



Welcome to your CDP Climate Change Questionnaire 2019

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Great-West Lifeco Inc. (hereinafter “Great-West Lifeco” or “the Corporation”) is an international financial services holding company with interests in life insurance, health insurance, retirement and investment services, asset management and reinsurance businesses.

When reporting for the Corporation, Great-West Lifeco covers its own activities as well as the activities of its subsidiaries. Great-West Lifeco subsidiaries include: operations in Canada, the United States, and Europe through Great-West Life, London Life, Canada Life, Irish Life, Great-West Financial and Putnam Investments. As of December 31, 2018, Great-West Lifeco and its companies had \$1.399 trillion in consolidated assets under administration and are members of the Power Financial Corporation group of companies.

Great-West Lifeco has long held responsible and ethical management as an intrinsic value, which we believe is essential to our long-term profitability and value creation for our stakeholders. As such, one of the Corporation’s values is “Committing ourselves to sustainability”.

As part of its management philosophy, the Corporation and its subsidiaries are committed to respecting the environment and taking a balanced and environmentally sustainable approach, which includes understanding and proactively addressing the potential impacts that climate change may have on our business.

The following document presents Great-West Lifeco’s approach to identifying and addressing the impacts of climate change for its operating subsidiaries.



C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Row 1	January 1, 2018	December 31, 2018	No

C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

- Canada
- Ireland
- United Kingdom of Great Britain and Northern Ireland
- United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

- CAD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

- Financial control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	Board-level oversight of climate-related issues and broader sustainability risk is included in the Risk Committee of the Board of Directors responsibilities, through the oversight it provides on the risks facing the Corporation. Specifically, the Risk Committee reviews the potential physical and transition risks facing the Corporation. Oversight of climate-related risks is an important responsibility of the Risk Committee, particularly given the nature of climate-related issues. By integrating climate-related issues into the Enterprise Risk Management Framework, the Risk Committee is positioned to provide oversight on the materiality of this topic as necessary.
Board-level committee	In addition, Board-level oversight of climate-related issues is included in the Investment Committee of the Board of Directors responsibilities, through the oversight it provides on our global investment strategies, including climate related transition risks such as cleaner energy sectors that could impact our investment growth strategies. Oversight on climate-related impacts with the Investment Committee of the Board, is an important part of its responsibility, enabling us to proactively identify and mitigate potential risks, while ensuring we maximize the opportunities within our investment portfolio.
Board-level committee	Additionally, the Board reviews the strategy and performance of our reinsurance business including the potential physical weather risks that could impact our reinsurance business. On an annual basis, the Audit Committee of the Board of Directors will review and approve corporate disclosures of environmental related information, including climate-related topics, with respect to governance, risks, opportunities and performance. Board-level oversight of climate-related issues is also assigned at the Board level to the Chief Executive



	Officer, who sits on the Executive Committee and Investment Committee of the Board of Directors. The CEO is informed of CSR-related issues, including climate change related matters and disclosures by the Deputy CFO.
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C1.1b

(C1.1b) Provide further details on the board’s oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding risk management policies Monitoring and overseeing progress against goals and targets for addressing climate-related issues Other, please specify Climate-related corporate disclosures	<p>The Risk Committee of the Board provides oversight and monitors risks, both current and emerging, facing the Corporation. In 2018, presentations on climate-related risks were formally discussed, including the approach for systematically embedding climate change and broader sustainability risks as part of the ERM framework. More recently, a climate change stress and scenario testing was completed.</p> <p>The Investment Committee of the Board will regularly monitor our investment performance against the investment plans, including with respect to cleaner energy investments (e.g., private debt placements in renewable energy projects).</p> <p>On an annual basis, the Audit Committee of the Board of Directors, will review and approve corporate disclosures of environmental related information, including climate-related topics, with respect to governance, risks, opportunities and performance.</p>

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify Deputy Chief Financial Officer	Both assessing and managing climate-related risks and opportunities	As important matters arise
Chief Risks Officer (CRO)	Both assessing and managing climate-related risks and opportunities	As important matters arise
Other C-Suite Officer, please specify Global Chief Investments Officer	Both assessing and managing climate-related risks and opportunities	As important matters arise

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The highest-level management positions with responsibility for climate-related issues sits within the executive team of Great-West Lifeco. Three executives have oversight for climate-related issues. First, our Chief Risk Officer (CRO) has oversight responsibility for ensuring climate-related risks are identified, assessed and mitigated. This responsibility lies with our CRO as part of the broader mandate of the position to identify and assess current and emerging risks facing the Corporation. The CRO is supported by the Sustainability Risk Working Group, whose mandate it is to ensure identification, measurement, management, monitoring and reporting processes, consistent with the ERM Framework are in place related to the management of climate related risk. The Sustainability Risk Working Group is chaired by the Chief Risk Officer and provides regular reports to the Executive Risk Management Committee of Great-West Lifeco and the Risk Committee of the Great-West Lifeco Board of Directors.

Second, our Chief Investment Officer (CIO) has oversight responsibility for ensuring climate-related risks and opportunities are considered in our investment processes. This responsibility lies with our CIO given the broader mandate of this position to ensure material risks and opportunities in our investments are well-managed and effective mitigation measures are in place. Third, our Deputy Chief Financial Officer for Great-West Lifeco, is the appointed Corporate Social Responsibility (CSR) lead and is responsible for overseeing efforts to identify and address the impacts of climate change, monitoring the progress being made to minimize impacts to the business, and providing oversight on the development and execution of the strategy and related communications efforts. This responsibility lies with our Deputy Chief Financial Officer because of the financial nature of climate-related



issues on our business, and because it aligns with the broader CSR mandate of this position. The CSR Lead is supported by a CSR Committee with multi-functional representation from Great-West Lifeco's operating companies, including those in North America and Europe. The CSR Committee meets regularly to share best practices, monitor trends and review CSR performance, including progress towards greenhouse gas (GHG) emissions reduction targets, CSR-related reporting activities, as well as the management of climate change-related risks and opportunities (e.g., potential climate change-related regulatory or transition risks). On an annual basis, the Deputy Chief Financial Officer reports to the CEO, who in turn reports to the Board.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Who is entitled to benefit from these incentives?

Other, please specify

Deputy Chief Financial Officer

Types of incentives

Recognition (non-monetary)

Activity incentivized

Emissions reduction target

Comment



The Deputy Chief Financial Officer's annual objectives include oversight on the Corporation's corporate social responsibility initiatives, including activities being undertaken to achieve our carbon reduction target.

Who is entitled to benefit from these incentives?

Chief Risk Officer (CRO)

Types of incentives

Monetary reward

Activity incentivized

Other, please specify

Climate change-related risk management

Comment

The Great-West Lifeco Chief Risk Officer is compensated based on the effectiveness of the risk management oversight function, which includes providing independent risk oversight of all risk-taking activities and embedding a disciplined risk management culture across Lifeco.

Who is entitled to benefit from these incentives?

Other, please specify

CSR Committee

Types of incentives

Recognition (non-monetary)

Activity incentivized

Emissions reduction target

Comment



The CSR committee members' annual objectives include executing on the Corporation's corporate social responsibility initiatives, including activities being undertaken to achieve our carbon reduction target.

Who is entitled to benefit from these incentives?

Other, please specify
VP, Corporate Properties

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

The Vice President, Corporate Properties variable compensation bonus structure includes executing on initiatives to achieve our carbon reduction target.

Who is entitled to benefit from these incentives?

Corporate executive team

Types of incentives

Monetary reward

Activity incentivized

Other, please specify
Climate change-related risk

Comment



The Great-West Lifeco leadership property catastrophe team is compensated for identifying optimal property catastrophe cover retrocession reinsurance opportunities within defined criteria and considering exposure to property risks, including physical climate parameters.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction project

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment



The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Energy reduction project

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward



Activity incentivized

Energy reduction target

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Efficiency project

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager



Types of incentives

Monetary reward

Activity incentivized

Efficiency target

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Behavior change related indicator

Comment

The corporate property managers at GWL Realty Advisors Inc. that manage Great-West Lifeco's corporate head office and investment properties are rewarded through the company's annual bonus structure for progress on achieving BOMA BEST® certifications, which aligns with our energy and carbon reduction objectives and includes sustainable procurement considerations. Various property managers of Great-West Lifeco are also incentivized through their annual bonus structures for progress being made towards energy reduction targets at buildings and contributions to emissions inventories and reporting.

Who is entitled to benefit from these incentives?

Other C-Suite Officer

Types of incentives

Monetary reward

Activity incentivized

Environmental criteria included in purchases

Comment

The Great-West Lifeco Chief Investment Officer is compensated based on the value created through our investment portfolios. Ensuring environmental criteria, including climate-related risks and opportunities are considered in our investment decision-making related to acquisitions or divestments in part of this mandate, which could have an impact on value creation in our investments.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	1	2	The definition of short -term will vary depending on the process, initiative or objective. With respect to the classification of current and emerging risks, we generally consider the short term to be 1 – 2 years. Our strategy development function does not formally define time horizons however they generally consider short-term to be 1-2 years.
Medium-term	2	5	The definition of medium-term will vary depending on the process, initiative or objective. Our strategy development function does not formally define time horizons however they generally consider medium-term to be 2-5 years.
Long-term	5	25	The definition of long-term will vary depending on the process, initiative or objective. Our strategy development function does not formally define time horizons however they generally consider the long-term to be beyond 5 years.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	We conduct quarterly assessment of both current and emerging risks and opportunities, including those related to climate-related issues.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

In order to inform our risk assessment process, self-assessment teams have been established to identify the risks and opportunities relating to various aspects of our business operations, products and services across a broad geographic scope.

The scope of climate-related issues considered through the process includes: the impacts of environmental regulations and cleaner market financing on investments, changing weather patterns on our reinsurance and property management businesses, changes in energy prices and green building standards on our building operations, integration of ESG performance and considerations into our decision-making processes for equity investments and products, and changing stakeholder expectations on our reporting.

At a company level, we consider a broad range of climate change risks and opportunities.



The assessment at a company level includes our exposure to reputational impacts, extreme weather events on our reinsurance business, as well as investment opportunities into new cleaner technology / renewable energy market. The assessment is conducted with the oversight of our corporate executive team, through our Chief Risk Officer.

At an asset level, climate-related risk assessments are conducted by our self-assessment teams to identify the risks and opportunities related to our corporate properties, subsidiaries, investment products, and building property investments. The self-assessment teams represent different aspects of our business operations, products and services. In conducting the assessment at an asset level, we consider a broad range of climate impacts, including carbon emissions, water and energy consumption, business continuity and green building standards in our corporate and investment properties, regulatory impacts and weather extremes on investments, and stakeholder requests on carbon management. In addition, our Public Policy and Regulatory Affairs group closely monitors public policy developments, including climate-related regulations in our operating jurisdictions.

We prioritize our climate change risks and opportunities on a regular basis based on the magnitude of the impact and the likelihood of occurrence on our operations and business products and services. Where relevant, we also consider the velocity of the risk to understand how quickly the climate risk could impact business operations. For example, within our P&C reinsurance business, we identify and assess climate change related risk impacts, to determine whether the risk limits would be impacted.

The results of the risks and opportunities assessments are communicated to the corporate risk management office for review and consideration. This includes both current and emerging risks.

Where material issues are identified, control policies and management programs are established to ensure the risks and opportunities are being addressed through consistent guidelines and standards. While still not considered material, in 2018, climate change was classified as a current risk; previously it had been classified as an emerging risk.

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
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<p>Current regulation</p>	<p>Relevant, always included</p>	<p>Through our climate-related risk assessments, we take into consideration current GHG regulations, carbon pricing, and building energy requirements.</p> <p>Through the assessment of our corporate and investment properties, we are not substantively impacted by climate regulations and pricing given our limited GHG emissions footprint and procurement spend on utilities. We conducted a sensitivity analysis of carbon pricing on our owner-occupied and investment properties throughout Canada. While the risk is marginal, the analysis allows us to adequately plan for minor rate escalations in the future.</p> <p>Furthermore, our subsidiary, GWLRA, quantifies the GHG emissions of our global owner-occupied offices, as well as our corporate and regional offices and third-party investment management properties across Canada. In 2018, these properties were not subject to GHG reporting regulatory thresholds, carbon markets or pricing requirements.</p> <p>The impact of climate-related regulations are also considered in the context of our investments. While we have some risk exposure, the impacts in our investments are inherently limited given the diversification of our business, which enables us to limit our exposure to sectors and regions subject to climate-related regulations.</p> <p>We maintain a high quality, diversified investment portfolio with sufficient liquidity to meet the demands of policyholder and financing obligations under normal and stressed conditions. For example, the total percentage of assets invested in sectors that could be exposed to carbon taxes and / or cap and trade schemes, such as the energy sector, transportation, and utilities, amounted to approximately 20% of invested bond assets in 2018. From a consolidated basis and considering the diversification of our portfolio, any such climate-related risks are not considered substantive to our business.</p>
<p>Emerging regulation</p>	<p>Relevant, always included</p>	<p>Through our climate-related risk assessments, we assess relevant emerging regulatory requirements, including carbon market and pricing expectations. For example, in 2018, we continued to monitor the regulatory landscape that emerged through the Pan-Canadian Framework on Clean Growth and Climate Change, from both a federal and provincial level. As part of the Framework, the Canadian Federal government has imposed an explicit price-based carbon pricing system on Canadian provinces that did not meet the carbon pricing benchmark by the end of 2018. We also reviewed the possible impacts related to the acquisition and ongoing management of our corporate and investment properties. For example, through the assessment of our corporate and investment properties, we determined we are not substantively impacted by</p>



		<p>these climate pricing regulations given the limited GHG emissions from our operations. While, carbon pricing is expected to impact the procurement of utilities at our office locations as well as the general costs of goods and services, we anticipate the costs on our business to be marginal. Additionally, we have conducted a sensitivity analysis of the impact of carbon pricing on our owner-occupied/ and investment properties throughout Canada. While this risk has been considered marginal, this will allow the Company to adequately plan for any minor rate escalations due to emerging regulations. From an investment standpoint, our exposure to sectors and regions impacted by carbon pricing is further minimized through the diversification of our business and assets. For example, in 2018, no individual sector, except for Government-issued bonds, accounted for more than 10% of our invested assets. For example, together, the energy, transportation and utilities sectors, amounted to approximately 20% of invested bond assets in 2018.</p> <p>Additionally, the level of exposure to environmental risk varies significantly. For example, the U.S. investments team with responsibility for General Account allocations, emphasizes investments in regulated Transmission and Distribution (T&D-only) utilities due to the reduced risk of stranded generating assets. Furthermore, the U.S. has increased its exposure to renewable power generators in order to enhance asset-exposure diversification.</p>
Technology	Relevant, always included	<p>Through our climate risk assessments, we assess the impacts of technology developments, including costs associated with transitioning to lower emission and smarter technologies, potential reduced demands for services, capital investments into technology developments, and costs to deploy new practices and processes. For example, over the past year, within our property management services carried out by our subsidiary GWL Realty Advisors, we have been assessing costs and capital investments to transition towards smarter more efficient buildings that optimize energy efficiency and take advantage of big data and technological innovations. While important, these costs are not expected to generate a substantive change to our business operations, revenue or expenditures given the expenditures and revenues associated with GWL Realty Advisors. For example, in 2018, the fee income from GWL Realty Advisor's real estate management services represented less than 0.5% of our overall net income and is not considered substantive to Great-West Lifeco as a business risk/opportunity. Furthermore, from an investment standpoint, we also look at the ability of investments in high energy intensive sectors to transition to lower emissions and smarter technologies. For example, 95% of utility investments in the U.S, have mandated green energy requirements, which we consider when making investments in the energy and utilities sectors. In certain circumstances, we will not invest in a utility where they are not technologically advanced to meet high renewable energy standards. And, in certain instances, we will not participate in fossil fuel-based,</p>

		long-term corporate debt placements (e.g., long-term debt for coal-powered energy generation) due to the regulatory and technological risks from a stranded asset perspective.
Legal	Relevant, sometimes included	Through our climate risk assessments, we assess the impacts of exposure to litigation because of climate change on our business operations and investment portfolio. For example, in 2018, several litigation lawsuits against oil and gas and energy companies have been brought to the courts on climate change impacts. While important, the impacts of possible litigation in our investments are limited given the diversification of our asset allocation, geographies and sectors. Specifically, in 2018, no individual sector accounted for more than 10% of our invested assets, and the percentage of assets in the energy sector that could be highly exposed to litigation lawsuits amounted to less than 5% of invested assets in bonds or equities.
Market	Relevant, always included	<p>Through our risk assessments, we consider the impact of climate-related events on the market demand for our products and services. For example, we have assessed fluctuating socio-economic conditions from society's exposure to weather-related losses and the potential impact from lapse rates. Through our assessment, we concluded that lapse rates from extreme weather events, such as Hurricane Katrina, were not severe and had limited impact on insurance affordability and customer retention rates.</p> <p>We also consider the potential for stranded assets that may arise from climate-related market trends. For example, we reviewed the extent to which some of our investments may be impacted by the increasing demand for electric vehicles. Given the diversification of our investment strategy, the potential for stranded assets was not deemed substantive to our overall business.</p>
Reputation	Relevant, always included	Through our climate-related risk assessments, we consider the reputation of Great-West Lifeco on climate-related impacts from our stakeholders, including customers, governments, investors, NGOs, among others. We recognize that with increasing public and investor concerns over climate change, a lack of disclosure on how we identify and manage climate change risks could expose us to potential reputational risk. For example, over the past few years, there has been an increase in investor interest on environmental, social and governance factors, which includes responding to and mitigating climate risks. As a result, we have been strengthening the transparency and credibility of the information we publish publicly on climate-related issues, including with respect to governance, risks, opportunities and performance. However, when considered generally in the context of our overall business and other types of reputational risks we do not consider climate-related reputational risks to have a substantive impact on our business, revenues or expenditures.

Acute physical	Relevant, always included	<p>Through our climate-related risk assessments, we consider exposure to increased severity of extreme weather events, such as cyclones, hurricanes and floods in our reinsurance business. Our assessments are based on worst-case scenarios (peak peril modeling) and indicate these events would not result in a substantive impact to our business. For example, claims related to losses from hurricanes Harvey, Irma, and Maria combined resulted in established reserves of \$175 million, which were not considered to be substantive on our overall business. The financial losses did not have a substantive impact on our business and are not considered a substantive inherent risk to Great-West Lifeco's overall earnings potential. Geographic limits for our mortgage portfolio do not exceed 8% for any region, thereby decreasing our risk arising from any one location. Furthermore, it is important to note that reinsurance is designed to attach for very significant claim events for the underlying cedants, and there are contractual limits which cap exposure on the portfolio. We license the latest modeling from an industry leading provider to help us calculate loss probabilities for our portfolios by geographic region. Furthermore, reinsurance contracts are renegotiated annually, which allows for an opportunity to revisit risk exposures and limits on an ongoing basis. Therefore, any impacts from acute weather-related events would not have a substantive impact on our business operations, revenue or expenditures over the long-term. We also have a maximum claim amount for all such contracts, limiting our risk exposure. We have also considered physical risk impacts as it relates to our investments. For example, in 2018, our US investment team divested of certain assets, in part, due to increased exposure to wild fire risks. When considered in the context of our overall business and the diversification of our investment assets, the exposure of our investments to acute physical risks are not considered to be substantive.</p>
Chronic physical	Relevant, always included	<p>Through our climate related risk assessments, we consider exposure to changes in chronic physical impacts, including changes in precipitation patterns, extreme variability in weather patterns, rising mean temperatures, and rising sea levels. For example, in terms of our life and health insurance businesses, we have not identified substantive risks from changes in physical climate parameters and health impacts on both morbidity and mortality rates. We diversify our morbidity and mortality risks limiting concentrations in any one specific region or geography. Furthermore, research and analysis are done regularly to provide the basis for establishing pricing and valuation assumptions that properly reflect the insurance market, including potential climate-related health impacts. At Great-West Lifeco, over the past few years, we have not experienced notable changes in insurance claims as a result of climate-related health impacts.</p> <p>As an example, from an equities fund management and investment perspective, the Sustainable Investing Team of our U.S. subsidiary, Putnam Investments, has highlighted climate change-related physical risks on select legacy assets, noting that those risks are already beginning to impact current valuations and the discount rate used in analysis for the</p>



		<p>cost of capital of affected companies. Long-term issues such as the chronic physical risk of climate change are also discussed at proxy voting meetings, where relevant. However, when considered in the context of Great-West Lifeco's overall business globally, and due to the diversification of our invested assets, chronic physical climate risk exposures are currently not considered to be substantive.</p> <p>We also monitor ongoing research as it relates to the potential physical impacts of climate change on the life/health insurance sector. For example, we track climate-related research from the Principles for Sustainable Insurance as well as from the IPCC Summary for Policymakers on the health impacts of climate change.</p>
Upstream	Relevant, sometimes included	<p>Through our climate related risk assessments, we consider exposure to upstream impacts, including the sourcing of products and services from third parties in our supply chain. For example, through our subsidiary GWL Realty Advisors, we consider the risks associated with sourcing sustainable materials and the impact of climate-related events on our supplier base. We are committed to reducing the environmental impacts that could occur from the services and products procured from third party contractors and suppliers. For example, our Supplier Risk Management Policy (SRMP) includes 'Sustainability' as one of our specific risk principles, which covers climate-related issues. Specifically, we assess the potential costs associated with sourcing cleaner, renewable energy sources and sustainable materials to ensure the efficiency and climate resilience of our assets under management. While important, these expenditures are not considered substantive to our overall business, given that fee income and related expenses represent less than 1% of our overall net income.</p>
Downstream	Relevant, always included	<p>Through our climate-related risk assessments, we consider the downstream impacts and risks related to the use of our products and services. For example, we have assessed the risks of not using low carbon products in our business offering (such as electronic applications and eClaim services), as well as providing our clients' with responsible investment options that include environmental and climate-related screening criteria. Already, Great-West Lifeco's subsidiary GLC Asset Management, Putnam Investments, and Irish Life Investment Managers are signatories to the UNPRI, demonstrating a strong commitment to the development of a more sustainable global financial system. Several of their investment products/funds undergo environmental, social and governance assessments, which include reviews of significant ESG risks (such as climate change, among others) and require that identified risks be addressed in the investment theses for invested equities. While these initiatives contribute to supporting even greater growth within our business, the risk of not having these products and services is not considered substantive given our diversified businesses and extensive</p>

		distribution reach. Specifically, in 2018, the fee income from responsible investment options represented less than 1% of our overall net income.
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C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

The effective management of risk is integral to the success of our business. We have a prudent and measured approach to risk management built on a strong risk culture and guided by our integrated ERM Framework. Our ERM Framework facilitates the alignment of business strategy with risk appetite, informs and improves the deployment of capital, and supports the identification, mitigation and management of exposure to possible operational surprises, losses and risks, including climate-related issues, where relevant. The ERM framework includes both physical and transition risks.

Our reinsurance business provides a good example of how we manage physical climate-related risks. On an annual basis we conduct scenario modelling on climate-related events and the impact on our reinsurance business. Using robust weather models, we model peak perils at the worst locations to assess the likelihood, severity and velocity of extreme weather events, including windstorms, hurricanes and cyclones. The information from these scenario models enables us to assess how much of a loss we will take, which in turn informs our pricing models. Based on this modelling of two worst-case scenarios, we determined it would not result in a substantive impact on our business. For example, claims related to losses from hurricanes Harvey, Irma, and Maria combined resulted in established reserves of \$175 million, which were not considered to be substantive on our overall business. Furthermore, we manage these inherently lower risks by setting contractual limits and cap exposure on the portfolio, and by ensuring we renegotiate our reinsurance contracts annually so that we can revisit our risk exposures and limits on an ongoing basis.

Our investment business provides a good example of how we manage transition risks relating to the exposure to sectors that may be impacted by climate-related policies, regulations, and technological risk. The impact of climate-related risks to our investments is limited given the diversification of our business. Diversification is an inherent part of our business strategy, which enables us to limit our exposure to sectors and regions that may be subject to climate-related regulations. For example, in 2018, no individual sector accounted for more than 10% of our invested assets. We further limit our relatively low inherent risks by establishing investment thresholds within specific sectors, asset types/allocations, and geographies, and conducting extensive due diligence to ensure climate-related risks are managed. For instance, in the U.S., when investing in the energy and utility sector, an important consideration in our assessments is the investee's ability to meet state level policy requirements on renewable or less carbon-intensive energy and to manage potential climate-related physical risks. As another example, with regard to commercial mortgage finance, we undertake environmental compliance due diligence for all new investments, ensure that adequate all-perils insurance is in place (which includes risks associated with extreme events), and give consideration to green building certifications.



Our corporate strategy teams at the various business levels, representing operations, insurance and investments, conduct ongoing scans of existing and emerging trends that could have the potential to positively or negatively impact revenues and growth markets in products and services. The information is then used to inform an assessment of opportunities from a financial and technical perspective, which in turn influence our corporate strategic planning process for the following year.

We continue to assess growth markets in our investment strategy. For example, in 2018, Lifeco invested over \$2 Billion in wind, solar, and other renewable energy projects, and Lifeco’s public bonds group made purchases of Ontario and Quebec’s green bonds. While important, these investments are not substantive given that less than 1.2% of invested assets is tied to investments in low carbon renewable energy markets and green bonds.

Engagement with companies is an important part of our process to manage potential climate change-related risks and opportunities. For example, Great-West Lifeco’s subsidiary, Irish Life Investment Managers (ILIM), engages with high risk companies within their investment portfolio on a variety of ESG issues, including climate change. ILIM identifies companies considered to be laggards on specific ESG issues, with the aim of bringing their performance in line with industry standards. Throughout 2018, ILIM was engaged with 18 companies on climate change-related issues, with three engagements concluding in 2018. One engagement resulted in a company committing to improve its disclosure of GHG emissions and climate change-related risks. In terms of overall engagements, bribery and climate change continue to see a relatively high number of completions.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

No

C2.3b

(C2.3b) Why do you not consider your organization to be exposed to climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Primary reason	Please explain
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<p>Row 1</p>	<p>Risks exist, but none with potential to have a substantive financial or strategic impact on business</p>	<p>We assess climate related-risks taking into consideration both physical and transition risk. With respect to physical risks we conduct scenario modelling on climate-related impacts on our reinsurance business. Using weather models, we model peak perils at the worst locations to assess the likelihood, severity and velocity of extreme weather, including windstorms, hurricanes and cyclones, which in turn informs our pricing models. Based on this modelling of two worst-case scenarios, we determined it would not result in a substantive impact on our business. In 2017, Great-West Lifeco established reserves of \$175 million for claims relating to losses from hurricanes Harvey, Irma and Maria combined which did not result in a substantive impact.</p> <p>In terms of life and health insurance, we have not experienced notable changes in insurance claims resulting from climate-related health impacts.</p> <p>We inherently diversify our morbidity and mortality risks, with the intent of limiting concentrations in any one specific region or geography. Further, research and analysis is done to provide the basis for establishing pricing assumptions that properly reflect the insurance market, including climate-related impacts. .</p> <p>Regarding transition risks, we review regulatory risks, including GHG regulations, carbon pricing, and building requirements. Our managed corporate and investment properties are not subject to GHG regulations, and we limit investments in exposed sectors through our inherent diversification strategy.</p> <p>In 2018, fixed income (bond) assets, representing 71% of total invested assets for the Lifeco, that were invested in sectors potentially exposed to climate-related regulations, such as the energy, transportation, and utilities sectors, represented approximately 20% of these invested bond assets. While important, these risks are not substantive to our business given our inherently diversified business.</p> <p>We also assess fluctuating socio-economic conditions from society's exposure to weather-related losses We modelled potential lapse rates from severe weather and determined such events had a limited impact on insurance affordability and customer retention rates. These risks when considered in the context of our overall business and other types of reputational risks would not be substantive on our business.</p>
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C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

No

C2.4b

(C2.4b) Why do you not consider your organization to have climate-related opportunities?

	Primary reason	Please explain
Row 1	Opportunities exist, but none with potential to have a substantive financial or strategic impact on business	<p>We assessed climate-related opportunities focusing on resource efficiency, cleaner energy, and products and services.</p> <p>With respect to clean energy, we determined that green government incentives would have a limited impact, given our utility spend represents less than 1% of overall expenditures. We are also taking advantage of investments in the renewable energy market, having invested over \$2 Billion in wind, solar, and other renewable energy project investments, as at 2018, through GWL's Private Debt Investment Group, as well as US and European Investment teams with responsibility for General Account investments. While important, these investments are not substantive given that less than 1.2% of our asset value is tied to investments in low carbon renewable energy projects/markets.</p> <p>We also use low carbon products, such as electronic and eClaim services, and provide responsible investment options with climate-related criteria. For example, we provide investment solutions with specific ESG (including climate change) mandates, such as Putnam's Sustainable Future Fund and Sustainable Leaders Fund. The total value of the two Putnam Investments Funds with mandate that include ESG criteria (e.g., climate change-related risks/opportunities), represents approximately \$5 Billion USD. Currently, our subsidiaries GLC Asset Management, Putnam Investments, and Irish Life Investment Managers are signatories to the UNPRI.</p> <p>While these products and services contribute to supporting even greater growth within our business, the</p>



		<p>benefits are not considered substantive given our diversified businesses and extensive distribution reach. For example, in 2018, the income from responsible investment options represented less than 1% of our overall net income.</p> <p>With respect to resource efficiency, we support energy efficiency upgrades in the management of our corporate/investment properties (owner occupied representing less than 1% of expenditures). With respect to products and services, we have strengthened the carbon efficiency of our services carried out by our subsidiary GWL Realty Advisors. Since 2013, GWLRA achieved approximately 25,970 tonnes of CO2e emission reductions for its managed portfolio. However, when considered in the context of our overall business, this is not substantive, given that the fee income represents less than 0.5% of our overall income.</p>
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C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

Yes, qualitative and quantitative

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

Our business objectives and strategy is informed by a broad range of information, including climate change issues relevant to the effective functioning of our business and provision of our products and services. Climate related issues that have influenced our business objectives and strategy cover both

internal and external factors. Internal factors include energy performance in our corporate buildings and investment real estate properties to inform energy efficiency cost savings strategies, and extreme weather events at our properties to inform business continuity and climate adaptation strategies. External factors include customer demands that are influencing our responsible investment growth strategies, extreme weather events in our reinsurance and insurance business that influence pricing, underwriting and new product strategies, government incentives in cleaner renewable energy and green infrastructure influencing the growth of our green bond investment portfolios, and stakeholder requests that are our driving carbon reporting strategies. Where relevant, the CSR Lead communicates climate-related information to the executive team for consideration into business strategy decisions.

Specifically, over the past few years, the increase in incentives and financing from governments has influenced our growth strategy into cleaner energy investments that support the transition to a low carbon economy in North America. As a result, we are now investing more to support the transition to a low carbon economy. For example, last year Ontario, Canada, launched its second green bond in the form of a \$759 million 2023 seven-year new issue to finance transit and other low-impact infrastructure projects across the province. Our GWL Bond Investments Group supported this Green Bond program, making purchases of the new issue. The Bond Investments team also made purchases in Quebec's inaugural \$500 million 2017 Green Bond issue, which will be used to finance environmentally friendly projects in accordance with Quebec's Green Bond Framework .

Our business strategy is linked to our emission reduction targets. Specifically, as part of our business strategy we are increasing investments in more energy efficiency initiatives in our corporate and investment properties. For example, we increased investments in building equipment retrofits, data centre optimization and green building certifications ((BOMA BEST® and/or LEED®), which align well with our Scope 1+2 GHG targets for Canadian properties to achieve a 27.3% GHG reduction by 2025 and a 50.4% reduction by 2036, based on a 2013 baseline year. And enables us to meet our green building certification.

An example of a relatively substantial business decision made during 2017 that was influenced by climate change was to continue to grow our property and casualty reinsurance business. We are growing our casualty and property reinsurance business due to increasing demand driven by economic and risk modelling factors. Our short-term strategy covering the current time and the next three years has been influenced by a number of aspects influencing the demand for property catastrophe retrocession opportunities. For example, economic growth driving the number of houses in areas prone to single events (e.g. hurricanes), changes in industry modeled location, occurrence and severity of windstorms, and availability of capital to support these risks have influenced the growth of our property and casualty re-insurance business. Another relatively substantial business decision influenced by climate change, was our investment decisions to support the transition to a low carbon economy. The aspect of climate change that influenced the decision to invest in the low carbon economy was the increase in incentives and financing from governments. For example, in 2018, Lifeco invested over \$2 Billion in wind, solar, and other renewable energy projects, and Lifeco's public bonds group made purchases of Ontario and

Quebec’s green bonds. While important, these investments are not substantive given that less than 1.2% of invested assets is tied to investments in low carbon renewable energy markets and green bonds.

C3.1d

(C3.1d) Provide details of your organization’s use of climate-related scenario analysis.

Climate-related scenarios	Details
<p>Other, please specify</p> <p>Modelling is used for the Property & Catastrophe portfolio in the Reinsurance department.</p>	<p>Climate Scenario Analysis Overview and Context:</p> <p>On an annual basis we conduct scenario modelling on climate-related events and the impact on our P&C reinsurance business. Using robust weather models provided by a third party, we model peak perils to assess the likelihood, severity and frequency of extreme weather events, including windstorms, hurricanes and cyclones. The information enables us to assess how much of a loss we would take, which in turn informs our pricing models. A description of the model is presented below.</p> <p>Description and Relevance of the time horizon:</p> <p>The third party model has the capabilities to provide long-term climate event horizons based on specific modeling solutions. For Great-West Lifeco, typically a one year time horizon is considered relevant for our property & catastrophe contracts. This is due to the fact that we manage these inherently lower risks of our reinsurance business by setting contractual limits and cap exposure on the portfolio. We renegotiate our reinsurance contracts annually so that we can revisit our risk exposures and limits on an ongoing basis.</p> <p>Details of the Methodology Used:</p> <p>Inputs: The third party model is derived from best-in-class models built in partnership with the world’s leading carriers. The inputs to the models include the frequency and severity of extreme weather events of clients’ underlying exposure to climate-related events, including windstorms, hurricanes and cyclones.</p> <p>Assumptions: The assumptions applied are based on various data sources, to determine the risk location, exposure, and hazards. The assumptions are based on the Poisson distribution frequency that expresses the reasonable assumption of the probability of a given number of extreme weather events occurring within a fixed period of time,</p>

	<p>within a specific area.</p> <p>Analytical Methods: The Great-West Lifeco applies the Monte Carlo simulation methodology to clients exposure files.</p> <p>Changes from the reference scenario considered: Based on our reinsurance business needs, the reference scenario applies over the period of the year in question, which was last done for the period 2018.</p> <p>The Area of the Organization considered for the Scenario Analysis: The scenario analysis is considered for our Property and Catastrophe portfolio, which is used by the Great-West Lifeco Reinsurance Division.</p> <p>Company Specific Description of the Results of conducting Scenario Analysis: Based on internal modelling of two worst-case scenarios, we determined extreme weather events would not result in a substantive impact on our reinsurance business. Specifically, for Great-West Lifeco's reinsurance business, we determined that the location, occurrence and severity of extreme weather events (specifically wind storms, hurricanes and cyclones) in the areas of our reinsurance was coverable by the allocated available capital.</p> <p>Description of how the Results of the scenario informed and directly influenced the Business Objectives and Strategy: Based on the internal modelling of two worst-case scenarios, we determined climate-related events would not result in a substantive impact on our business. For example, in 2017, Great-West Lifeco established reserves of \$175 million for claims relating to losses from hurricanes Harvey, Irma and Maria combined in the third quarter of the year, which did not result in a substantive impact to the business.</p>
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C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Scope

Scope 1+2 (location-based)

% emissions in Scope

37.54

Targeted % reduction from base year

27.3

Base year

2013

Start year

2014

Base year emissions covered by target (metric tons CO2e)

21,972

Target year

2025

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% of target achieved

50.38

Target status

Underway

Please explain

This target (2013-2025) applies to Scope 1 and 2 emissions for Great-West Lifeco's owner-occupied and investment properties in Canada. The target excludes Scope 1 + 2 GHG emissions associated with corporate jet fuel use, backup generator diesel fuel use, and refrigerants. The target includes emissions associated with our property-level electricity, natural gas, and steam consumption at our corporate head office and investment properties. The reductions achieved to-date (50.38% towards target completion) are in part due to emissions reduction activities (e.g. energy efficiency focused retrofits and behavioral changes) at our corporate head office and investment properties in scope for this target.

Target reference number

Abs 2

Scope

Scope 1+2 (location-based)

% emissions in Scope

37.54

Targeted % reduction from base year

50.4

Base year

2013

Start year

2014

Base year emissions covered by target (metric tons CO2e)

21,972

Target year

2036

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% of target achieved

27.29

Target status

Underway

Please explain

This target (2013-2036) applies to Scope 1 and 2 emissions for Great-West Lifeco's owner-occupied and investment properties in Canada. The target excludes Scope 1 + 2 GHG emissions associated with corporate jet fuel use, backup generator diesel fuel use, and refrigerants. The target includes emissions associated with our property-level electricity, natural gas, and steam consumption at our corporate head office and investment properties. The reductions achieved to-date (27.29% towards target completion) are in part due to emissions reduction activities (e.g. energy efficiency focused retrofits and behavioral changes) at our corporate head office and investment properties in scope for this target.

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.



C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	20	
To be implemented*	13	156
Implementation commenced*	2	87
Implemented*	4	130
Not to be implemented	2	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative type

Energy efficiency: Building services

Description of initiative

HVAC



Estimated annual CO2e savings (metric tonnes CO2e)

108

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

12,000

Investment required (unit currency – as specified in C0.4)

36,000

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

Heat exchanger maintenance, cleaning, and optimization

Initiative type

Energy efficiency: Building services

Description of initiative

Motors and drives

Estimated annual CO2e savings (metric tonnes CO2e)

17

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,200

Investment required (unit currency – as specified in C0.4)

910

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

Fan speed optimization (vent unit), shut offs (parkade), and VSD optimization

Initiative type

Energy efficiency: Building services

Description of initiative

Building controls

Estimated annual CO2e savings (metric tonnes CO2e)

5



Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

600

Investment required (unit currency – as specified in C0.4)

1,200

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

Zoning and isolation of HVAC for small data centre and print shop.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	At Great-West Lifeco we have a dedicated budget for energy efficiency projects. Each year, an investigation is made into possible energy efficiency projects. The dedicated budget will vary based on the type of projects, return on investment, and overall positive sustainability impact (e.g. GHG emissions reduction potential). In 2018, we dedicated over \$12 Million (CAD) to energy efficiency-focused projects within the international owner-occupied and investment property portfolio. While significant investments were made in energy efficiency-related projects, only some of these projects had emission reductions accounted for and reported.



Financial optimization calculations	Financial optimization calculations are conducted on a project-by-project basis by asset management and property management teams for major capital expenditures at Lifeco corporately-owned properties as well as all investment (segregated fund) properties managed by GWL Realty Advisors.
Employee engagement	Employee engagement is a core component of Great-West Lifeco's sustainability strategy. In 2018, we continued to expand the mandate of the Corporate Properties Sustainability Working Group (CPSWG) and included teams from international owner-occupied properties. The Working Group, consisting of experienced property management and building operations employees, helps to direct sustainability initiatives with a particular focus on greenhouse gas (GHG) reductions at our corporate properties. So far, they have concentrated on retrofits focusing on energy, water and waste reduction, and the sharing of best practices and strategies among our facilities. The Working Group also helps co-ordinate environment-themed employee engagement activities, such as our participation in the longstanding Earth Day and Earth Hour events. Additionally, sustainability initiatives that can lead to emission reductions at the corporate level are run throughout the year as well, including energy awareness programs, waste reduction initiatives (e.g. paper use reduction), and the promotion of sustainable commuting strategies.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products



Property management services through our subsidiary GWL Realty Advisors.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Green buildings (e.g., LEED/BOMA BEST)

% revenue from low carbon product(s) in the reporting year

1

Comment

Through GWL Realty Advisors Inc., we have certified select assets under management as green buildings under LEED and / or BOMA BEST certifications. Furthermore, we are working with building owners and tenants in our office and multi-residential portfolio to minimize the carbon footprint of these assets by prudently managing their overall environmental impact.

Level of aggregation

Group of products

Description of product/Group of products

Putnam Investments – Sustainable Investing Funds:

1) Sustainable Future Fund

2) Sustainable Leaders Fund

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify



Putnam offers two funds that aim to identify companies that thrive by producing beneficial products and services. Putnam's Sustainable Investing team identifies opportunities for investing in the most effective solutions to challenges in ESG.

% revenue from low carbon product(s) in the reporting year

1

Comment

Putnam offers two funds that aim to identify companies that thrive by producing beneficial products and services in responsible ways. Putnam's Sustainable Investing team identifies opportunities for investing in the most effective solutions to challenges in corporate environmental (including climate change), social, governance (ESG), and sustainability practices. The team's research on these issues enhances fundamental insights across Putnam.

When Putnam's Sustainable Investing Team assesses potential investments in carbon-intensive sectors, a key consideration is our analysis of the rate of change in those metrics and the magnitude of improvement that we expect given individual company strategies. For the purposes of this report, we focus on carbon intensity, which measures the ratio of carbon emissions (scope 1+2) to revenues, which is one important element of environmental efficiency. The carbon intensity of the Sustainable Leaders portfolio is somewhat lower (better) than the S&P 500, which we use as a representation of the broader market, and this metric is considerably lower (better) for the Sustainable Future Fund. These metrics show positive, but not outstanding, differences versus the market mainly because we are invested in two utilities in Sustainable Leaders as of March 31, 2019, which, despite their current fossil fuel use, are leading the way in replacing hydrocarbon-derived power generation with renewable energy generation.

We do not explicitly exclude or screen out energy or utility holdings in our process, though it is unusual for companies in these sectors to meet our investment criteria. As active managers, we have the ability to selectively own and engage with companies that are actively committed to transitioning away from carbon-intensive energy sources. Therefore, when we assess potential investments in carbon-intensive sectors, a key consideration is our analysis for the future rate of change in those metrics and the magnitude of improvement that we expect given individual company strategies.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO₂e)

17,652

Comment

Scope 2 (location-based)

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO₂e)

40,879

Comment

Scope 2 (market-based)

Base year start

January 1, 2013

Base year end

December 31, 2013

Base year emissions (metric tons CO₂e)

40,879

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO₂e?

Reporting year

Gross global Scope 1 emissions (metric tons CO₂e)



15,893

Start date

January 1, 2018

End date

December 31, 2018

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

We have no operations where we are able to access electricity supplier-specific emission factors or residual emission factors and are unable to report a Scope 2, market-based figure.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO₂e?

Reporting year



Scope 2, location-based

31,011

Scope 2, market-based (if applicable)

31,011

Start date

January 1, 2018

End date

December 31, 2018

Comment

GWL does not purchase market-based contractual instruments..

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

5,362



Emissions calculation methodology

Weight of paper purchased was multiplied by appropriate emissions factor based on % post-consumer content provided by the manufacturer. All paper sources that were not explicitly identified as having Post Consumer Content were assumed to have 0% Post Consumer Content.

Emissions factors based upon US average carbon intensity for selected recycled post-consumer waste content levels of uncoated freesheet paper (0%, 10%, 30%, 50%, 100%). All paper consumed is assumed to be recycled or otherwise accounted for in submitted waste stream data.

Source: Environmental Paper Network, version 3.2.1, <http://c.environmentalpaper.org>

Assuming Uncoated Freesheet

Segregated by % Post-Consumer Waste - For Misc. values, 0% is assumed.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

The emissions relate to the procurement of office paper for GWL properties only. Emissions are associated with the production and use of paper products by GWL employees. When considered in the context of the scope 3 emissions from our investments, these emissions are considered to be immaterial.

Capital goods

Evaluation status

Not relevant, explanation provided

Explanation

These emissions are from the production of our office buildings assets and infrastructure. When considered in the context of the scope 3 emissions from our investments, these emissions are considered to be immaterial.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided



Explanation

These emissions are from the production of our office buildings assets and infrastructure. When considered in the context of the scope 3 emissions from our investments, these emissions are considered to be immaterial.

Upstream transportation and distribution

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

244

Emissions calculation methodology

The water consumption for each property was multiplied by country or region-specific emissions factors. Uses electricity intensity factor of 1.276 kWh/m³ of water.

Maas, Carol. Greenhouse Gas and Energy Co-Benefits of Water Conservation. POLIS Project on Ecological Governance, University of Victoria. March 2009.

Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 3: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2016.), 63-76. United States: Source: eGRID 2016, released Feb 2018 from epa.gov/energy/eGRID (Annual Total Output Emissions Rate). United Kingdom/Ireland: Source: Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

84.66

Explanation

The emissions relate to the transport and distribution of products that we purchase for our offices. The emissions we have calculated relate to the distribution of water for consumption in our corporate owner-occupied and investment buildings. When considered in the context of the scope 3 emissions from all investments, these emissions are considered to be immaterial.

Waste generated in operations



Evaluation status

Not relevant, calculated

Metric tonnes CO2e

3,554

Emissions calculation methodology

Weight of landfill waste was multiplied by country specific emissions factors. Waste to energy was multiplied by plant specific or country specific emissions factors. Waste to energy and landfill waste emissions were combined.

Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 170; York Durham Energy Centre correspondence, Nov 2017 (non-biomass emissions and tonnage only); Metro Vancouver Waste to Energy Plant correspondence, Sept 2017 (non-biomass emissions and tonnage only).

United States - Source: https://www.epa.gov/sites/production/files/2016-03/documents/warm_v14_management_practices.pdf page 6-8. Used an average of wet/dry Mixed MSW, Source: https://www.epa.gov/sites/production/files/2016-03/documents/warm_v14_management_practices.pdf , Page 5-4, Mixed MSW (noted per short ton) and non-biomass only as per WARM Background and Overview

United Kingdom/Ireland - Source: Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

70.02

Explanation

This includes emissions related to the waste we generate at our corporate owner-occupied and investment properties that is sent to landfill or waste-to-energy plants. When considered in the context of the scope 3 emissions from all of our investments, these emissions are considered to be immaterial.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

13,545

Emissions calculation methodology

Distance traveled and/or litres of fuel used were multiplied by country-specific emissions factors.

Corporate Air Travel (UK/Ireland) - Source: Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Corporate Air Travel (USA/Canada) - Source: Emissions Factors for Greenhouse Gas Inventories (March 2018): https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

Reimbursed Mileage (Gasoline, Canada) - Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016: Greenhouse Gas Sources and Sinks in Canada Part 2. (Ottawa: Environment Canada, 2018.), 212, 216.

Reimbursed Mileage (Canada) – Source: Based on average of fuel efficiencies for mid-size, automatic transmission, 6 cylinder, regular gasoline vehicles from Fuel Consumption Ratings Search Tool (NRCan).

Rail Travel – Source: Emissions Factors for Greenhouse Gas Inventories (March 2018): https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf - Fuel consumption data and passenger-miles data for rail are from Tables A.14 to A.16 and 9.10 to 9.12 of the Transportation Energy Data Book: Edition 32. Fuel consumption was converted to emissions by using fuel and electricity emission factors presented in the tables above.

Corporate Ground Travel (USA) - Source: EPA, Optional Emissions from Commuting, Business Travel and Product Transport Emissions Factors for Greenhouse Gas Inventories (March 2018): https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

Vehicle Gasoline (Ireland) – Source: Source: CH4 and N2O from Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

This includes emissions generated from both air and ground business travel. When considered in the context of the scope 3 emissions from our investments, these emissions are considered to be immaterial. However, there is potential for emissions reductions that could be undertaken or influenced by the company for this source, so the emissions have been deemed relevant.

Employee commuting

Evaluation status

Not relevant, explanation provided

Explanation

This includes travel by our employees, such as by bus, rail and automobile. When considered in the context of the scope 3 emissions from our investments, these emissions are considered to be immaterial.

Upstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

4,913

Emissions calculation methodology

Energy, water and waste data collected from leased properties was multiplied by appropriate emissions factors. Electricity - Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 3: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 63-76.

Natural Gas - Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 210

Waste – Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 170

Water – Source: Uses electricity intensity factor of 1.276 kWh/m³ of water.

Maas, Carol. Greenhouse Gas and Energy Co-Benefits of Water Conservation. POLIS Project on Ecological Governance, University of Victoria.



Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 3: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 63-76

Percentage of emissions calculated using data obtained from suppliers or value chain partners

79.63

Explanation

Upstream leased assets are outside of our financial and operational control of Great-West Lifeco. These emissions are associated with Great-West Lifeco external (third-party managed) field offices and other leased area for Great-West Life, London Life, and Canada Life employees in Canada.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Explanation

We do not produce a product that results in downstream emissions from transportation and distribution.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

We do not sell products that result in the processing of sold products.

Use of sold products

Evaluation status

Not relevant, explanation provided

Explanation



We do not sell products in our business where the use of the product is relevant in the context of emissions.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

We do not sell products in our business where end of life treatment would be relevant.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

We do not have any downstream leased assets.

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

We do not own any franchises.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

90,825



Emissions calculation methodology

Energy, water and waste data from segregated investment fund properties was multiplied by appropriate emissions factors. Electricity - Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 3: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 63-76.

Natural Gas - Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 210

Waste – Source: Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 170

Water – Source: Uses electricity intensity factor of 1.276 kWh/m3 of water.

Maas, Carol. Greenhouse Gas and Energy Co-Benefits of Water Conservation. POLIS Project on Ecological Governance, University of Victoria. Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 3: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 63-76

Percentage of emissions calculated using data obtained from suppliers or value chain partners

82.65

Explanation

This includes our investment property fund emissions from Canada. We have not included the emissions from other investments.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Explanation

No other upstream emissions are considered material.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Explanation

No other downstream emissions are considered material.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000001065

Metric numerator (Gross global combined Scope 1 and 2 emissions)

46,905

Metric denominator

unit total revenue

Metric denominator: Unit total

44,032,000,000

Scope 2 figure used

Location-based

% change from previous year

3.91



Direction of change

Increased

Reason for change

Revenue decreased by 6.55% and year-over-year GHG emissions also decreased, in part due to emission reduction activities (energy efficiency measures) at Canadian owner-occupied and investment properties, resulting in a decrease of 1,395 tonnes CO₂e.

Intensity figure

1.94

Metric numerator (Gross global combined Scope 1 and 2 emissions)

46,905

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

24,200

Scope 2 figure used

Location-based

% change from previous year

6.5

Direction of change

Decreased

Reason for change

Employee count increased by 3.9% year-over-year, while emissions decreased, in part due to emission reduction activities (energy efficiency measures) at Canadian owner-occupied and investment properties, resulting in a decrease of 1,395 tonnes CO₂e.

Intensity figure

0.00525

Metric numerator (Gross global combined Scope 1 and 2 emissions)

46,905

Metric denominator

square foot

Metric denominator: Unit total

8,292,275

Scope 2 figure used

Location-based

% change from previous year

2.89

Direction of change

Decreased

Reason for change

Decrease due, in part, to energy efficiency measures (emission reduction activities) throughout the Canadian owner-occupied and investment property portfolio in 2018 (reduction of 1,395 tCO₂e), resulting in reduced emissions and emissions intensity. The area also increased by 243,620 ft² due to acquisition of four properties.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO ₂ e)	GWP Reference
CO ₂	15,518.49	IPCC Fourth Assessment Report (AR4 - 100 year)
CH ₄	8.4	IPCC Fourth Assessment Report (AR4 - 100 year)
N ₂ O	87.7	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify R22	84.66	Other, please specify IPCC/TEAP, 2005, Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons
Other, please specify R-410A	99.87	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify R123	5.24	IPCC Fourth Assessment Report (AR4 - 100 year)

Other, please specify R134A	38.92	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify R407C	49.89	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Canada	10,884.96
United States of America	1,165.52
United Kingdom of Great Britain and Northern Ireland	587.91
Ireland	3,254.89

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

By activity

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Oliver Village	1,071.18	53.547272	-113.518677

Concord Tower	350.54	45.504671	-73.56775
Oxbridge Place	639.09	53.536013	-113.50512
670 Sovereign Road	294.49	43.008638	-81.154967
255 Dufferin Avenue	1,100.24	42.987168	-81.249506
City Centre Plaza	57.54	43.596015	-79.641717
Canada Life Place	244.18	50.448355	-104.612709
180 Queen St	329.08	43.650747	-79.389931
190 Simcoe St	18.24	43.651552	-79.390712
330 University	6.26	43.651758	-79.389572
180 Simcoe St	118.45	43.651184	-79.39046
College Park	1,504.03	43.660711	-79.38626
Yonge Richmond Centre	478.13	43.651497	-79.38066
455 René-Lévesque	7.75	53.517815	-113.49808
433 Main	336.13	49.28078	-123.101865
560 Broadway	28.23	49.885343	-97.154095
Winnipeg Data Center	0	49.875361	-97.042264
GWL Centre	2,036.92	49.879174	-97.146911
Block 1, Irish Life Centre	245.78	53.349264	-6.255672
Block 2, Irish Life Centre	237.35	53.349461	-6.254703
Block 3A-3B, Lower Abbey Street	1,055.96	53.349772	-6.255334
Block 4, Irish Life Centre	50.93	53.350347	-6.25571
Block 5, Irish Life Centre	200.66	53.350274	-6.256308

Block A, Irish Life Centre	151.64	53.349669	-6.256113
Block C, Abbey Court	247.19	53.34922	-6.257573
Block D, Abbey Court	475.98	53.349494	-6.257114
Beresford Court, Beresford Place	260.97	53.348918	-6.255389
Irish Life Centre (Public Car Park)	305.92	53.349889	-6.25654
Block 1 Christchurch Square	9.7	53.342624	-6.272535
Block 2 Christchurch Square	12.83	53.342782	-6.272558
Great-West Financial Centre - Tower I	54.44	39.610576	-104.89244
Great-West Financial Centre - Tower II	273.39	39.61067	-104.89168
Great-West Financial Centre - Tower III	275.1	39.609958	-104.890738
Great-West Financial Centre - North Building	551.86	39.611685	-104.890513
Great-West Financial Centre - Parking Garage No. 1	7.36	39.610677	-104.890684
Great-West Financial Centre - Parking Garage No. 2	3.37	39.611449	-104.889832
Canada Life Place UK	179.11	51.693241	-0.179321
Maple House	119.11	51.692877	-0.179663
Lombard Street	231.65	51.51284	-0.088884
Canada Life Residential Flats	58.04	51.692855	-0.178693
Corporate Jet (GWLL)	652.96	49.9098	-97.2365
Corporate Jet (GWLI)	333.5	49.9098	-97.2365
Corporate Jet (GBDI)	449.79	49.9098	-97.2365
The Hendrix	824.66	53.535425	-113.511754
555 Robson Stret	3.55	49.280835	-123.118528

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO ₂ e)
Jet Fuel	1,436.25
Heating Fuels (e.g., natural gas)	12,373.22
Back-up Generator Fuels (e.g., diesel)	196.81
Refrigerants	278.57
Vehicle Fuels (e.g., gasoline, diesel)	1,608.42

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO ₂ e)	Scope 2, market-based (metric tons CO ₂ e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Canada	9,716.63	9,716.63	120,531.22	113,329.28
United States of America	14,797.55	14,797.55	23,695.26	
United Kingdom of Great Britain and Northern Ireland	1,678.45	1,678.45	5,929.47	
Ireland	4,818.75	4,818.75	10,971.9	

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

By activity

C7.6b**(C7.6b) Break down your total gross global Scope 2 emissions by business facility.**

Facility	Scope 2 location-based emissions (metric tons CO ₂ e)	Scope 2, market-based emissions (metric tons CO ₂ e)
Oliver Village	814.22	814.22
Concord Tower	290.31	290.31
Oxbridge Place	1,797.82	1,797.82
670 Sovereign Road	56.84	56.84
255 Dufferin Avenue	350.05	350.05
City Centre Plaza	139.13	139.13
Canada Life Place	1,455.14	1,455.14
180 Queen St	156.79	156.79
190 Simcoe St	1,289.94	1,289.94
330 University	550.2	550.2
180 Simcoe St	171.46	171.46
College Park	1,338.73	1,338.73
Yonge Richmond Centre	184.09	184.09
455 René-Lévesque	9.24	9.24
433 Main	4.47	4.47
560 Broadway	0.34	0.34
Winnipeg Data Center	16.01	16.01

GWL Centre	18.44	18.44
Block 1, Irish Life Centre	646.75	646.75
Block 2, Irish Life Centre	367.43	367.43
Block 3A-3B, Lower Abbey Street	1,101.82	1,101.82
Block 4, Irish Life Centre	105.56	105.56
Block 5, Irish Life Centre	327.69	327.69
Block A, Abbey Court	232.39	232.39
Block C, Abbey Court	259.61	259.61
Block D, Abbey Court	511.16	511.16
Beresford Court, Beresford Place	360.54	360.54
Irish Life Centre (Public Car Park)	735.7	735.7
Block 1 Christchurch Square	83.93	83.93
Block 2 Christchurch Square	86.17	86.17
Great-West Financial Centre - Tower I	4,198.08	4,198.08
Great-West Financial Centre - Tower II	4,198.08	4,198.08
Great-West Financial Centre - Tower III	2,349.7	2,349.7
Great-West Financial Centre - North Building	3,531.74	3,531.74
Great-West Financial Centre - Parking Garage No. 1	259.88	259.88
Great-West Financial Centre - Parking Garage No. 2	260.07	260.07
Canada Life Place UK	981.31	981.31
Maple House	228.34	228.34



Lombard Street	465.25	465.25
Canada Life Residential Flats	3.56	3.56
The Hendrix	895.51	895.51
555 Robson Street	177.91	177.91

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Electricity	29,278.06	29,278.06
Steam	1,733.32	1,733.32

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation

Change in renewable energy consumption	0	No change	0	N/A
Other emissions reduction activities	216	Decreased	0.46	Reduction in business-related travel in owned assets. Over half of the decrease (110 tCO ₂ e) was due to a reduction of vehicle miles. The majority of this reduction was due to decreased business travel by car, by Irish Life employees in 2018 (reduction of 108 tCO ₂ e). The other 2 tCO ₂ e was due to a slight reduction in business travel by GWF/Putnam employees. The corporate jet used 41,121 fewer liters in 2018 for corporate travel, than in 2017, resulting in a decrease in emissions of 106 tCO ₂ e. Calculation is as follows: $(-216 \text{ tCO}_2\text{e}/48,300 \text{ tCO}_2\text{e}) * 100 = -0.46\%$
Divestment	0	No change	0	N/A
Acquisitions	0	No change	0	N/A
Mergers	0	No change	0	N/A
Change in output	0	No change	0	N/A
Change in methodology	417	Decreased	0.86	Changes in emissions factors resulted in a net decrease in emissions of 417 tCO ₂ e. Although the Canadian steam emissions increased by 388 as a result of emissions factors changes, this was offset by a decrease of 738 tCO ₂ e resulting from changes in Ireland's electricity emissions factors and a decrease of 67 tCO ₂ e resulting from changes in the UK's electricity emissions factors. Calculation is as follows: $(-417 \text{ tCO}_2\text{e}/48,300 \text{ tCO}_2\text{e}) * 100 = -0.86\%$
Change in boundary	0	No change	0	N/A
Change in physical operating conditions	325	Decreased	0.67	Weather and occupancy changes in the Canadian corporate buildings resulted in a net decrease in emissions of 325 tCO ₂ e. The majority of the change was noted in natural gas (-296 tCO ₂ e), while electricity showed a 78 tCO ₂ e decrease and steam

				showed a 49 tCO ₂ e increase. Calculation was as follows: $(-325/48,300) * 100 = -0.67\%$
Unidentified	618	Decreased	1.28	Once all other possible variance analyses had been completed, the remaining change, that cannot be accounted for was -618 tCO ₂ e. It is possible this may be due to weather and occupancy changes, or emissions reduction activities (such as building services/retrofits), however this analyses cannot be completed at this time. Calculation was as follows: $(-618/48,300)*100 = -1.28\%$
Other	181	Increased	0.39	While GWF/Putnam properties showed a reduction in refrigerant use in 2018 of 85 tCO ₂ e, all other groups showed a combined increase of 164 tCO ₂ e. This resulted in a net increase of 79 tCO ₂ e. Diesel use increased overall by 102 tCO ₂ e, due to a large increase in Irish Life usage (increase of 112 tCO ₂ e), despite a 10 tCO ₂ e reduction by Canadian Corporate Properties and no change in Canada Life UK and GWF/Putnam diesel use. Overall Calculation was as follows: $((79+102)/48,300 \text{ tCO}_2\text{e})*100 = 0.39\%$

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	79,053.81	79,053.81
Consumption of purchased or acquired electricity		104,118.08	47,798.57	151,916.65
Consumption of purchased or acquired heat		0	0	0
Consumption of purchased or acquired steam		9,211.19	0	9,211.19
Total energy consumption		113,329.27	126,852.38	240,181.66

C8.2b

(C8.2b) Select the applications of your organization’s consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Aviation Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

5,361.93

Comment



Fuels (excluding feedstocks)

Diesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

6,838.95

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

66,715.72

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

137.2

Comment

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Aviation Gasoline

Emission factor

0.00258

Unit

metric tons CO2 per liter

Emission factor source

Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016: Greenhouse Gas Sources and Sinks in Canada Part 2. (Ottawa: Environment Canada, 2018.), 212, 216.

Comment

Canadian aviation turbo fuel emissions factor.

Diesel

Emission factor

0.0028

Unit

metric tons CO2e per liter

Emission factor source

Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016: Greenhouse Gas Sources and Sinks in Canada Part 2. (Ottawa: Environment Canada, 2018.), 212, 216.; Emissions Factors for Greenhouse Gas Inventories. Direct Emissions from Stationary Combustion Sources. EPA, Mar 2018; Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

This is an average of Canadian, US and Irish Diesel Emissions factors.

Motor Gasoline

Emission factor

0.00244

Unit

metric tons CO2e per liter

Emission factor source

EPA, Emissions Factors for Greenhouse Gas Inventories. Direct Emissions from Stationary Combustion Sources, Mar 2018; Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

This is an average of US and Irish light duty vehicle gasoline emissions factors

Natural Gas

Emission factor

0.002

Unit

metric tons CO2 per m3

Emission factor source

Environment Canada. Greenhouse Gas Division, National Inventory Report 1990–2016 Part 2: Greenhouse Gas Sources and Sinks in Canada. (Ottawa: Environment Canada, 2018.), 210; Emissions Factors for Greenhouse Gas Inventories. Direct Emissions from Stationary Combustion Sources. EPA, Mar 2018; Department of Energy and Climate Change, UK Government GHG Conversion Factors for Company Reporting, <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

Comment

This is an average of Canadian provincial natural gas emissions factors (AB,BC,MB,ON,QC,SK) as well as the US, UK and Irish natural gas emissions factors.

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Basis for applying a low-carbon emission factor

Other, please specify
District Steam (Ontario)

Low-carbon technology type

Other low-carbon technology, please specify
Steam generated with lower carbon energy sources when compared to on-site natural gas fired heating

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

8,612.68

Emission factor (in units of metric tons CO2e per MWh)

0.184051

Comment

Great-West Lifeco purchases district steam for our Toronto owner-occupied office locations. This source produces lower emissions per MWh compared to traditional fossil fuel-based heating sources.

Basis for applying a low-carbon emission factor

Other, please specify

District Steam (British Columbia)

Low-carbon technology type

Other low-carbon technology, please specify

Steam generated with lower carbon energy sources when compared to on-site natural gas fired heating

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

598.51

Emission factor (in units of metric tons CO₂e per MWh)

0.247536

Comment

Great-West Lifeco purchases district steam for our Vancouver owner-occupied office location. This source produces lower emissions per MWh compared to traditional fossil fuel-based heating sources.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity



Low-carbon technology type

Hydropower

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

2,680.86

Emission factor (in units of metric tons CO₂e per MWh)

0.0111

Comment

Electricity purchased in British Columbia for our owner-occupied and investment properties comes predominantly (90% of grid mix) from a low carbon hydroelectric source.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity

Low-carbon technology type

Hydropower

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

20,659.96

Emission factor (in units of metric tons CO₂e per MWh)

0.0019

Comment

Electricity purchased from Manitoba Hydro for our owner-occupied and investment properties in Manitoba comes predominantly (97% of grid mix) from low carbon energy sources, such as utility-scale hydro and other renewables.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity

Low-carbon technology type

Solar PV

Wind

Hydropower

Nuclear

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

73,668.22

Emission factor (in units of metric tons CO₂e per MWh)

0.036

Comment

Electricity purchased in Ontario for our owner-occupied and investment properties comes predominantly (90% of grid mix) from low carbon energy sources including utility-scale hydro, nuclear, wind, solar, and other renewables.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity

Low-carbon technology type

Hydropower

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

7,109.03

Emission factor (in units of metric tons CO₂e per MWh)

0.0013

Comment

Electricity purchased in Quebec for our corporate property comes predominantly from low carbon energy sources, including hydropower.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

3,554.36

Metric numerator

tCO₂e



Metric denominator (intensity metric only)

% change from previous year

9.4

Direction of change

Decreased

Please explain

Waste generation from the Canadian Corporate and International properties decreased from 2017 to 2018 by 369 tCO₂e.

Description

Other, please specify

Seg Fund Investment Properties GHGs

Metric value

90,824.83

Metric numerator

tCO₂e

Metric denominator (intensity metric only)

% change from previous year

1.9

Direction of change

Increased

Please explain

Emissions from the Canadian Segregated Fund properties increased by 1,686 tCO₂e. This was due to large increases in natural gas usage (1741 tCO₂e) as well as landfill waste (834 tCO₂e). These increases occurred despite a combined reduction of 890 tCO₂e from electricity, steam, water and waste to energy

Description

Other, please specify

Lifeco Leased Properties (Canada) GHGs

Metric value

4,913.43

Metric numerator

tCO₂e

Metric denominator (intensity metric only)

% change from previous year

37.4

Direction of change

Decreased

Please explain

Emissions from Canadian Leased properties decreased by 2935 tCO₂e, largely due to significant decreases in waste emissions (2242 tCO₂e). In fact, all other sources (natural gas, electricity, chilled water, steam and water) showed reductions, further reducing emissions by 693 tCO₂e.

Description



Other, please specify

Water Consumption GHG Emissions

Metric value

243.62

Metric numerator

tCO₂e

Metric denominator (intensity metric only)

% change from previous year

7.4

Direction of change

Decreased

Please explain

Water emissions in Canadian Corporate and International properties has decreased by 19 tCO₂e.

Description

Other, please specify

Business Travel GHG Emissions

Metric value

13,545

Metric numerator

tCO₂e



Metric denominator (intensity metric only)

% change from previous year

3.8

Direction of change

Increased

Please explain

Business Travel emissions were increased by 493 tCO₂e, due to increases in air travel (373 tCO₂e) and rail travel (56 tCO₂e), despite a decrease in car travel (59 tCO₂e).

Description

Other, please specify

Paper Use GHG Emissions

Metric value

5,361.82

Metric numerator

tCO₂e

Metric denominator (intensity metric only)

% change from previous year

15.5

Direction of change

Decreased



Please explain

Paper emissions were reduced by 987 tCO₂e due to a decrease in paper usage at Canadian Corporate offices.

Description

Energy usage

Metric value

240,181,657.32

Metric numerator

kWh

Metric denominator (intensity metric only)

% change from previous year

0.5

Direction of change

Decreased

Please explain

Absolute energy usage in the corporate properties was reduced by 1,254 MWH. This was largely due to increases in natural gas usage of 3,713 MWH and steam of 1,913 MWH.

Description

Energy usage

Metric value



26.9

Metric numerator

kWh

Metric denominator (intensity metric only)

ft²

% change from previous year

0.5

Direction of change

Decreased

Please explain

As a result of increases in natural gas and steam usage (primarily), energy intensity in the Corporate properties decreased by -0.5% or -0.14 kWh/ft².

Description

Other, please specify
Water Use

Metric value

563,488.75

Metric numerator

m³

Metric denominator (intensity metric only)



% change from previous year

3.2

Direction of change

Decreased

Please explain

Water consumption was decreased by 18,682 m3 as a result of a 29.2% decrease in the Great-West Financial/Putnam properties consumption, a 9.0% decrease in the Canada Life UK consumption and a 4.6% decrease in Irish Life's water usage.

Description

Other, please specify
Water Use Intensity

Metric value

0.06

Metric numerator

m3

Metric denominator (intensity metric only)

ft2

% change from previous year

3.2

Direction of change

Decreased

Please explain



Water Use Intensity decreased by 0.002 m³/ft due to the reduction in consumption at the Great-West Financial, Canada Life UK and Irish Life properties.

Description

Waste

Metric value

2,061

Metric numerator

metric tonnes

Metric denominator (intensity metric only)

% change from previous year

11.2

Direction of change

Decreased

Please explain

Total waste generation decreased by 260 metric tonnes, due to a decrease across all groups; a 14% decrease from the Irish Life properties, a 13% decrease in the Canadian Corporate properties, a 4% decrease in the Canada Life UK properties and a 1% decrease in the Great-West Financial/Putnam properties. Overall, there was a decrease in both waste being sent to landfills, as well as waste being sent to waste-to-energy plants.

Description

Waste



Metric value

59.2

Metric numerator

%

Metric denominator (intensity metric only)

% change from previous year

13

Direction of change

Increased

Please explain

The waste diversion rate increased due to an increase in recycling in both the Canadian Corporate group (by 340 tonnes) and the Irish Life group (by 139 tonnes). All groups showed a reduction in total waste generated, resulting in a decrease of 260 tonnes of waste.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 pwc assurance 2019-Representation_Letter-SIGNED.pdf

Page/ section reference

See pgs. 3-5 for a description of the assurance scopes and level (limited).

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 pwc assurance 2019-Representation_Letter-SIGNED.pdf

Page/ section reference

See pgs. 3-5 for a description of the assurance scopes and level (limited).

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 pwc assurance 2019-Representation_Letter-SIGNED.pdf

Page/ section reference

See pgs. 3-5 for a description of the assurance scopes and level (limited).

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

 pwc assurance 2019-Representation_Letter-SIGNED.pdf

Page/section reference

See pgs. 3-5 for a description of the assurance scopes and level (limited).

Relevant standard

ISAE 3410


C10.2




(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Year on year change in emissions (Scope 1)	ISAE 3410	PwC verified the year on year change in emissions for Scope 1, Scope 2, and Scope 3. See attached PwC Assurance Statement.  1

C6. Emissions data	Year on year change in emissions (Scope 2)	ISAE 3410	PwC verified the year on year change in emissions for Scope 1, Scope 2, and Scope 3. See attached PwC Assurance Statement.  1
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	ISAE 3410	PwC verified the year on year change in emissions for Scope 1, Scope 2, and Scope 3. See attached PwC Assurance Statement.  1
C6. Emissions data	Year on year change in emissions (Scope 3)	ISAE 3410	PwC verified the year on year change in emissions for Scope 1, Scope 2, and Scope 3. See attached PwC Assurance Statement.  1

 1pwc assurance 2019-Representation_Letter-SIGNED.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations

GHG Scope

Scope 1
Scope 2

Application

The price is applied to all owner-occupied and investment properties in Canada by our subsidiary GWLRA.

Actual price(s) used (Currency /metric ton)

30

Variance of price(s) used

CAD \$30-\$50/tCO₂e

We currently reference a carbon price of \$30 per tonne as a proxy, which corresponds with the carbon tax price per tonne of CO₂e in British Columbia (British Columbia's Carbon Tax Act [SBC 2008] Chapter 40, B.C. Reg. 125/2008 O.C. 386/2008. We also use a proxy carbon price of \$50 per tonne, as per Canada's national approach to pricing carbon pollution, the "Pan-Canadian Framework".

Type of internal carbon price

Implicit price

Impact & implication



We use carbon prices for informational purposes – to determine the level of opportunity that our business may have to monetize carbon through potential cap and trade systems (e.g. GHG offset origination for commercial energy efficiency projects). Over time, we will be exploring how to integrate carbon costs into the investment decision-making process for our retrofit (and other) projects.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism

Other, please specify

Sustainability considerations (e.g., climate change) integrated into supplier evaluation and as a risk principle in the Supplier Risk Management Policy

% of suppliers by number

29

% total procurement spend (direct and indirect)

31

% Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

We specifically engage our critical suppliers to understand the products and services that could reduce the environmental footprint of our buildings, operations, and processes. Supplier evaluation and our Supplier Risk Management Policy includes sustainability (including climate change) as one of its considerations. This includes suppliers that support us in improving the sustainability of our real estate assets, as well as other products and services that enable us to reduce energy, water, and material consumption (e.g. building equipment retrofits, utility providers, data centre optimization, LED lighting, paper, and building materials). By working collaboratively with these suppliers to encourage alternative and green products and services, it enables us to meet our green building certification targets as well as our GHG Scope 1+2 reduction target for Canadian properties to achieve a 27.3% GHG reduction by 2025 and a 50.4% reduction by 2036, based on a 2013 baseline year. Please note that the data provided for this question relates to our Canadian operations only.

Impact of engagement, including measures of success

By engaging with our suppliers to provide products and services that reduce our environmental footprint, we have been able to achieve our green building certification targets for our corporate head offices and investment properties.

Furthermore, the use of more environmentally friendly products and services from our suppliers has contributed to our targeted GHG reductions for Canadian properties. Specifically, in 2018, Great-West Lifeco achieved a 13.8% reduction in the GHG scope 1 and 2 emissions when compared to its baseline year of 2013.

Comment

Based on Great-West Lifeco's response to question 6.5, the Company engages with 100% of its Scope 3 suppliers, which include the waste management companies, water utilities, paper suppliers, and corporate travel suppliers who provide the necessary information for Great-West Lifeco to calculate the environmental impact (e.g., GHG emissions) of its operations.

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number

100

% Scope 3 emissions as reported in C6.5

100

Please explain the rationale for selecting this group of customers and scope of engagement

Through our subsidiary, GWL Realty Advisors, we engage with the tenants, residents, and occupants of our downstream real estate assets under management, to better understand their changing needs, to enhance our services, and to endeavor to exceed their expectations, including with respect to energy management. For example, GWLRA engages to share information on sustainability-related metrics such as green building certification status, energy performance (e.g., energy reductions), water use efficiency, waste production and GHG emissions of the property.

GWLRA commercial and multi-residential property managers continue to engage and educate tenants on topics of interest, including sharing relevant climate change-related information, such as GHG emissions performance and programs in place to improve GHG emissions at the property-level, such as the Sustainability Benchmarking and Conservation Program for GWLRA managed office assets (establishing energy, water, waste, and GHG targets). GWLRA holds monthly tenant meetings, interact through green teams, workshops and education events, issue newsletters, and host building events to encourage tenant participation in activities, such as Earth Hour, Earth Day/Week, and National Waste Reduction Week.

Please note these Scope 3 emissions are specifically associated with the categories “Waste generated in operations” and “Investments” listed in question 6.5.

Impact of engagement, including measures of success

On an ongoing basis, GWLRA conducts tenant and resident engagement (satisfaction) surveys to inform our continuous improvement efforts at both our commercial and multi-residential properties under management. Results from these satisfaction surveys are tied to the internal performance metrics of property management teams. Issues and follow-ups pertaining to the surveys are addressed by property and asset management teams, as required.

By engaging with the occupants of its buildings, GWLRA is able to contribute to the continuous improvement of the efficiency of its assets under management. For example, engagement by GWLRA staff can lead tenants to adopt and install higher efficiency equipment for their spaces. In 2018, GWLRA achieved a 15.0% GHG emissions across its office and multi-residential portfolio, compared to its 2013 baseline, in part due to the efforts of tenants and residents.

C12.1c

(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

Other Partners - Community Organizations

Method of engagement: We interact with communities through ongoing dialogue and face-to-face meetings to explore opportunities to support community-based needs on a wide range of sustainability issues, including but not limited to climate change.

Strategy for prioritizing engagements: Engagements are prioritized based on the needs identified by the community organizations and our specific focus areas. Within our environment focus, we prioritize organizations that are supporting carbon mitigation and adaptation strategies.

Measures of Success: We measure our success by the number of community projects and their associated impacts in addressing climate change issues. For example, in 2018, we continued our support for the International Institute for Sustainable Development (IISD). As part of this partnership, we contributed to building the capacity of Manitobans to understand, prepare for, and build resilience to the impacts of climate change. This included support to the IISD to publish their “Combating Canada’s Rising Flood Costs” with the Insurance Bureau of Canada;

hosting a national forum on “Advancing Natural Infrastructure in Canada” bringing leaders across the country to share innovative financing solutions; working to launch a new Centre to support climate adaptation services on the Prairies, and promote strategies for building the climate resilience of cities.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Trade associations
- Funding research organizations
- Other

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Canadian Institute of Actuaries (CIA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association’s position



The CIA supports the advancement of knowledge into better understanding the impact of climate change and has developed a Climate Change and Sustainability Committee. Part of the Institute's role is to raise awareness of climate change and environmental sustainability with both members and the public.

How have you influenced, or are you attempting to influence their position?

Through the membership of our employees on the CIA, we are engaging within the industry to better understand how climate change could impact insurance pricing and valuation models.

Trade association

American Academy of Actuaries

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The American Academy of Actuaries supports knowledge and raises awareness among policymakers and the public at large of the increasing risks from extreme weather events. It aims to evaluate and help manage exposure to these risks from an insurance perspective, by combining current climate science knowledge with actuarial experience.

How have you influenced, or are you attempting to influence their position?

As members of the American Academy of Actuaries, we support and are increasing our own knowledge of climate risks.

Trade association

Chartered Financial Analyst (CFA) Institute

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position



The mission of CFA Institute is served by generating value for core investment management professionals and engaging with the core investment management industry to advance ethics, market integrity, and professional standards of practice, which collectively contributes value to society. The CFA Institute provides knowledge on climate change risks, pricing and management.

How have you influenced, or are you attempting to influence their position?

As members of the CFA Institute, we support and are increasing our own knowledge of climate risks.

Trade association

REALPAC (Real Property Association of Canada)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

REALPAC recognizes the significant economic, environmental, social, governance (EESG) impact of Canada's commercial real estate sector, and the need for an industry-driven approach toward supporting national and provincial strategies on greenhouse gas reduction (climate change action), the importance of reasoned discourse with political and policy officials, and the value of persuasive arguments for sustainable economic growth. The Association also recognizes the need for industry-wide "green" benchmarking data and shared best practices, and is working with its constituents and its national and international counterparts to help to responsibly ensure the sector is well positioned for a sustainable future.

How have you influenced, or are you attempting to influence their position?

As members of REALPAC, as well as REALPAC's Environmental, Social and Governance (ESG) Committee, we support initiatives to increase awareness on energy improvements and increase government incentives towards energy efficient existing and new commercial real estate.

Trade association

Building Owners and Managers Association (BOMA) and its regional chapters

Is your position on climate change consistent with theirs?



Consistent

Please explain the trade association's position

BOMA is the voice of the Canadian commercial real estate industry, addressing issues of national concern, and promotes excellence in the industry through information, education advocacy and recognition, including on issues of carbon and energy efficiency. BOMA Canada implements timely, responsible and consistent policy positions on issues of critical importance to the Canadian commercial real estate industry (including climate change-related legislation).

How have you influenced, or are you attempting to influence their position?

Through our Board membership with BOMA, we support initiatives to increase awareness of energy and climate change issues, and incentives to increase building energy and carbon efficiency investments.

Trade association

Canada Green Building Council (CaGBC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The CaGBC mission is to "Lead and accelerate the transformation to high-performing, healthy green buildings, homes and communities throughout Canada". This includes the adoption of green building practices that ultimately lead to reduced greenhouse gas emissions. The CaGBC is working with federal, provincial and municipal leaders and government officials to support the development and implementation of green building policies and sustainability practices across Canada and is working with CaGBC members and stakeholders to set and report against ambitious targets and action plans that will contribute to COP21 goals.

How have you influenced, or are you attempting to influence their position?

Through our membership with the CaGBC, we support initiatives to increase the adoption of green building practices, participation in green building certification systems, and incentives to increase energy and carbon efficiency investments.



Trade association

NAIOP (Commercial Real Estate Development Association)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

NAIOP is an organization for developers, owners, and investors of office, industrial, retail and mixed-use real estate. They provide strong advocacy, education and business opportunities on a range of issues. The organization is committed to providing its members with education and resources that encourage environmentally-responsible choices, as well as issuing policy statements that promote the utilization of sustainable building practices. Energy efficiency is a legislative priority for NAIOP and "NAIOP supports the advancement of higher levels of energy efficiency for commercial buildings through solutions that incorporate federal incentives, and realistic time frames for the financial recoupment of efficiency investments through utility savings."

How have you influenced, or are you attempting to influence their position?

Through our membership on the NAIOP, we support initiatives to increase awareness of energy and climate change issues as part of a broader mandate for real estate operations.

Trade association

Urban Land Institute (ULI)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

ULI is the oldest and largest network of cross-disciplinary real estate and land use experts in the world. The Urban Land Institute provides leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. One of the ULI's six commitments is to "Exploring issues: Of urbanization, conservation, regeneration, land use, capital formation, and sustainable development". ULI also maintains a Centre for Sustainability and Economic Performance that is "dedicated to creating healthy, resilient, and high performance communities around

the world. Through the work of its Greenprint and Urban Resilience programs, the Center provides leadership and support to land use professionals to invest in energy performance and portfolio resilience while reducing risks due to a changing climate.”

How have you influenced, or are you attempting to influence their position?

Through our membership in ULI, we support initiatives and research focused on responsible and sustainable land use planning and development, including issues related to building resilience, energy conservation and climate change adaptation/mitigation.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

We engage with various organizations to support climate change awareness and management, and encourage our staff and distribution associated to get involved in these causes. Recent examples include the International Institute for Sustainable Development (IISD), Pollution Probe’s Health Communities Campaign, and the Canadian Institute for Energy Training (CIET).

International Institute for Sustainable Development (IISD):

Method of Engagement – We are engaged with the IISD to promote research and knowledge of the risks associated with climate change.

Topic of Engagement - The topic of engagement is focused on understanding the risk of climate change and how we can anticipate the risk to increase community resilience.

Nature of Engagement – We are the catalyst funder for Prairie Climate Centre – a joint venture between the IISD and the University of Winnipeg. The Centre provides research, advice and policy development.

Actions Advocated – Through our engagement with the IISD we are supporting coordinated research, advice and policy development on climate change. For example, in 2018, we continued our support for the International Institute for Sustainable Development (IISD). As part of this partnership, we contributed to building the capacity of Manitobans to understand, prepare for, and build resilience to the impacts of climate change. This included support to the IISD to publish their “Combating Canada’s Rising Flood Costs” with the Insurance Bureau of Canada; hosting a national forum on “Advancing Natural Infrastructure in Canada” bringing leaders across the country to share innovative financing

solutions; working to launch a new center to support climate adaptation services on the Prairies, and promote strategies for building the climate resilience of cities.

Pollution Probe's Healthy Communities Campaign:

Method of Engagement – We engage with Pollution Probe at a group level through ongoing dialogue and as a major sponsor of the organization's national, year-round Healthy Communities Campaign.

Topic of Engagement - We engage with Pollution Probe on focused e-waste recycling, which helps to divert waste from landfills and ultimately reduce carbon emissions.

Nature of Engagement – As both the Presenting Sponsor and an active corporate Participant, we made an early commitment to register an e-waste recycling drive. This year, our employees have continued to drop off electronic waste TVs, monitors, microwaves, audio equipment and phones – in special recycling bins set up in our Winnipeg buildings.

Actions Advocated –Through our engagement with Pollution Probe, we are supporting healthier sustainable behaviour. By diverting e-waste from landfills, we are supporting initiatives to protect both the environment and the health and safety of people from substances of concern like mercury and lead within electronics.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

An annual review of our direct and indirect activities that influence public policy, including both financial and non-financial engagements with voluntary sector organizations, is conducted by our Community Relations Department to ensure relevancy, efficacy and consistency of approach and strategy.

Where relevant, this process includes a review of our direct and indirect activities that influence public policy, which are assessed for consistency with our overall climate change strategy. This includes our support of organizations addressing climate change strategies and sustainability, including finding practical solutions to address energy and carbon management issues at a policy, business and personal level. New

opportunities to support such endeavours are measured against annual strategic objectives.

In addition, the executive-led Corporate Social Responsibility (CSR) Committee provides perspective on the alignment of the community investment approach with the CSR strategy, which includes climate-related matters.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).


Publication

In mainstream reports

Status

Complete

Attach the document

 33729_gwl_public-accountability-statement_electronic_AODA.pdf

Page/Section reference

Information about the organization's response to climate change and GHG emissions performance is provided in the Public Accountability Statement (PAS) for GWL on pages 19-23.

Content elements

Strategy
Emissions figures
Emission targets
Other metrics

Comment

The Public Accountability Statement for GWL covers environmental (including, but not limited to GHG emissions figures, targets, and climate change strategy) as well as social aspects of the organization's activities.


Publication

In mainstream reports

Status

Complete

Attach the document

 lifeco-2018-annual-report-en.pdf

Page/Section reference

See pg. 15 for GHG emissions figures, strategy and other metrics (e.g., absolute energy reductions) in the Great-West Lifeco 2018 Annual Report.

Content elements

Strategy
Emissions figures
Other metrics

Comment

Other metrics include absolute energy reductions and strategy includes the statement on "strengthening sustainable practices".



C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Deputy Chief Financial Officer, Chief Accounting and Control Officer	Chief Financial Officer (CFO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors



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