

JULY 2018

CARBON FOOTPRINT REPORT

**Greenhouse gas emissions from companies in the
University of Toronto's Pension and Endowment portfolios
as of September 30, 2017**

Signatory of:

 **PRI** Montréal **PLEDGE**
Principles for Responsible Investment



In December 2016, UTAM became a signatory, on behalf of the University of Toronto, to the United Nations-supported Principles for Responsible Investment (PRI). Institutional investors around the globe are adopting this set of commitments as they integrate consideration of environmental, social and governance (ESG) factors into their investment processes.

The six Principles of the PRI framework have guided us in articulating UTAM's approach to responsible investing, which is formalized in our [Responsible Investing Policy](#). For the latest update on how we put the Principles into practice, please see our [2017 Responsible Investing Report](#).

In September 2017, UTAM joined more than 120 global investors – collectively responsible for over US \$10 trillion in assets under management – in signing the [Montréal Carbon Pledge](#). Aligned with the Paris Agreement on climate change, the pledge reinforces our commitment to measure and disclose the carbon footprints of the two main portfolios we manage on behalf of the University of Toronto:

- **Pension** – the assets of the university's employee pension plan, officially called the University of Toronto Master Trust.
- **Endowment** – known formally as the Long-Term Capital Appreciation Pool and consisting primarily of certain Endowment assets, but also including other funds invested for the long term.

WHY ARE WE DISCLOSING OUR CARBON FOOTPRINT?

We believe that investors who measure their carbon footprints are better able to understand, quantify and manage climate change-related impacts, risks and opportunities.

Measuring the footprints of the university's Pension and Endowment portfolios is only one aspect of our climate change-related activities. In December 2017, for example, UTAM became a founding signatory of Climate Action 100+, an investor-led initiative to engage with more than 100 of the world's largest corporate greenhouse gas emitters. Our collective goal is to encourage these companies to reduce their carbon emissions, strengthen disclosure and improve governance on climate change issues. As an active participant, UTAM has committed to engage directly with at least one company on the Climate Action 100+ list.

UTAM is also a signatory to CDP and participated in a letter-writing campaign in 2017 asking corporations to respond to CDP's carbon disclosure requests. And we signed a [May 2017 letter](#) – developed by CDP, the PRI and other groups – that was sent to governments of the G7 and G20 nations urging leaders to stand by the pledges they made in signing the Paris Agreement on climate change.

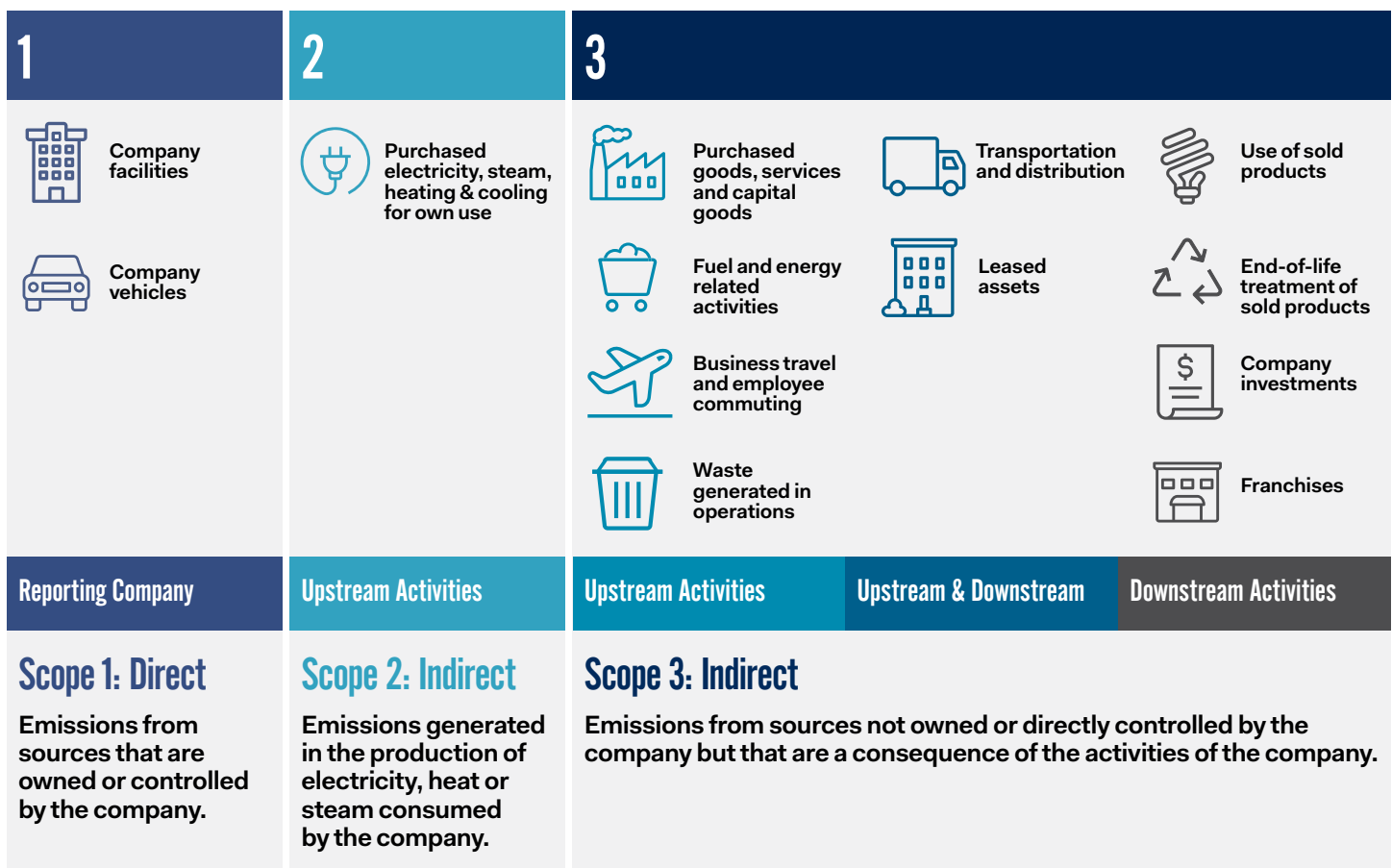


WHAT IS A CARBON FOOTPRINT?

A carbon footprint represents the greenhouse gas (GHG) emissions associated with the activities of an entity or individual. The carbon footprint attributable to an investment portfolio measures the proportionate emissions associated with companies held by that portfolio. In this report, we disclose the carbon footprint of the public equity holdings within the Pension and Endowment portfolios.

The greenhouse gases in our analysis are those covered by the internationally recognized GHG Protocol and include, where available, carbon dioxide (CO₂), nitrogen trifluoride (NF₃), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). All gases are converted to CO₂ equivalents (CO₂e) to calculate the carbon footprint.

Carbon emissions are typically divided into three scopes, as outlined in the diagram below. However, because of data limitations and the lack of a consistent standard for measuring Scope 3 emissions, in this report the carbon footprints of the Pension and Endowment portfolios are based solely on Scope 1 and 2 emissions. This approach is consistent with how the majority of Montréal Carbon Pledge signatories report their footprints.



HOW DID WE MEASURE OUR CARBON FOOTPRINT?

There is currently no standard method of calculating a carbon footprint. For this report, we've included all four measures outlined in the June 2017 implementation guidelines of the Task Force on Climate-related Financial Disclosures (TCFD)¹ – which recommends using the weighted average carbon intensity measure.²

1. Total carbon emissions expressed in tonnes of carbon dioxide equivalents

The most basic calculation of a portfolio's overall carbon footprint.

2. Carbon emissions per million dollars invested

A portfolio's normalized carbon footprint relative to the value of holdings.

3. Carbon intensity as measured by emissions per million dollars of revenue

A portfolio's efficiency in terms of carbon emissions per unit of sales.

These first three measures are calculated based on a portfolio's percentage ownership of each underlying company.

4. Weighted average carbon intensity

A portfolio's exposure to carbon-intensive companies, based on the weight of each investment within it.

1 The TCFD seeks to develop recommendations for voluntary climate-related financial disclosures that are consistent, comparable, reliable, clear, and efficient, and provide decision-useful information to lenders, insurers, and investors.

2 See the Appendix for the formulas used to calculate each of these four measures.

DATA OVERVIEW

Holdings Included

Public equity holdings³ (long and short⁴) within the Pension and Endowment portfolios.

Scopes Included

Scope 1 and Scope 2

Benchmark

Asset class benchmarks from the [Reference Portfolio](#), with weights based on the public equity holdings included in this analysis. The Reference Portfolio reflects various well-established equity indexes, such as the S&P 500 for US equities. Its carbon footprint is measured at the individual company level. The Reference Portfolio has been designed to be an objective measure of risk and return against which UTAM's active management approach should be assessed. Comparing carbon emissions for the Pension and Endowment portfolios against this benchmark demonstrates the impact of making active investment choices, in contrast to the passive approach represented by the Reference Portfolio.

Currency

All carbon footprint metrics with a currency component are reported in US dollars.

Date of Holdings

September 30, 2017

All calculations in this report were completed by UTAM using carbon emissions data from MSCI.

3 Consistent with the Montreal Carbon Pledge requirements, this report calculates the carbon footprints for the public equity portfolios of the Pension and Endowment. These portfolios include all public equity investments in the Pension and Endowment except for holdings within private market funds and absolute return hedge funds.

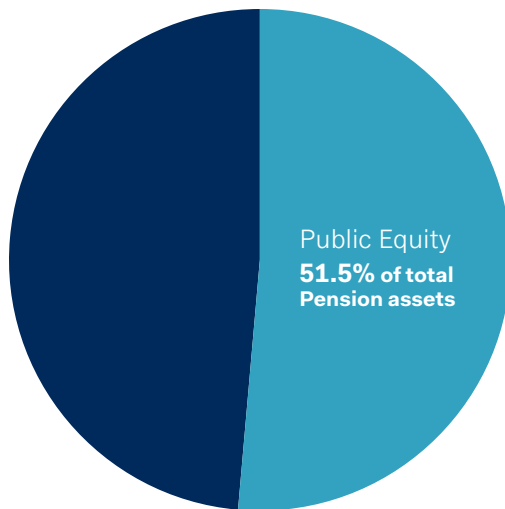
4 A short position occurs when an investor sells shares of borrowed stock in the open market; the investor hopes subsequently to buy the stock back at a lower price than they sold it for. Emissions from short positions are included as negative emissions. If all investors calculated their total carbon emissions in this way, the sum would match the total carbon emissions of all underlying companies.

WHAT PROPORTION OF THE PORTFOLIOS WAS INCLUDED IN OUR ANALYSIS?

Our carbon footprint analysis included public equity holdings within the university's Pension and Endowment portfolios. The following pie charts show the dollar value of the public equity holdings, as well as the proportion they represent within the Pension and Endowment portfolios.

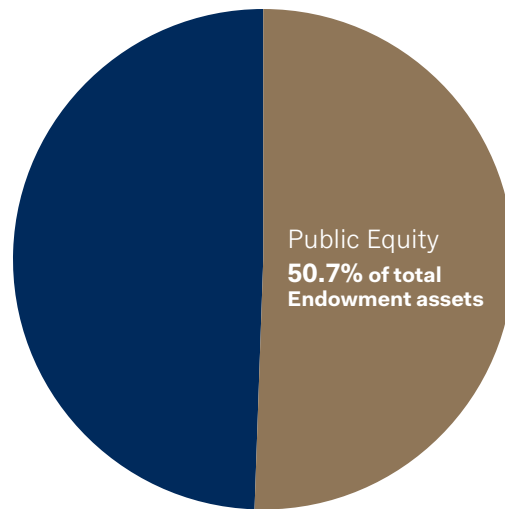
Pension Portfolio

Public equity portfolio: \$2.45 billion CAD



Endowment Portfolio

Public equity portfolio: \$1.41 billion CAD



HOW MANY HOLDINGS DID WE ANALYZE, AND HOW WAS EMISSIONS DATA OBTAINED?

Our analysis included more than 8,700 public equity positions in the university's Pension and Endowment portfolios, along with over 2,600 holdings in the Reference Portfolio. The table below shows the number of holdings included and the source of the carbon emissions data.

	Total Holdings Included	Source of Data by Number and % of Holdings			Source of Data by % of Market Value		
		Reported	Estimated	No Data	Reported	Estimated	No Data
Pension	8,782	2,334 (27%)	4,222 (48%)	2,226 (25%)	61%	32%	7%
Endowment	8,782	2,334 (27%)	4,222 (48%)	2,226 (25%)	61%	33%	7%
Reference Portfolio	2,653	1,463 (55%)	1,161 (44%)	29 (1%)	74%	25%	0%

Please note that due to rounding, some totals may not add up precisely.

For the Pension holdings we analyzed, Scope 1 and Scope 2 carbon emissions data was:

- reported by companies⁵ for 61% of holdings (by market value)
- estimated by MSCI for 32% of holdings
- not available for 7% of holdings, as these companies did not provide emissions data, and MSCI did not estimate the emissions

Results for our analysis of Endowment holdings were similar.

For the Reference Portfolio holdings we analyzed, Scope 1 and Scope 2 data was:

- reported by companies for 74% of holdings (by market value)
- estimated by MSCI for 25% of holdings
- not available for less than 1% of holdings, as these companies did not provide emissions data, and MSCI did not estimate the emissions

Pension, Endowment and Reference Portfolio holdings without Scope 1 and Scope 2 data have been included in the analysis by adding their market value to the market value of holdings with emissions data available, calculated on a manager-by-manager basis. This allows for a better estimate of total carbon emissions for each of these portfolios⁶.

⁵ MSCI collects emissions data once a year from the most recent company sources, including annual reports, corporate social responsibility reports and websites. When reported data is not available through direct corporate disclosures, MSCI uses GHG data reported through CDP (formerly the Carbon Disclosure Project) or government databases.

⁶ This assumption had no material impact on the other three measures of carbon emissions.

SUMMARY OF PENSION RESULTS

As shown in the following table, carbon emissions for the Pension portfolio are 13.1% higher than the Reference Portfolio, based on the first two measures: total emissions and emissions per million dollars invested.

The Pension portfolio has about the same carbon intensity (-0.3%) as the Reference Portfolio but is more carbon-efficient by virtue of its lower weighted average carbon intensity (-5.7%).

Pension Carbon Footprint	Carbon Footprint Metric			
	Total Carbon Emissions	Carbon Emissions Per \$Million Invested	Carbon Intensity	Weighted Average Carbon Intensity
	Measurement Units			
	Tonnes CO ₂ e	Tonnes CO ₂ e per USD \$Million Invested	Tonnes CO ₂ e per USD \$Million Sales	Tonnes CO ₂ e per USD \$Million Sales
Pension	362,101.9	184.7	269.4	242.7
Reference Portfolio (Pension Weights)	320,064.6	163.3	270.2	257.4
Difference vs Reference Portfolio	42,037.2	21.4	-0.9	-14.6
Difference vs Reference Portfolio (%)	13.1%	13.1%	-0.3%	-5.7%

Please note that due to rounding, some values in this table may differ from the results of simple subtraction.

SUMMARY OF ENDOWMENT RESULTS

As shown in the table below, carbon emissions for the Endowment portfolio are 12.5% higher than the Reference Portfolio, based on the first two measures: total emissions and emissions per million dollars invested.

The Endowment portfolio has about the same carbon intensity (-0.5%) as the Reference Portfolio but is slightly more carbon-efficient by virtue of its lower weighted average carbon intensity (-5.0%).

Endowment Carbon Footprint	Carbon Footprint Metric			
	Total Carbon Emissions	Carbon Emissions Per \$Million Invested	Carbon Intensity	Weighted Average Carbon Intensity
	Measurement Units			
	Tonnes CO ₂ e	Tonnes CO ₂ e per USD \$Million Invested	Tonnes CO ₂ e per USD \$Million Sales	Tonnes CO ₂ e per USD \$Million Sales
Endowment	207,271.1	183.8	268.7	243.8
Reference Portfolio (Endowment Weights)	184,293.6	163.4	270.1	256.5
Difference vs Reference Portfolio	22,977.5	20.4	-1.5	-12.8
Difference vs Reference Portfolio (%)	12.5%	12.5%	-0.5%	-5.0%

Please note that due to rounding, some values in this table may differ from the results of simple subtraction.

WHAT DID WE LEARN FROM OUR ANALYSIS?

To identify more precisely the sources of carbon impact across the university's investments, we conducted a detailed attribution analysis of the Pension and Endowment portfolios, breaking down emissions by sector, country, asset class, investment manager and individual holding. For each dimension, we looked at both its absolute contribution to the carbon footprint and its contribution to relative differences versus the Reference Portfolio.

When we studied the results in more detail, we gained many specific insights. For instance, we found that most of the carbon emissions in the Pension and Endowment portfolios are from stocks in the utilities and industrials sectors. And our examination of the data by country revealed that holdings in Asia represent the biggest emitters.

As a result of the analysis reflected in this report, we've held a number of conversations with investment managers to better understand how they consider carbon emissions in their investment decision-making. At the same time, we've enhanced our investment due diligence process and, where possible, now calculate the carbon footprint when evaluating potential public equity investment managers and when monitoring the performance of existing public equity managers.

Calculating and analyzing the carbon footprints of the Pension and Endowment portfolios has proven to be an informative and valuable exercise. We now have a granular understanding of the specific factors that contribute to overall carbon emissions in both portfolios. However, it must be stressed that the carbon footprints in this report capture the carbon emissions from the investment holdings in the Pension and Endowment portfolios at a single point in time (i.e., Sept. 30, 2017). As we continue to report these numbers on an annual basis, we will gain an understanding of the trend in the results, but it may take many years before any conclusions can be drawn. Although we have presented emissions results to one decimal place, we would caution the reader from placing too much emphasis on the precise numbers in this report and instead view these initial results as indicative in nature.

Looking to the future, we expect that the availability and quality of emissions data will continue to improve, enabling better carbon footprint estimates in the future. We're also hopeful that reporting methodologies will become more standardized globally; we will monitor evolving best practices and adjust our reporting accordingly.

This Carbon Footprint Report is just one initiative among many that UTAM has undertaken as we pursue our commitment to responsible investing. It reflects our ongoing efforts to communicate transparently with U of T stakeholders about the investments we manage on behalf of the university. We provide regularly updated information on our responsible investing activities via our website and welcome feedback from all interested parties.

APPENDIX – CALCULATING CARBON FOOTPRINTS

The following tables outline the formulas used to calculate the four carbon footprint measures shown in this report.

	Total Carbon Emissions (Tonnes CO₂e)	Carbon Emissions Per USD \$Million Invested (Tonnes CO₂e/USD \$Million Invested)
Formula	$\sum_{i=1}^n \frac{\$ \text{ investment}_i}{\text{Total Market Cap of Issuer}_i} \times \text{Scope 1 and Scope 2 Carbon Emissions in tonnes}_i$	$\left(\frac{\sum_{i=1}^n \frac{\$ \text{ investment}_i}{\text{Total Market Cap of Issuer}_i} \times \text{Scope 1 and Scope 2 Carbon Emissions in tonnes}_i}{\text{Portfolio Market Value in millions}} \right)$
Question:	What is my portfolio's <u>total</u> carbon footprint?	What is my portfolio's <u>normalized</u> carbon footprint per million dollars invested?
Strengths:	<ul style="list-style-type: none"> ✓ Most literal carbon footprint from greenhouse gas accounting perspective ✓ Absolute number can be used for carbon offsetting 	<ul style="list-style-type: none"> ✓ Allows for comparison regardless of portfolio size ✓ Enables portfolio decomposition and attribution analysis
Weaknesses:	<ul style="list-style-type: none"> • Limited usefulness for benchmarking and comparison to other portfolios due to link to portfolio size • Requires underlying issuer market cap data • Ownership perspective means it is only applicable to equity portfolios 	<ul style="list-style-type: none"> • Requires underlying issuer market cap data • Ownership perspective means it is only applicable to equity portfolios • Sensitive to changes in market value of portfolio
	Carbon Intensity (Tonnes CO₂e/USD \$Million Sales)	Weighted Average Carbon Intensity (Tonnes CO₂e/USD \$Million Sales)
Formula	$\frac{\sum_{i=1}^n \frac{\$ \text{ investment}_i}{\text{Total Market Cap of Issuer}_i} \times \text{Scope 1 and Scope 2 Carbon Emissions in tonnes}_i}{\sum_{i=1}^n \frac{\$ \text{ investment}_i}{\text{Total Market Cap of Issuer}_i} \times \text{Millions of Sales}_i}$	$\sum_{i=1}^n \text{Portfolio Weight}_i \times \frac{\text{Scope 1 and Scope 2 Carbon Emissions in tonnes}_i}{\text{Millions of Sales}_i}$
Question:	How <u>efficient</u> is my portfolio in terms of carbon emissions per unit of sales?	What is my portfolio's <u>exposure</u> to carbon-intensive companies?
Strengths:	<ul style="list-style-type: none"> ✓ Provides overall intensity of portfolio by adjusting for company size ✓ Allows for comparison regardless of portfolio size 	<ul style="list-style-type: none"> ✓ Applicable across asset classes, including fixed income ✓ Simple and intuitive calculation ✓ Does not require corresponding market cap or sales data ✓ Enables simple attribution analysis and portfolio decomposition
Weaknesses:	<ul style="list-style-type: none"> • Complex calculation • Challenging to communicate and understand • Requires underlying issuer market cap data • Ownership perspective means it is only applicable to equity portfolios 	<ul style="list-style-type: none"> • Does not capture any measure of investor responsibility • Sensitive to outliers