each of the sector-specific interim target(s) discussed in [RBC's 2022 Net-Zero Report](#).
41. Physical emissions intensity measures a borrower's emissions per unit of production (e.g., the number of megawatt-hours or megajoules of energy produced). At a portfolio level, physical emissions intensity measures the exposure-weighted average of the physical emissions intensities of the borrowers in the portfolio.
42. The target is informed by the Canada Emissions Reduction Plan (ERP). The ERP is grounded in science and based on Canada's commitment under the Paris Agreement. It does not yet provide a pathway to net-zero beyond 2030 or a temperature alignment reflective of a global carbon budget. We deviate from the scenario-implied reduction rate of 40% as the RBC portfolio includes exposure from other geographies, including the United States, for which we do not have sufficiently granular and credible regional scenarios.
43. International Energy Agency (IEA) Net-Zero Emissions (NZE). Only the upper-bound of the range is based on the IEA NZE. The lower-bound is based on RBC's assessment of the policy landscape in key jurisdictions and an analysis of our portfolio at the time of RBC's 2022 Net-Zero Report, as dated October 26, 2022.
44. Manufacturing includes passenger cars and light trucks.
45. Other includes airlines, auto services, wholesale, couriers and freight, marine transport, other dealers, railroad equipment, tires and trucking.
46. This data was sourced from RBC Economics, BCG Centre for Canada's Future, & Arrell Food Institute at the University of Guelph. November 2022. [The Next Green Revolution: How Canada can produce more food with fewer emissions](#).
47. United Nations Educational, Scientific and Cultural Organization (UNESCO)
48. See RBC's Policy Guidelines for Sensitive Sectors and Activities which address our lending activities.
49. The [Equator Principles](#) are a financial industry benchmark for determining, assessing and managing environmental and social risk in projects. RBC was the first Canadian bank to sign the Equator Principles in 2003, and we recommitted to the revised Principles in 2006, 2013, and 2020.
50. The [GHG Protocol Corporate Accounting and Reporting Standard](#) defines carbon offsets as discrete GHG reductions used to compensate for (i.e., offset) GHG emissions elsewhere. Offsets are calculated relative to a baseline that represents a hypothetical scenario for what emissions would have been in the absence of the mitigation project that generates the offsets.
51. A renewable energy credit (REC) is a market-based instrument that is issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy source.
52. Carbon offset registries develop standardized protocols for project registration in order to issue carbon credits, track credits in the marketplace, and ensure that the environmental benefits associated with the carbon credits are not being allocated to multiple entities. Carbon registries have their own established standards, verification requirements and monitoring protocols for projects to ensure that carbon credits have been verified and meet requirements.

Endnotes

53. Our principal risks include credit, market, liquidity, insurance, operational, regulatory compliance, strategic, reputation, legal and regulatory environment, competitive, and systemic risks. Insurance is a principal risk impacted by climate risk. Physical climate risks would primarily impact property and casualty products, and have secondary impacts on morbidity, mortality, and travel risks. However, as RBC is not in the property and casualty insurance business, Insurance risk is mitigated and not listed in Table 3.
54. RBC's Climate Risk Management Approach applies across all businesses and functional units in all of RBC's legal entities and subsidiaries with the exception of RBC GAM.
55. RBC's enterprise-wide stress tests (EWST) evaluate key balance sheet, income statement, leverage, capital, and liquidity impacts arising from risk exposures and changes in earnings to understand our performance drivers under stress. See page 64 in our 2022 Annual Report for more information on its EWST program.
56. Comprehensive Capital Analysis and Review (CCAR) is a regulatory stress test required by the U.S. Federal Reserve.
57. In the case of EWST it is generally 12-20 quarters and for CCAR it is 9 quarters.
58. Stress tests focused on specific risk types are a key part of our risk management framework. Operational risk includes business continuity risk, being the risk of being unable to maintain, continue or restore essential business operations during and/or after an event that prevents us from conducting business in the normal course.
59. Please refer to the "Caution regarding forward-looking statements" for examples of such external factors. Our climate- or sustainable finance-related commitments, goals and targets are aspirational and may need to be changed or recalibrated as available data improve and as climate science, transition pathways and market practices regarding standards, methodologies, metrics and measurements evolve.
60. Derived from PCAF (2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition, p. 40 and the PCAF North America Launch webinar (2019), slide 15.
61. Oil & gas includes upstream, midstream, downstream and integrated oil & gas. Oil & gas services are excluded.
62. Emission factors are a way to proxy the emissions of our clients. These are generally developed using a variety of 3rd party data sources and provide sector averages to estimate financed emissions for clients who do not report publicly or to RBC.
63. Changes in data sources and considerations include better availability of client reported data, updates to our internal industry classification codes, and a shift from PCAF emission factors to using internally developed emission factors to estimate client emissions at PCAF data quality Score 5 where possible. See page 42 for further details.
64. Authorized balances reflect our total lending commitment and are a more stable data point than outstanding balances, which fluctuate with amounts drawn.
65. Automotive includes lending to manufacturing and automotive captive finance.
66. Enterprise Value Including Cash (EVIC) is a component of the PCAF methodology for calculating financed emissions attributed to business loans and unlisted equity, as the denominator in the attribution factor for calculating financed emissions. For private companies that do not report EVIC we use total equity + debt, as per the PCAF guidance. These are dynamic values as company valuations and operations fluctuate and can result in changes to attribution of emissions to RBC.
67. We have not disclosed Scope 3 emissions for power generation as Scope 3 emissions in this sector are insignificant by comparison to Scope 1. This is also aligned to our interim target for power generation (see the [RBC's 2022 Net-Zero Report](#)).
68. When Scope 1 and 2 have different data quality scores we assign the lower PCAF data quality score to the measurement. See page 38 for the PCAF general data quality scorecard. PCAF data quality scores may fluctuate year-over-year as they are a weighted average of client emissions data quality and can shift with the relative outstanding balances for each client in a given year.
69. RBC uses standard industry classification (SIC) codes to classify our exposure/lending to different sectors. These codes form the basis for our industry groupings and are used for a variety of purposes including target setting and measuring financed emissions. This is particularly relevant in power generation where RBC developed 10 new industry classification codes within the power generation sector (solar, wind, tidal, hydro, geothermal, biomass, coal, oil, natural gas and nuclear) to improve our ongoing monitoring and reporting of lending to clients in the sector. For more details see page 44.
70. PCAF Scope 3 emissions factors only include upstream emissions.
71. In relation to electric utilities borrowers, as per the TCFD Implementation Guidelines, we have excluded those whose business relates to renewables and hydro-electric power in our measurement of carbon-related assets.
72. Lending represents the credit risk exposure that include on-balance sheet amounts and off-balance sheet amounts (undrawn and other). Calculated on a client-by-client basis using the most recent publicly available information on energy source (as a percentage of megawatt-hours (MWh)), the proportion of which is applied to our credit risk exposure to the client, as at October 31, 2022.
73. The GHG Protocol Scope 2 Guidance defines the market-based method as a method for Scope 2 emissions accounting that reflects emissions from electricity that a reporting company has purposely chosen (or their lack of choice). In the market-based method, emissions factors are derived from contractual instruments, including "any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims."

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74. RBC publicly reports multi-year data on absolute and intensity-based GHG emissions (Scope 1 and Scope 2) calculated according to the GHG Protocol. Under Scope 3, RBC reports the emissions resulting from employees' business travel calculated according to Category 6 of the GHG Protocol. Scope 1 and 2 emissions data for buildings that we lease or own is sourced from our property management companies. Fuel purchased directly for travel, as well as travel booked through our third-party system and through travel agencies is aggregated and converted into emissions based on either fuel usage or distance conversion. Emissions factors and grid mix data used are either sourced from publicly available government sources or from the International Energy Agency's annual emissions factors data set. Our energy reporting since 2018 represents 99% of our global floor area. The reporting cycle for our Scope 1 and Scope 2 energy data for buildings (natural gas, fuel oil, propane, chilled water, steam and electricity) is August 1 - July 31, to ensure there is enough time for data collection, review and approval. The reporting for other sources of emissions remains November 31 to October 1.
75. The GHG Protocol Scope 2 Guidance defines the location-based method as a method for Scope 2 emissions accounting that reflects the average emissions intensity of grids on which energy consumption occurs, using mostly grid-average emission factor data.
76. Greenwashing means accusations of false or misleading claims about the environmental benefits of a product, service or technology.
77. Energy Performance Certificate (EPC) ratings. Energy Performance Certificates are energy schemes to review a property's energy efficiency. An EPC will rate the energy efficiency of a property from A-G, with those buildings rated F or G being the worst performing.



Providing feedback

This Report is published for all stakeholders of Royal Bank of Canada and its subsidiaries. We welcome your questions and feedback on our approach, or suggestions for improvement, at corporatecitizenship@rbc.com.

