



2018 RESPONSIBLE INVESTING REPORT
**LEADING CHANGE.
DRIVING VALUE.**

ABOUT THIS REPORT

OPTrust's mission is paying pensions today, preserving pensions for tomorrow. We keep our members' interests in mind, in everything we do and every investment decision we make. As a long-term investor, integrating environmental, social and governance (ESG) factors is critical to the way we invest.

Our 2018 Responsible Investing Report marks the fifth year of OPTrust's commitment to be transparent in our efforts. The report provides an overview of our achievements during the year and our long-term responsible investing strategy.

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With net assets of almost \$20 billion, OPTrust invests and manages one of Canada's largest pension funds and administers the OPSEU Pension Plan, a defined benefit plan with almost 95,000 members and retirees.

2018 HIGHLIGHTS



Hosted a global **Climate Change Symposium** bringing together 175 investors, climate scientists and thought leaders



Voted at **2,430** company meetings in **55** countries



Aligned our **Proxy Voting Guidelines** to our commitment to gender diversity



Endorsed the **Tobacco-Free Finance pledge**



8% of the total fund is invested in **renewables, green real estate** and **green bonds**



Became a supporter of the **Transition Pathway Initiative**



Endorsed the Statement of Investor Commitment to Support a **Just Transition on Climate Change**



Released the OPTrust **Climate Change Action Plan (CCAP)** in June



Engaged **456** companies on key ESG issues



Engaged securities regulators on **climate change** and **gender diversity**



Signed the 2018 **Global Investor Statement to Governments on Climate Change**



Supported **The Investor Agenda** and reported actions in four areas: investment, corporate engagement, investor disclosure and policy advocacy

MESSAGE FROM THE CHAIR AND VICE-CHAIR



Five years ago, OPTrust introduced its first Responsible Investing Report with a commitment to our members, investment partners and stakeholders to be transparent in the way we invest and consider long-term environmental, social and governance (ESG) factors. In the years since, OPTrust has been recognized for its excellence in reporting and taking bold steps to lead on climate change action with respect to its investments.

2018 was a year of remarkable success for OPTrust's responsible investing program in effecting change, advocating for greater disclosure and pursuing partnership opportunities aligned with OPTrust's mission to pay pensions today, preserve pensions for tomorrow.

The organization joined a group of leading global investors to promote gender diversity, develop infrastructure investment in emerging economies and improve financial reporting related to climate change. In response to its divestment from public market tobacco firms the previous year, OPTrust endorsed the Tobacco-Free Finance Pledge, among other advocacy priorities outlined in this report.

OPTrust continued to play a leadership role in advancing new thinking on climate change with the release of its Climate Change Action Plan (CCAP) and by hosting a Climate Change Symposium. With climate change being one of the most significant risks we face today, better understanding its effects on the Plan is a critical and long-term endeavour for the fund.

The members who rely on OPTrust for retirement security now and decades into the future can also be confident that their pension plan invests with their interests in mind.

We wish to express our thanks to everyone who supported the organization's responsible investing efforts over the past year. And look forward to OPTrust's continued engagement and action in 2019.



A handwritten signature in blue ink that reads "Michael Grimaldi".

Michael Grimaldi
Chair

A handwritten signature in blue ink that reads "Sharon Pel".

Sharon Pel
Vice-Chair

MESSAGE FROM THE CIO



The clear measure of success for a defined benefit pension plan is its funded status and the ability to deliver retirement security spanning many decades. The pension promise is increasingly faced with complex challenges — from the low-return environment and macroeconomic headwinds to the long-term impacts of climate change. Our role is to look far ahead at not only challenges, but also opportunities that could affect our ability to deliver our members' pensions.

OPTrust invests in a variety of asset classes around the world that create long-term value for the Plan. In doing so, we incorporate responsible investing (RI) considerations into the way our investment groups manage their growing portfolios taking into account global events and market forces.

2018 marked a year of notable highlights for OPTrust's RI program to drive meaningful change, reflected throughout this report. Our Responsible Investment Committee spent time to develop a clear and thoughtful RI philosophy that will direct our ESG engagement and investment decisions in the years to come.

Making tangible progress on climate change was a considerable focus for OPTrust this year. As a long-term investor, we must consider the financial implications in the best interests of our members. We are proud of the achievements we have made to date to better understand and to measure the risks and opportunities that climate change presents.

During 2018, we released OPTrust's Climate Change Action Plan (CCAP) — defining a clear path forward and aligned with our risk conscious approach to pension management and the Task Force on Climate-related Financial Disclosures (TCFD). The eight-point action plan outlined in our CCAP demonstrates our strategy to build climate

change awareness into OPTrust's investment approach, including increased disclosure of climate change-related information expected from companies across the portfolio to achieve our strategy.

We recognize the transition to a lower carbon economy is becoming increasingly disruptive and as long-term investors we must be prepared. Our partnership with Ortec Finance is just one way in which we are leveraging innovation to invest climate aware. In integrating climate risk into our portfolio construction framework, we are exploring and developing various climate change scenarios and analyzing the impact on the portfolio and the funded status of the Plan. The project is one of the first of its kind globally to integrate physical and transition risks into real-world economic scenarios in a portfolio construction environment.

We remain committed to investing in what matters for our members.

A handwritten signature in black ink, appearing to read 'James C. Davis'. The signature is stylized with a large, sweeping initial 'J' and a horizontal line extending to the right.

James C. Davis
Chief Investment Officer

RESPONSIBLE INVESTING APPROACH



GOVERNANCE



ESG
INTEGRATION



ACTIVE
OWNERSHIP



STAKEHOLDER
ENGAGEMENT

RESPONSIBLE INVESTING STRATEGY

OPTrust's responsible investing (RI) strategy supports our mission to pay pensions today and preserve pensions for tomorrow. This conviction appears in our overarching investment policy which states that we believe environmental, social and governance (ESG) factors can affect investment risk and return as well as our reputation.

Our Member-Driven Investing (MDI) strategy is similarly guided by a set of investment beliefs that include integrating material ESG factors in a manner that supports both our mission to deliver retirement security and our fiduciary duty to members.

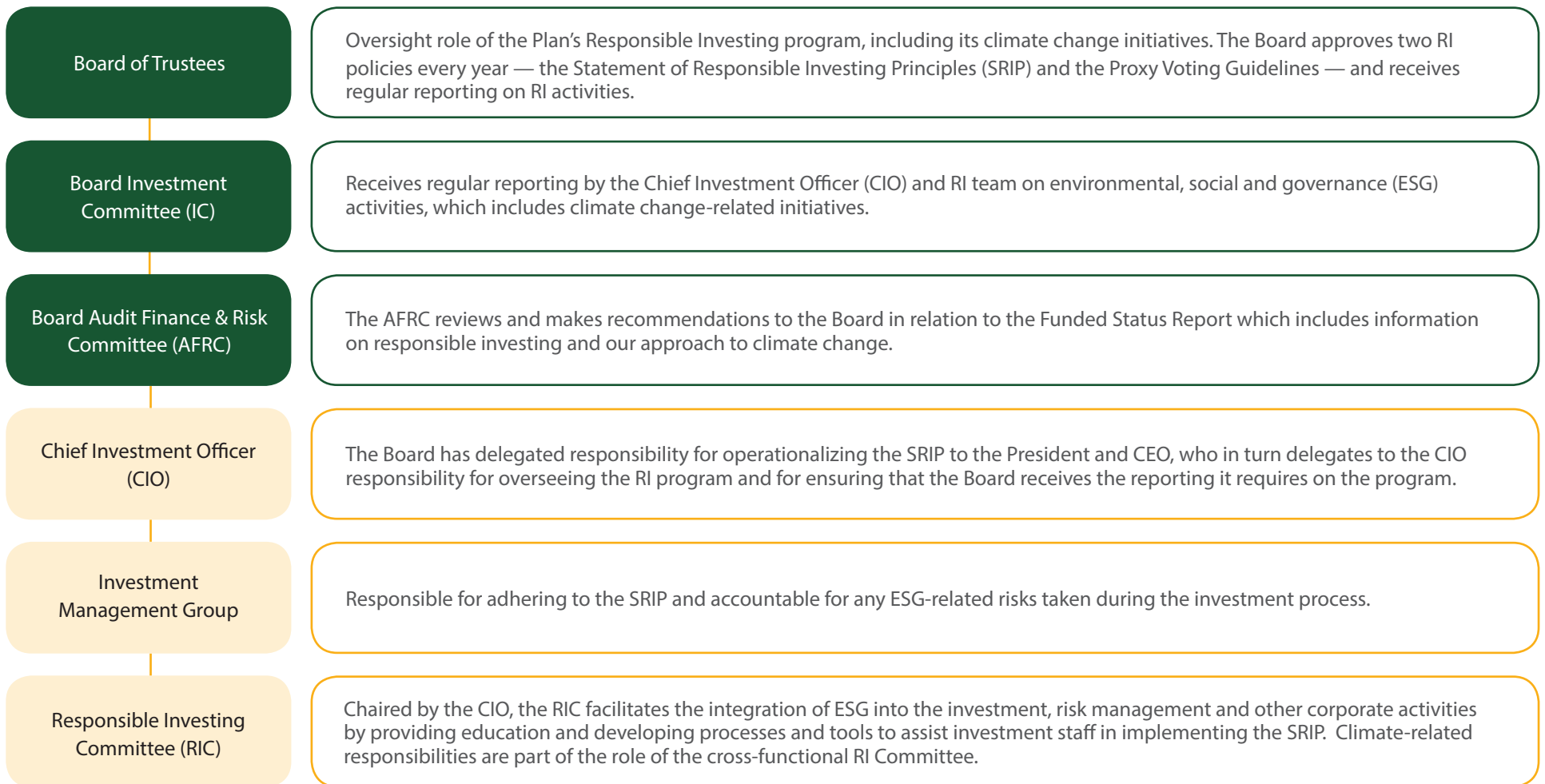
The RI program is implemented through all phases of the investment life cycle and our active ownership practices. The identification, assessment and management of ESG factors allow us to better assess risks with each investment decision. Our commitment to active ownership encompasses monitoring, voting and engaging investee companies, regulators and industry organizations to ensure the long-term sustainability of the Plan.

In 2018, we spent time defining our RI mandate as well as articulating our beliefs, highlighted here:

- **ESG factors can impact plan sustainability and stability.** We recognize that ESG factors can impact investment risk and return over varying time horizons. As market forces react, we should be agile and adapt our mandates to build risk-resilient portfolios. Proactive management of ESG factors is required to mitigate risk and enhance value to ensure plan sustainability and stability for our members.
- **Our voice has influence.** As a large, global investor we have the ability to effect change in the companies in which we invest. Engagement is a cornerstone of our approach to responsible investing and we use our position regularly to improve long-term performance. Although we favour engagement over divestment, we have found in certain situations that divestment may be pursued.
- **We are active stewards of our members' capital.** Our RI program reflects our position that our fiduciary duty includes a duty to be active owners where it is in the best interests of the Plan's members to do so. Throughout the investment process we seek to use the levers we have available to us to promote the sustainability of the companies in which we invest for the benefit of our members. These activities include proxy voting, engagement and advocacy.
- **Working collaboratively amplifies our voice.** Our engagement efforts extend beyond our investments and include securities regulators, stock exchanges and public policy makers. We take advocacy positions to encourage sustainable and transparent financial markets in Canada and around the world, and we work together with peers, business partners and other external organizations to strengthen our influence.
- **We can measure progress by measuring impact.** The increasingly rapid pace of change, exponential developments in technology and the potential for disruption are foundational to how we invest and how we approach stewardship. We continue to look for innovative ways to enhance our RI processes as better data becomes available and as approaches mature so that we can better understand our impact.

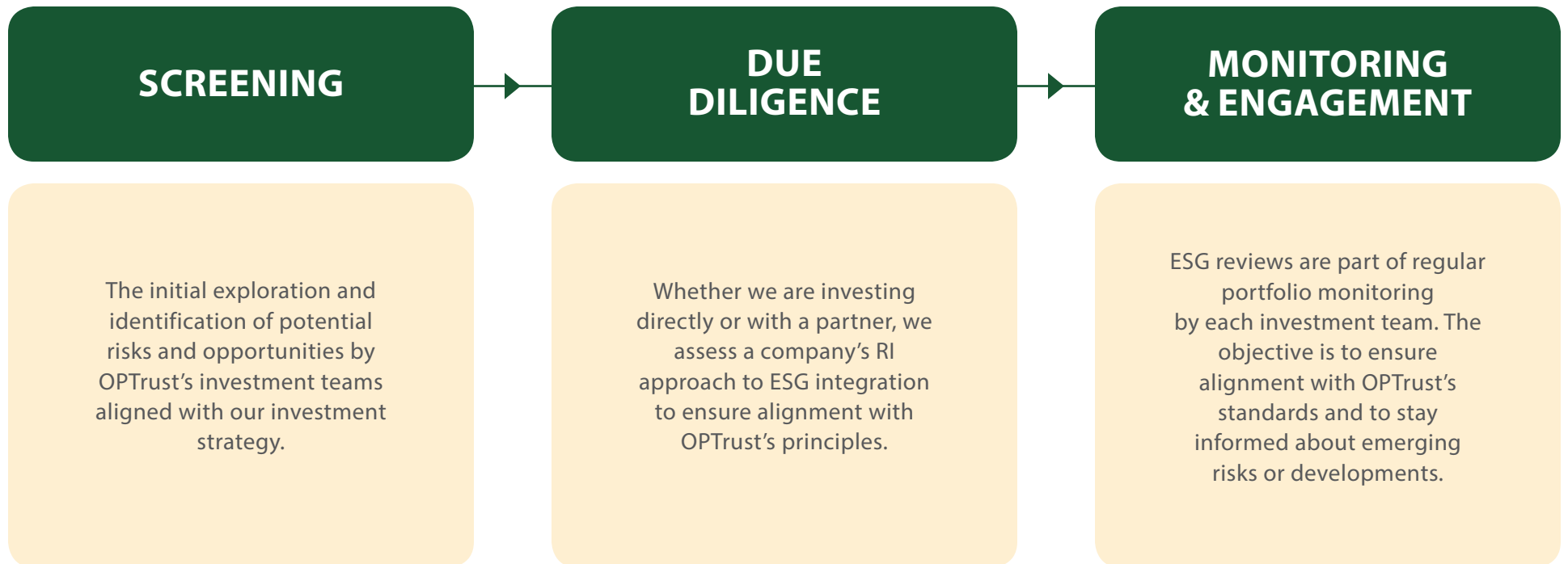
GOVERNANCE

We believe good governance is good business and contributes to long-term value creation for the Plan and the almost 95,000 members who count on us for retirement security. Our RI governance framework reflects this commitment.



ESG INTEGRATION

Our investment groups seek to identify, assess and manage ESG risks and opportunities across the investment life cycle in a manner that supports both our mission and mandate, and are held accountable for doing so.



SUSTAINABLE PRIVATE EQUITY: SUMMA EQUITY

During 2018, OPTrust made a commitment to Summa Equity, a private equity firm in the Nordic market focused on capturing the investment opportunity provided by sustainable thematic megatrends. Summa's thematic investment strategy is focused on companies in various industries including resource efficiency, changing demographics and tech-enabled businesses. Although Summa takes a thematic approach to megatrends in their investment strategy, their core themes overlap with many of the industries OPTrust has invested in historically. Summa Equity is among the first private equity managers to commit to the UN Sustainable Development Goals and to use them as a framework for responsible investment.



"In an increasingly interdependent and rapidly changing world, OPTrust is focused on building relationships with partners who can generate attractive risk-adjusted returns, are willing to collaborate on best practices and opportunities with a like-minded approach to ESG risks."

Sandra Bosela
Co-Group Head, Managing Director and
Global Head of Private Equity
Private Markets Group



SUSTAINABLE INITIATIVES IN REAL ESTATE: 101 MCNABB STREET

In December 2011, OPTrust acquired 101 McNabb Street — a 315,000 square foot office complex located in Markham, Ontario built in 1983. Through active management and significant investments, it has been repositioned and leased to large multinational corporations. In 2018, the property's sustainable initiatives achieved LEED Gold Certification and Building Owners and Managers Association's BEST Sustainable Building Platinum Certification. In recognition of promoting sustainable commuting (e.g. carpooling, biking and public transit), the property was awarded a Smart Commute Silver designation by Metrolinx, a regional transportation agency.



"Real estate investing plays an important role to create long-term sustainability and predictable income for the Plan. When the properties we invest in prioritize sustainability in their operations it creates value for tenants and our members, too."

Jim Wong
Portfolio Manager
Real Estate Group
Responsible Investing Committee Member

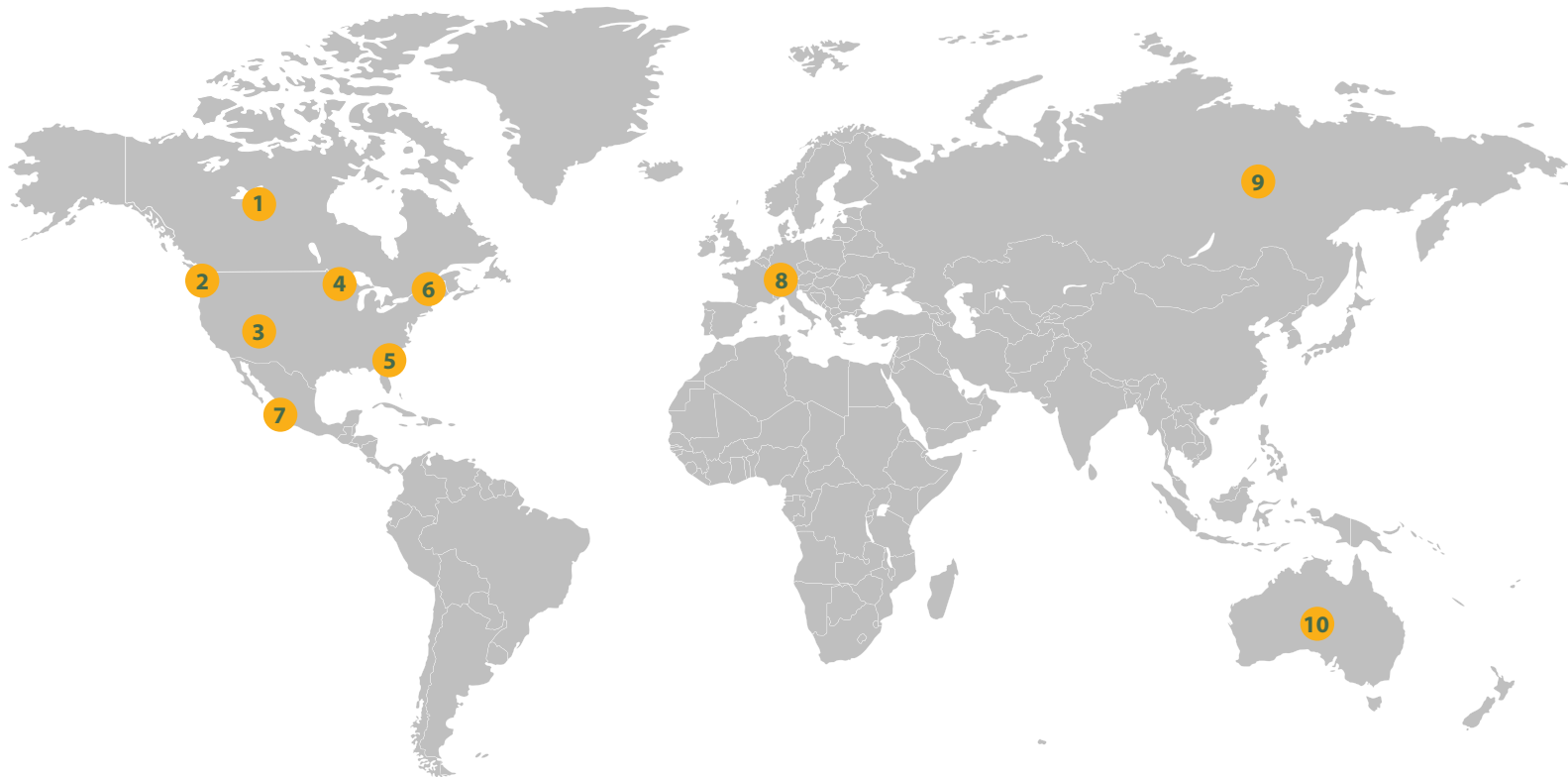


ACTIVE OWNERSHIP

As a responsible steward of our member's capital, OPTrust is committed to fulfilling our responsibilities as fiduciaries. OPTrust's RI beliefs articulate our commitment to be active owners where we can enhance long-term sustainable value creation. We fulfill this responsibility through corporate engagement, proxy voting and advocacy.

ENGAGEMENT

In 2018, we engaged 456 companies on ESG issues with our engagement partner. The following examples highlight the actions that some of our investee companies took to better manage ESG issues around the globe.



- 1 Human Rights – **Barrick Gold** published a dedicated human rights report for the first time.
- 2 Labour Standards – **Samsonite** introduced a supplier code of conduct covering health and safety, and human rights standards.
- 3 Business Conduct – **Facebook** joined the Cybersecurity Tech Accord to work with others to improve collaboration on cyber-attack threat detection and mitigation.
- 4 Human Rights – **Freeport-McMoRan** updated its human rights policy to reflect an explicit, full commitment to the UN Guiding Principles.
- 5 Environmental Standards – **Mondelez** committed to making all packaging recyclable by 2025.
- 6 Climate Change – Electric utility company **AES** published a market leading Climate Scenario Report and set a new emissions reduction target of 70% by 2030.
- 7 Corporate Governance – **Walmart de México's (WALMEX)** board made the decision to submit directors for re-election individually, rather than as a single slate, enabling shareholders to hold directors individually accountable for their performance.
- 8 Corporate Governance – **Novartis** improved the executive pay structure and level of disclosure. We have urged the company to improve disclosure of performance metrics and remove full vesting of awards on termination for several years. We are pleased that the company has implemented or committed to implementing positive changes for 2019 which will largely address our concerns.
- 9 Climate Change – **PetroChina** announced that, by 2030, domestic natural gas production will account for at least 55% of its total domestic oil-equivalent output as part of its low-carbon development plan. We encouraged the company to invest in developing its natural gas business to future-proof its business against climate change-related risks and, in the process, contribute to China's transition to a lower carbon economy.
- 10 Environmental Standards – **BHP Group** published a dedicated water report, the first of its kind in the extractives industry, that includes information regarding the company's exposure to water-related risks and opportunities, water performance and targets, and governance frameworks in place.

SUSTAINABLE DEVELOPMENT GOALS



In recent years, we have communicated and classified our corporate engagements in general ESG categories. Increasingly, investors, companies and other stakeholders are reporting in alignment with the Sustainable Development Goals (SDG) categories. OPTrust has begun to identify where our corporate engagement efforts directly align with the SDGs to address broad challenges, including climate action, decent work and gender equality.

This illustration shows a breakdown of how our 2018 corporate engagements with more than 450 companies align with the SDGs.



DEFINING THE SUSTAINABLE DEVELOPMENT GOALS



The United Nations Sustainable Development Goals (SDGs) are a collection of 17 ambitious goals set by the United Nations General Assembly in 2015 and adopted by Canada and 192 other UN member states to define a shared blueprint for peace and prosperity for people and the planet, now and into the future. The SDGs target 169 outcomes in the realms of social and economic development, better environmental and healthier communities and include issues like poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanization, environment and social justice. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth — all while tackling climate change and working to preserve our oceans and forests.

COLLABORATIVE ENGAGEMENTS

In addition to advocating for change with our investee companies, we also leverage engagement opportunities with like-minded partners.



- The Workforce Disclosure Initiative (WDI) brings together institutional investors to request public companies to improve the quantity and quality of information about workforce composition, workforce development and worker engagement in their operations and supply chains
- 120+ investors with USD \$13.5 trillion in assets under management
- 90 disclosing companies, 11 sectors and 16 countries.



- Climate Action 100+ is an investor initiative focused on engaging the world's largest corporate greenhouse gas emitters to encourage companies to curb emissions, strengthen climate-related financial disclosures and improve governance on climate change
- 310+ investors with more than USD \$32 trillion in assets under management
- 161 focus companies.



- By exploring how stock exchanges can work together with investors, regulators, and companies, the Sustainable Stock Exchanges Initiative hopes to encourage sustainable investment, while also enhancing corporate transparency and performance with respect to ESG issues
- 80+ partner exchanges.



- As members of the 30% Club Canada's Investor Group, we are part of an engagement targeting 19 Canadian companies to encourage the adoption and disclosure of diversity policies and processes to identify female board nominees and candidates for executive management positions.

PROXY VOTING

As a long-term investor, we believe that good governance practices support stronger long-term performance and enhance shareholder value. We view voting OPTrust's shares on behalf of our members as an important part of our rights and duties as shareholders. In 2018 we voted at 2,430 company meetings in 55 countries based on guidelines approved by the Board of Trustees.

During the 2018 proxy season, we adjusted OPTrust's Proxy Voting Guidelines to reflect the organization's commitment to gender diversity and climate change and in alignment with the 30% Club Canada and the Task Force on Climate-related Financial Disclosures (TCFD).

- **Climate Change**
We supported 20 shareholder proposals related to climate change in four countries on topics such as assessment of climate change impacts, adoption of greenhouse gas emissions goals, and governance of climate-related issues and disclosure.
- **Gender Diversity**
OPTrust is a member of the 30% Club Canada and signatory to the 30% Club Investor Statement of Intent with a mandate to strive for 30% of board seats and executive management positions to be held by women by 2022. Our Proxy Voting Guidelines have been aligned with these commitments and reflect our support to boards with more than 30% women or with policies outlining the companies' plans to achieve that target in a reasonable period.

ADVOCACY

OPTrust is involved in a wide variety of advocacy efforts. We believe successful advocacy prompts decision makers to find ways for more people to enjoy secure retirement income and keep the Plan sustainable. We are proud to take positions that encourage sustainable and transparent financial markets in Canada and around the world, and we work together with peers, business partners and other external organizations to strengthen our influence and impact.

2018 HIGHLIGHTS

- Recognizing that strategies to tackle climate change need to better incorporate the social dimension, we endorsed the **Statement of Investor Commitment to Support a Just Transition on Climate Change**
- Became a supporter of the **Transition Pathway Initiative**. Led by asset owners and supported by asset managers it aims to assess companies' preparedness for the transition to a low-carbon economy
- For a third year, OPTrust signed the **2018 Global Investor Statement to Governments on Climate Change** reiterating our full support for the Paris Agreement and strongly urging all governments to implement the actions that are needed to achieve its goals
- Supported **The Investor Agenda**, an initiative of global investors to accelerate and scale up the actions that are critical to tackling climate change and achieving the goals of the Paris Agreement. OPTrust reported actions in four areas: investment, corporate engagement, investor disclosure and policy advocacy
- In line with our decision to divest from the tobacco manufacturing industry, we endorsed the **Tobacco-Free Finance Pledge**
- Engaged securities regulators and policy makers to advocate for the consideration of **climate change** and **gender diversity** in policies and guidelines.

PARTNER INITIATIVES

As investors, we cannot navigate today's challenges alone, which is why collective thought and idea sharing helps to ensure long-term sustainability. Working collaboratively strengthens our voice and influence on ESG matters. We regularly join initiatives with peers, business partners and other external organizations to advocate for change.



Member



Member



Research Partner

OPTrust partnered with our global pension peers in the International Centre for Pension Management's (ICPM) Climate Change Working Group to develop guidance for institutional investors on understanding the risk.



Member

OPTrust joined a group of leading global investors to promote gender diversity, develop sustainable infrastructure investment in emerging economies and improve financial reporting related to climate change.



Member

Katharine Preston, Director, Responsible Investing at OPTrust, serves on the PIAC Board of Directors.



Signatory

James Davis, Chief Investment Officer at OPTrust, serves on the PRI's Asset Owner Advisory Committee.



Member



Signatory



Member



Affiliate



Member

COMMITMENT TO TRANSPARENCY

We encourage full transparency and disclosure by the companies we invest in, and our members expect the same from OPTrust. In 2014, we introduced this report to highlight our RI strategy and the material factors we consider in making sound investment decisions. As we mark the fifth anniversary of our RI Report, we reiterate our commitment to transparency and to keeping our stakeholders informed about our journey.



2014



2015



2016



2017





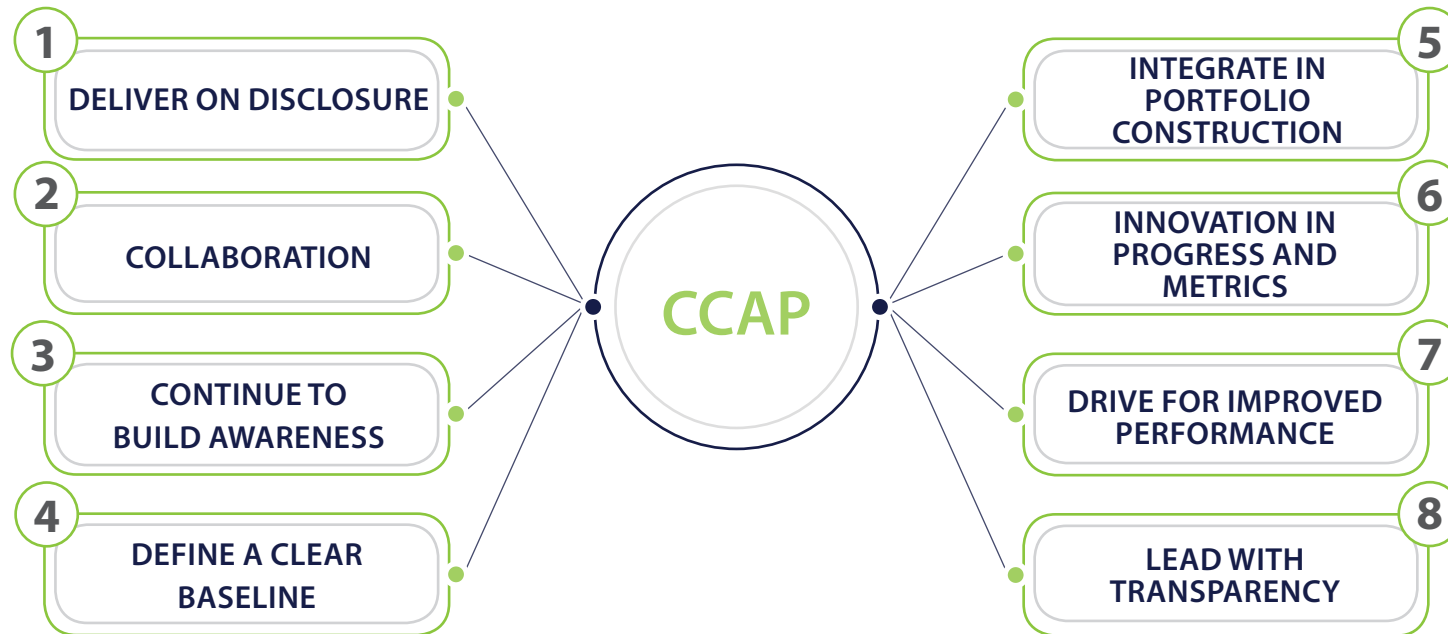
IGNITING CLIMATE ACTION
CLIMATE CHANGE ACTION PLAN
2019 UPDATE

IGNITING CLIMATE ACTION

OPTrust has articulated an organization-wide view that climate change poses both risks and opportunities to the Plan, which is why we took innovative measures to better develop our understanding of climate risk. OPTrust considers the integration of climate-related risks into our investment strategy as not only necessary but in the best interests of our Plan members, both today and over the long term. We believe investors have a responsibility to understand the impacts of climate change, and we are engaged in finding solutions to manage the challenges we face.

We made the decision to publicly endorse the recommendations of the Task Force on Climate-related Financial Disclosure (TCFD) as the preferred standard for disclosure. As part of our continued commitment to transparency, we are detailing our actions in line with the recommendations of the TCFD for the second year [see page 31].

Ensuring that OPTrust's portfolio remains resilient and agile in meeting the challenges of climate change risk is an integral part of our investment mandate in defining a long-term strategy for the fund. 2018 marked the introduction of our Climate Change Action Plan (CCAP) which sets out eight broad actions that are aligned with our risk conscious approach to pension management.



1

DELIVER ON DISCLOSURE

We will continue to drive for better disclosure of the information investors need to price carbon risk. We will do this in collaboration with our peers and portfolio companies and will continue to champion the TCFD as the 'gold standard' disclosure framework.

OPTrust publicly endorsed the TCFD's recommendations in 2017 with the release of our white paper *Climate Change: Delivering on Disclosure* and a commitment to report on our progress every year. The first report was featured in our 2017 Funded Status Report.

OPTrust's CCAP implementation activities are rooted in the TCFD framework. During the year, we engaged with external managers, investee companies and our investment teams to better understand their approach to climate change and commitment to the TCFD recommendations.

OPTrust is an active participant of the Investor Leadership Network (ILN) Climate Action Committee. The goal of the ILN committee is to publish and adopt practical, concrete TCFD guidance that will stimulate meaningful implementation of climate disclosures by investors and businesses.

In 2018, we worked with OPTrust's engagement partner to discuss their role as leading investor in the execution of direct engagements related to climate change as part of Climate Action 100+.

2

COLLABORATION

Climate change is a complex issue that requires collaboration to find solutions. OPTrust will work with peers, regulators and with companies in which we are invested to achieve meaningful change.

We look for like-minded partners to share knowledge and collaborate across a broad spectrum of investment disciplines to help increase our internal capacity and capabilities.

During the year, we hosted a peer forum with Canada's top public pension funds and asset management organizations to share insights on ESG issues including climate change.

Our continued involvement with organizations such as the Asia Investor Group on Climate Change (AIGCC), CDP, CERES and ILN focused on climate change action provides meaningful interactions for OPTrust to amplify our voice.

We constantly look to identify best practices in climate risk assessment and management across investment managers, general partners and other external partners. We identify opportunities to facilitate cross team conversations around the challenges and successes of implementing the CCAP.

3

CONTINUE TO BUILD AWARENESS

As we gain a better understanding of climate change, the information and tools to evaluate its impacts are becoming increasingly sophisticated and accessible to the investment community.

We continue to create awareness and alignment among our investment professionals and investee companies through education.

We held education sessions to highlight our CCAP focus areas, and regularly reported on our actions to staff and our members.

We leverage our roles in organizations where we have a deeper relationship to advocate for better disclosure in line with the TCFD and the adoption of its recommendations with business partners.

OPTrust is leading conversations to enhance climate change-related disclosure, reduce uncertainty in the investing environment and ignite climate action. In November, we held a Climate Change Symposium, which brought together over 175 prominent investors, leading climate scientists and thought leaders from around the globe. Our goal is to pivot from conversations about climate change to action so that meaningful progress can be made.

4

DEFINE A CLEAR BASELINE

We will develop a 'current state' assessment of climate-related risks to the total fund through measuring our exposure to industries and geographies that are at higher risk for climate change impacts.

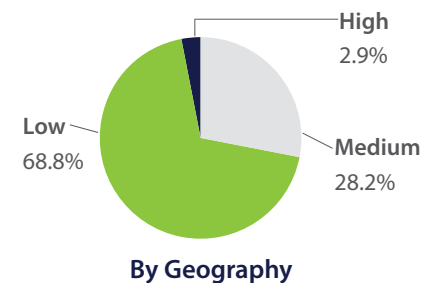
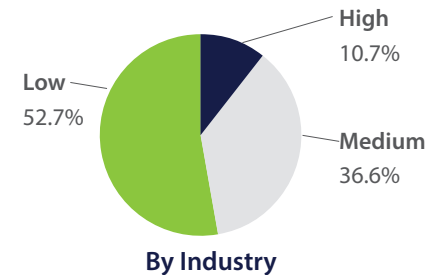
Despite years of debate about the risks associated with climate change, a common approach or perfect tool has yet to be realized to model and mitigate its impact on investment portfolios. Nevertheless, we are focused on determining an approach that works for OPTrust. Our process began by determining the fund's current exposure to climate change-related risk and opportunities. We determined this 'baseline' from two perspectives – top-down and bottom-up to evaluate our exposure to the transition to a low carbon economy.

Recognizing the diversity of the fund's different asset classes, no one baseline measurement is sufficient. Our investment teams – real estate, private equity, infrastructure, capital markets and portfolio construction – looked at different approaches to assessing and managing the risks and ensuring opportunities are captured.

TOTAL FUND

OPTrust reviewed different methodologies to assess the exposure to climate change-related risks of the total portfolio by geography and industry. We based our internal assessment on the *MSCI ESG Industry Risk Intensity Scores* and *HSBC Climate Vulnerability by Country* methodologies. (For details, please refer to the methodologies in the Appendix).

The results of this assessment proved to be valuable in providing a clear baseline for our total fund exposure. As presented in the charts below, OPTrust has the majority of its holdings in industries and countries with low exposure to climate-related risks.



ASSET LEVEL APPROACH

Our bottom-up approach focuses on identifying climate risk at the asset level. Each investment team scoped out an appropriate process for their portfolio, or subset of assets.

Real Estate

External managers for applicable Canadian direct office buildings were surveyed on their approaches to climate change and data was collected on key metrics. The Canadian office portfolio was reviewed due to the availability of data and is a property type that is an intense user of energy, water and producer of waste. The data from the survey was compared against the reference values for water and energy use intensity provided by the 2018 BOMA BEST National Green Building Report for BOMA certified office buildings. BOMA BEST is Canada's largest environmental assessment and certification program for existing buildings. It recognizes excellence in energy and environmental management and performance in commercial real estate.

- OPTrust's office buildings' average energy and water use intensity compared well against the 597 office buildings that achieved BOMA certification in 2016.
- Approximately 87% of the office buildings surveyed, by area, has achieved LEED or BOMA certification.
- Some building managers are starting to incorporate green leases, defined as those that include provisions that encourage the landlord, occupier or both to carry out their roles in a sustainable way including setting targets for energy, water and waste management.
- 67% of the managers reported an engagement program with tenants that included sustainability specific issues.

SOLAR PANELS POWERING A RETAIL PROJECT IN HAWAII

OPTrust and its partner, DeBartolo, committed to the installation of a 311 KW system encompassing 915 roof-top solar panels at its Ka Makana Ali'i retail project in Hawaii. The solar project was completed and began operating in early 2018.



Infrastructure

Infrastructure investments add diversification and act as a partial inflation hedge for the total fund. They also provide cash flow and the potential for return enhancement through long-term capital growth. The long life and physical nature of infrastructure assets make them potentially more susceptible to the long-term effects of climate change. In 2018, we conducted a survey of our direct infrastructure investee companies to gain insights into climate change risks and opportunities, and how they are managed at the company and board of director level.

In conducting this survey, we engaged with the management teams representing 100% of our direct infrastructure investee companies. It is important to note that these investments vary significantly, by industry, geography, management involvement and investment size and structure.

From a governance perspective, the survey indicated a high level of climate change awareness at the board and management level. Senior decision-makers are taking responsibility for climate change-related risks and opportunities, and often appointing an individual or team to monitor or implement actions. Although awareness is high, there remains room to improve from a policy implementation perspective and a consistent application of best practices.

From a risk perspective, almost all the investee companies noted some form of climate change risk, with policy or legal and technology transition risks being the most dominant. The investee companies are also assessing or pursuing a number of climate change-related opportunities, including improved resource efficiency and shifting energy sources to lower carbon intensity alternatives.

Public Markets

Our assessment in public markets focused on external managed portfolios. We took two complementary approaches, first to evaluate the managers' approach to climate-related risk and then to the individual portfolios.

Manager Evaluation

OPTrust evaluated the fund's managers on their approach to climate risk, including mandates in equity, multi-asset, hedge funds and credit. We developed questionnaires to determine the overall management approach to climate risk.

By the numbers (as % of assets under management)

- 86% is managed by external managers with processes in place to identify the risks and opportunities associated with climate change
- 81% is managed by external managers with metrics to measure climate-related risks and opportunities

- 42% is managed by external managers that have climate change specific policies
- 45% is managed by external managers that include climate change as a part of their ESG policies

External managers running long-only mandates in more traditional asset classes are generally further ahead in the implementation of climate change-related factors because of the relative ease of incorporating them in that context. Conversely, managers running long/short portfolios or operating in more specialized markets face challenges in integrating climate risk factors due to the difficulty in applying them to certain asset classes or the complexity and general dynamic nature — turnover in portfolio — of such strategies.

Portfolio Evaluation

The scope for the asset level assessment included long-only and multi-asset managers where ESG data was available. Current tools and approaches of measuring climate-related risk are in an embryonic stage. We continue to work with external managers and service providers in exploring innovative ways to evaluate our public market exposure to climate risk.

Our view is that carbon footprinting provides an incomplete picture of carbon risk in an investment portfolio and to company value. Therefore, our objective is to develop a relevant and scalable methodology that is adaptable to the universe of public market strategies.

Leveraging Opportunity

In evaluating our exposure to climate change, we also looked at areas and sectors that may directly benefit from the transition to a low carbon economy. Investments in renewables, green real estate and green bonds represent 8% of the total fund.

Green Buildings. Building certifications recognize the incorporation of sustainability criteria in the design or operation of real estate assets. A majority of OPTrust's direct Canadian real estate portfolio achieved LEED or BOMA certification.

Renewables. The Private Markets Group has been an active investor in the development and construction of renewable power projects globally. The team has committed \$825 million to the sector across North America, Europe and Developed Asia. Renewable power investments account for approximately 30% of our total infrastructure portfolio. The portfolio spans multiple renewable power technologies across dozens of individual power projects.

Green Bonds. We have now invested \$181 million in Ontario and Quebec Green Bonds. These issuances are usually oversubscribed, and issuers often review the buyers' approach to climate change to determine the allocation among interested investors.

Our commitment and transparency on our approach to climate change has contributed to OPTrust receiving a disproportionate allocation for our size.

5 INTEGRATE IN PORTFOLIO CONSTRUCTION

We will introduce an approach that considers climate risk impact on the total fund and in our portfolio construction framework.

As part of our top-down approach, we explored the impact of climate change from a total fund perspective. We have begun to explore and develop climate change scenarios integrated with our risk-based portfolio construction framework and analyze the impact on the total fund portfolio.

Our partnership with Ortec Finance explored a new approach to map potential climate impacts on future risk and return. The asset liability management allocation project is one of the first efforts of its kind to integrate physical and transition risks associated with climate change into standard forward-looking financial scenario sets that drive strategic investment decision-making.

In working with Ortec Finance, we analyzed the impact of climate change risk on the entire portfolio. The innovative pilot project involved three different climate change scenarios, over 1,000 simulations and looked at the effects of climate change on three macro variables to draw inferences on strategic asset allocation: GDP, interest rates and inflation. The research showed that it is crucial for investors to consider the macro-economic and systemic implications of different global warming pathways.

Ortec's full report on the pilot project is available at optrust.com.

NEW INSIGHTS ON ASSET ALLOCATION

In integrating climate risk into our portfolio construction framework, we continue to explore and develop various climate change scenarios and analyze the impact on the entire portfolio. Working together with Ortec Finance, OPTrust launched a pilot project to identify ways to keep the fund resilient and agile in meeting the challenges presented by climate change.



Matthew Zhao
Portfolio Manager,
Portfolio Construction Group
Responsible Investment Committee
Member

Q: How does the Ortec study help OPTrust to better measure risks in portfolio construction?

A: In the past three years, we've transformed our portfolio construction process to put an emphasis on risk management, with the goal of Plan sustainability and stability. We've been using a risk-factor framework to guide us. As climate change is a serious risk for investors, we need to be prudent in understanding it if we are going to protect our members' interests. This project deepens our understanding of climate risk and has the potential to enrich our existing risk-factor framework, so we can more holistically consider different sources of risk.

Q: The study looks at both transition and physical risks. Could you give an example of what those risks might be?

A: Transition risks are financial risks associated with the transition towards a low-carbon economy, as laid out in the Paris Agreement. An example is the required reduction in greenhouse gas emissions, which implies a "move-away" from fossil fuel energy and related physical assets. Portfolios with investments in these assets may suffer as a consequence.

Physical risks are financial risks associated with climate change, including things like extreme weather events, and slow-onset physical climate impacts – like sea level rise, increasing temperatures, ocean acidification, glacial retreat, salinization, land and forest degradation, loss of biodiversity and desertification.

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INNOVATION IN PROGRESS AND METRICS

We will focus on achieving greater disclosure within our portfolio companies and incorporate climate change-related metrics in the evaluation of new investments on an asset class or by asset basis.

The precise evaluation of climate change-related risks for a broad, diversified investor is still at an early stage. Climate risk is disrupting the traditional portfolio management approaches and requires being open to exploring innovative new approaches and tools to measure risk.

We are also aware of the opportunities that the transition to a low carbon economy represents for certain industries and geographies. We are working with partners to identify attractive deals that might be related to clean energy and other climate change solutions.

We invited thought leaders and partner companies such as Climate AI, Summa Equity, Schroders and Ortec Finance to talk about the power of innovation to measure risk in facing the challenges of climate change at OPTrust's symposium held in November.

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DRIVE FOR IMPROVED PERFORMANCE

We will use our influence across market participants — from companies to regulators — to drive for improved performance on ESG issues, advocate for certainty in the regulatory environment and promote the implementation of the TCFD's recommendations.

During the year, we revised our Proxy Voting Guidelines to reflect our support of companies in developing climate-competent boards to oversee climate change-related risks and to encourage the adoption of the TCFD framework.

Our engagement partner engaged 101 companies on climate-related issues like emissions management and adoption of the TCFD recommendations.

We are proud of our advocacy efforts that saw OPTrust join investors in a call for a just transition on climate change, work with our partner G7 investors in advancing global development initiatives and contribute to consultations with the Ontario Securities Commission.

Our senior leaders were invited to speak on OPTrust's climate change action, investment strategy and approach to responsible investment at numerous conferences and events around the globe, including New York Climate Week.

In addition to considering climate change implications to our investment portfolio, we understand the importance of environmental sustainability within our own operations. OPTrust's continued commitment to reducing the impact of climate change is reflected in measurable activities across the organization.



In OPTrust's corporate travel carbon offsetting program, a total of 600 tonnes of carbon dioxide equivalents

(CO₂) were offset via Carbonzero's Niagara Escarpment Forest Carbon Project. This is equivalent to the greenhouse gas emissions that would be generated from the annual electricity use of approximately 1,570 Ontario homes.

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LEAD WITH TRANSPARENCY

The need for better disclosure of the information investors need to price carbon risk has never been more important. We are committed to reporting our progress against the TCFD framework and to requesting the same disclosure in the companies in which we invest.

2018 marks OPTrust's second year of TCFD-aligned public reporting.

During the year, we released several reports that highlight our partnerships and actions on climate change. From research and analysis with Ortec Finance, Mercer and EY to our CCAP, we continue to leverage opportunities to share our progress on climate change action. We have a dedicated climate change section on our website at optrust.com where these materials can be downloaded.

ACT COMMODITIES



The transition to a lower carbon economy will likely be increasingly disruptive, which will create opportunities for those who can navigate this complex and often fragmented environment. In September 2018, OPTrust invested in ACT Commodities alongside UK-based private equity firm Three Hills Capital Partners.

ACT Commodities is a world-leading market maker of environmental commodities related to incentive schemes focused on reducing the use of fossil fuels and emission of greenhouse gases. The Netherlands-based company has been a global trading house since inception, identifying for itself the role of market maker in both regulated and voluntary environmental energy products. As a result, it has helped catalyse the emergence of a market in environmental energy goods bringing speed, dependability, volume and ever keener pricing to the industries that depend upon such products and certificates.

OPTrust's investment in ACT Commodities builds on the organization's extensive investment experience in renewable power and green real estate, coupled with our focus on responsible investing, providing a tailor-made capital solution in the form of a private equity investment to support the company's five-year growth plan. The market underlying environmental commodities is expected to grow meaningfully and become increasingly complex as more jurisdictions support the long-term shift towards a low carbon economy. This investment is representative of the types of transactions OPTrust will opportunistically pursue to capitalize on the transition, leveraging our expertise, and fulfilling our mandate to our members.



"With countries globally committed to reducing carbon emissions and transitioning towards a clean energy future, we believe that leveraging our investment expertise and partnering with innovative companies like ACT Commodities will help to deliver long-term, climate-friendly solutions and generate attractive risk-adjusted returns for our members."

Morgan McCormick
Managing Director
Private Markets Group

TCFD REFERENCE GUIDE

OPTrust supports the recommendations of the TCFD as the global standard to provide investors with the information required to assess the financial impact of climate change. This report reflects our commitment to transparency and our efforts to implement the TCFD’s framework in each of its four thematic areas with associated references below.

GOVERNANCE		
<p>Disclose the organization’s governance around climate-related risks and opportunities.</p>	<p>a. Describe the Board’s oversight of climate-related risks and opportunities.</p>	<ul style="list-style-type: none"> • Statement of Responsible Investing Principles (page 4) • Statement of Investment Policies and Procedures (page 1) • Investment Beliefs • 2018 Funded Status Report Message from the Chair and Vice-Chair (page 12) • 2018 Responsible Investing Report Message from the Chair and Vice-Chair (page 5) Message from the CIO (page 6) RI Beliefs (page 8) RI and Climate Change Governance (page 9) • Climate Change Beliefs – Climate Change Action Plan (page 8)
	<p>b. Describe management’s role in assessing and managing climate-related risks and opportunities</p>	

STRATEGY

<p>Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's business, strategy and financial planning where such information is material.</p>	<p>a. Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.</p>	<ul style="list-style-type: none"> • 2018 Responsible Investing Report Define a clear baseline (page 24-26) Integrate in portfolio construction (page 27) • 2018 Funded Status Report Climate Change Section (page 28) • Climate Change: Delivering on Disclosure • OPTrust: Portfolio Climate Risk Assessment • Climate-Savvy Project Report
	<p>b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.</p>	
	<p>c. Describe the resilience of the organization's strategy, taking into consideration different future climate scenarios, including a 2°C or lower scenario.</p>	

RISK MANAGEMENT

<p>Disclose how the organization identifies, assesses and manages climate-related risks.</p>	<p>a. Describe the organization's processes for identifying and assessing climate-related risks.</p>	<ul style="list-style-type: none"> • 2018 Responsible Investing Report Climate Change Action Plan Results (pages 21-28) Active Ownership (page 12-18) Carbon offsetting (page 29) • Proxy Voting Guidelines (page 35) • Climate Change Action Plan
	<p>b. Describe the organization's processes for managing climate related risks.</p>	

RISK MANAGEMENT CONT'D

<p>Disclose how the organization identifies, assesses and manages climate-related risks.</p>	<p>c. Describe the resilience of the organization's strategy, taking into consideration different future climate scenarios, including a 2°C or lower scenario.</p>	<ul style="list-style-type: none"> • OPTrust Climate Change Framework • OPTrust's Climate Change Symposium • Investor Leadership Network • Consultation: A Made-in-Ontario Climate Change Plan – OPTrust Submission • OPTrust Signs Global Investor Statement on Climate Change • OPTrust Expands Green Bond Investments Media coverage
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METRICS AND TARGETS

<p>Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities</p>	<p>a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.</p>	<ul style="list-style-type: none"> • 2018 Responsible Investing Report Proxy Voting (page 17) Define a clear baseline (page 24) Innovation in process and metrics (page 29) Carbon offsetting (page 29) Lead with transparency (page 30) • Climate Change Action Plan • PRI Reporting Framework 2018 • Proxy voting records
	<p>b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas emissions and the related risks.</p>	
	<p>c. Describe the targets used by the organization to manage climate-related risks and opportunities and the performance against those targets.</p>	

APPENDIX

HSBC ranked 67 developed, emerging and frontier market countries for their vulnerability to climate change risks in the HSBC Global Research report [Fragile Planet: Scoring climate risks around the world](#). The key factors of the analysis are physical impacts, sensitivity to extreme weather events, energy transition risks and a country's potential to respond to climate change, covering financial resources and national governance indicators. We used this ranking to classify countries as high, medium and low to assess the exposure to climate risk.

MSCI ESG Industry risk intensity scores aim to measure the relative magnitude of the ESG risks faced by different industries, stemming from the interplay of environmental, social and governance factors with the core activities of each industry. Some of the themes assessed are: Climate Change, Human Capital and Corporate Governance among others.

From a climate change perspective, MSCI assess the exposure to costs linked to carbon pricing, carbon regulation, "stranded assets" or reserves, volatile energy costs; indirect exposure to these risks through financing or supply chains; exposure to physical climate risks (e.g. weather patterns).

Source: MSCI ESG Research LLC, (2017) ESG Industry Risk Intensity Scores, MSCI



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