Capitalizing on Sustainable Finance: A growth opportunity for Toronto’s financial sector

September 2018

Report commissioned by Toronto Finance International and prepared by EY and Corporate Knights
Foreword

The global demand for cleaner economic growth is providing an opportunity for financial centres to play a leading role in unlocking the potential of sustainable growth. An estimated investment of US$500 billion per year between now and 2030 will be required in order to keep global warming under 1.5°C. While Toronto, and – more broadly – Canada has achieved significant milestones in green bond issuance, sustainable assets under management and new products and services addressing the growing sustainable finance market, to date, we have not developed a coordinated strategy for our financial sector to capitalize on this economic opportunity.

As North America’s second largest financial centre, Toronto is well positioned to develop and expand expertise and talent in sustainable finance. Other global financial centres have recognized the opportunity and have developed strategies to capitalize on the growth in the demand for sustainable finance alternatives from businesses, government and investors.

This report seeks to assess the opportunity for Toronto to develop a leading global hub for sustainable finance. Through our research and extensive interviews with executives from the financial sector, government, business leaders and academia, we sought to provide a practical assessment of the ambition and ability to develop a hub of excellence in the area of sustainable finance in Toronto and Canada more broadly. No doubt, there was consensus among stakeholders that there is a need for increased analysis and collaboration on this important and growing opportunity.

We sincerely hope this report will contribute to Toronto’s continued strength and growth as a global financial centre and advance the sector’s activity and expertise in financing sustainable economic growth.

About TFI

TFI is a public-private partnership between Canada’s three levels of government, the financial services sector and academia. TFI’s mission is to lead collective action that drives the competitiveness and growth of Toronto’s financial sector and establishes its prominence as a leading international financial centre. For more information, please visit tfi.ca.
Acknowledgements

The authors would like to extend our sincere thanks to the teams and organizations who assisted in this study. EY and Corporate Knights conducted industry research, interviews and analysis to form the basis of the report. Executives from the organizations listed in Appendix B provided critical insights, ideas and feedback to inform its content. We specifically appreciate the advice and guidance of Ed Waitzer of Stikeman Elliott in serving as a special advisor throughout the process.
The 21st Annual Conference of the Parties (COP 21), the maturation and broadening of carbon markets across the world and the increasingly obvious physical evidence in the form of severe weather, floods and forest fires have propelled climate change toward the top of the investor agenda. Even so, the sheer scale of the issue makes it a challenging one to tackle for many institutions, financial and non-financial alike. If commitments to limit global warming to 2°C are to be fulfilled and critical adaptation and resilience objectives realised, then the coming decades will see a worldwide macroeconomic transition with vast financial implications. Investors and enterprises will face many interconnected and highly complex climate-related risks, including both transition risks related to how well we do or don’t prepare for the shift to a low-carbon economy and the existing and increasing physical and business interruption risks related to the rise in global temperatures.

On the up side, research suggests that investment opportunities arising from the energy transition will in fact outweigh climate-related risks in the long term. The relevance of sustainable finance will continue to increase with shifting market forces and societal expectations, the proliferation of policies and initiatives designed to accelerate the low-carbon economic transition, technological advances and other innovation as well as changing weather patterns.

Toronto’s financial sector can be positioned to capitalize on these opportunities, as well as those associated with broader applications of sustainable finance. While climate change and the corresponding low-carbon transition continue to be the ultimate financial issue, many other environmental and social factors pose risks to, and create opportunities for, an economically sustainable financial sector. Exploring and developing a leadership role for Toronto in sustainable finance will help our financial sector proactively position itself for success in this shifting global investment landscape.

We know through the development of sustainable finance initiatives in other regions that appropriately assessing and rolling out sustainable finance products and services such as cleantech financing and environmental derivatives will take time. It will require discussion and deep collaboration amongst the financial sector, industry, government, academia and other key stakeholders, and will involve adjustments as new information emerges and data improves.

We hope that the analysis and insights shared within this report will be helpful in supporting the ongoing growth of this vibrant and dynamic sector in Toronto and across Canada. We call on our financial industry peers and stakeholders across Toronto’s financial ecosystem to review the opportunities identified and work collaboratively to adopt them both as an industry and within their own organizations. Together, we can position our city as a critical financial engine behind the transition to a low-carbon economy.
About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY’s Climate Change and Sustainability Services (CCaSS) practice helps clients to build more sustainable and profitable enterprises by addressing their environmental and social challenges and capitalizing on economic opportunities. The CCaSS practice is a multi-disciplinary, global network of over 850 professionals that includes strategists, finance specialists, engineers, accountants, lawyers, regulatory and policy advisors, scientists and former sustainability leaders at global companies who harness the power of our global reach to deliver meaningful results.

About Corporate Knights

Corporate Knights is a media and investment research company that produces rankings and financial product ratings based on sustainability performance. Corporate Knights also acts as Secretariat to the Council for Clean Capitalism, a group of CEOs from leading Canadian companies dedicated to advancing a more sustainable economy. The company’s media division publishes Corporate Knights Magazine, the world’s largest-circulating publication focused on responsible business. Recently named Magazine of the Year by the National Magazine Awards Foundation of Canada, Corporate Knights Magazine is printed quarterly and has a circulation of 147,500 reaching some of the world’s most influential business and political decision-makers as an insert in Canada’s Globe and Mail and the Washington Post in the United States.
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Disclaimer: Ernst & Young LLP (EY) prepared this report for TFI pursuant to an agreement solely between EY and TFI. EY did not perform its services on behalf of or to serve the needs of any other person or entity. Accordingly, EY expressly disclaims any duties or obligations to any other person or entity based on its use of this report. Any other person or entity must perform its own due diligence inquiries and procedures for all purposes.
I. Executive summary

Sustainable finance is on the rise. In recent years, there has been a significant global increase in green equity and bond issuances, the integration of environmental, social and governance (ESG) factors into investment decision making, the understanding and disclosure of carbon exposure and climate risk and the incorporation of environmental risks into market supervision.

Beyond any type of ethical driver, sustainable finance makes business sense in the face of changing market dynamics. A shifting economic environment is affecting demand for products and services. There is a growing contingent of younger investors who are choosing to invest their savings in alignment with their values. Markets are transitioning away from traditional energy sources such as thermal coal toward wind and solar renewables, which have seen a dramatic decrease in cost. The imperative to invest in energy efficient capital improvements is widely acknowledged.

The investment required to successfully make this transition is significant, estimated at upwards of US$500 billion per year on top of business-as-usual estimates by 2030. The associated opportunity for the financial community is equally significant. Recent data published by Corporate Knights estimates that the annual value of the sustainable finance opportunity for Canada’s financial sector is at least $27 billion and could be as high as $110 billion annually by 2025.

Although the dialogue on sustainable finance in Canada is in the early stages, there has been significant activity regarding sustainability priorities. Both the private and the public sectors have engaged in sustainable finance initiatives – including some world-firsts – with respect to green bond issuances, carbon pricing, climate disclosure and alignment with international sustainable finance commitments. In addition, we boast North America’s second biggest cleantech industry and are a significant global fintech hub.

Relative to other global sustainable finance centres, however, our analysis indicates that Toronto currently sits in the middle of the pack. Other global leaders have surpassed Toronto by, for example, developing cohesive sustainable finance strategies, developing partnerships with academia to drive research and analytics and collaborating on systematic efforts to attract and/or underwrite green bond issuances.

With this report, along with the parallel efforts of the Canadian Expert Panel on Sustainable Finance and strong support from across the financial sector, we have the opportunity to shift the course. Based on the analysis performed and extensive stakeholder interviews, we have identified seven calls to action that, while voluntary, we believe are critical to continuing Toronto’s momentum.
## Calls to action

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Opportunity</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
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<tr>
<td>1</td>
<td>Establish a sustainable finance classification system, or <em>taxonomy</em> in order to allow identification of sustainable assets and exposures as well as provide standardization and reduced uncertainty to Canadian investors.</td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
<tr>
<td>2</td>
<td>Review financial institution balance sheets and income statements and tag qualifying sustainable exposures and revenue after the establishment of a Canadian taxonomy (per above) to understand the current state of sustainable exposure, identify current and future opportunities and address data gaps.</td>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
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<td>3</td>
<td>Build a national pipeline of potential sustainable and resilient infrastructure projects in order to provide a signal and roadmap to the market of the large-scale sustainable investment opportunities available.</td>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
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<td>4</td>
<td>Develop strategies within financial institutions which empower business units to innovate and capitalize on the sustainable finance opportunity giving responsibility for the design of sustainable finance strategies to those responsible for their implementation, for example through the development of new products and structures.</td>
<td>High</td>
<td>Complex</td>
<td>2-3 years</td>
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<td>5</td>
<td>Work with the public sector to establish new, innovative financing methods such as public funds or seeding programs to assist in de-risking of large scale low-carbon technologies and addressing other barriers to financing low-carbon innovation.</td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
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<td>6</td>
<td>Establish a new Sustainable Finance Institute to strengthen cross-sectoral capacity and knowledge sharing including links between the private sector and academia. The entity’s mandate could include advancing the national and global conversation on sustainable finance, maintaining the sustainable finance taxonomy and advocating for Toronto’s brand as a sustainable finance hub, as well as research on critical sector-wide issues such as models to analyze portfolio carbon exposure.</td>
<td>Medium</td>
<td>Average</td>
<td>Quick win</td>
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<td>7</td>
<td>Create a joint forum for the financial sector and fintech industry on sustainable finance to leverage Toronto’s status as a fintech hub.</td>
<td>Low</td>
<td>Simple</td>
<td>Quick win</td>
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A note on language

In referring to the consideration of ESG risks in the financial world (and more broadly), a variety of terms are frequently used and may be defined differently depending on the source. Sustainable, responsible, green and clean are all common examples. In this report, we have elected to exclusively use the term “sustainable finance” to refer to the incorporation of ESG factors into business and investment decision making in the financial sector. The exception to this rule is in direct quotes, report titles or entity names where original terms are retained.

“Sustainability” as a term itself may refer – depending on the source – to primarily issues of environmental concern or more broadly to environmental, social and ethical issues as summarized by the United Nations (UN) Sustainable Development Goals (SDGs). This report primarily addresses sustainable finance in the context of the investment activities relating to climate risk mitigation and adaptation and the transition to a low-carbon economy; however, in some cases we may use the same term to refer to a broader consideration of ESG risks. This reflects the fact that, while climate change presents one of – if not the – most pressing ESG risk, the objective of Toronto becoming a sustainable finance hub should not be limited to climate change alone. And although most of the opportunities and supporting analysis in this report explicitly focus on climate change risk, certain opportunities are relevant across the full sustainable finance spectrum.
II. Introduction

The rise of sustainable finance

Global momentum

Across the world, the growing momentum towards sustainable finance is clear: integrating ESG factors into investment portfolios is delivering superior returns; the green bond market continues to expand; governments are developing national sustainable finance roadmaps; and, financial regulators are incorporating environmental risks into market supervision. Sustainability factors are becoming material for the competitiveness of financial centres. A new network of Financial Centres for Sustainability (FC4S) was launched in September 2017 with a vision of facilitating “…rapid global growth of green and sustainable finance across the world’s financial centres, supported by strengthened international connectivity and a framework for common approaches.”. Toronto has recently joined (represented by the TFI), along with London, Paris, Shanghai, Casablanca, Dublin and others the International Network of Financial Centres for Sustainability.

In the last two years, an increasing number of governments, central banks and regulators have taken action to drive sustainability into the core of the financial system – as a way to increase visibility of emerging risks, build competitiveness, attract investment and drive policy coherence across economic and financial frameworks for the low-carbon transition. Some leading practices include national green bond standards as in China, France and coming soon in Britain, corporate and financial institution climate-related disclosure requirements and national capital raising and investment plans linked to Paris Agreement commitments. Now, more than ten countries have set out strategic roadmaps and policy frameworks for sustainable finance – including Argentina, France, Germany, Italy, the Netherlands, Norway, Singapore and Sweden. The European Commission has established a High-Level Expert Group (HLEG) on Sustainable Finance, which provided a broad list of recommendations on that topic in early 2018. Developments have also occurred at the international level with sustainable finance now identified as a key focus within the G20 and the G7 platforms.

Canadian leadership examples

The first Global Green Finance Index (GGFI), recently released by NGO Finance Watch and think tank Z/Yen (Long Finance), ranked Toronto’s sustainable finance activity as globally diversified and relatively broad and cited Toronto as one of five global centres whose sustainable finance offerings were most expected to improve significantly over the next two to three years.

There are many specific examples of sustainable finance leadership across Canada from the private and public sectors, as shown in Table 1 below.
Capitalizing on Sustainable Finance: A Growth Opportunity for Toronto’s Financial Sector

Private sector

Green Bonds
- The Canadian green bond market has increased significantly recently and has the potential to top $50B annually\(^8\).
- In 2018, Manulife became the first life insurer to issue a green bond globally\(^1\).
- Since 2014, TD Bank has issued over $1B in green bonds with plans to deliver more in the coming years

Public sector

- The Canadian public sector is a green bond leader, with issuances of over $3B since 2014 from Ontario\(^2\), Export Development Canada (EDC)\(^3\) and Quebec\(^4\).
- The City of Ottawa issued the first ever municipal green bond in Canada in 2017\(^6\).
- The City of Toronto issued $300 million green bond, saving the city $600,000 in financing costs\(^8\).
- Ontario is the largest sovereign issuer of green bonds in the western hemisphere\(^7\).
- In 2018, the Canadian Pension Plan Investment Board (CPPIB) issued $1.5B of green bonds in the largest single green bond transaction in Canada and the first green bond issued by a pension plan in the world\(^8\).

Disclosure
- Two of Canada’s largest banks have joined a global network of the world’s leading banks working to implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)\(^9\).

Public sector
- At the 2018 G7 gathering in Canada, several Canadian institutional investors agreed to speed up the implementation of uniform and comparable climate-related disclosures under the TCFD framework as well helping address the persistent global infrastructure gap\(^20\).
- The Ontario government requires pension plans to disclose how ESG factors are addressed in their Statement of Investment Policies and Procedures\(^21\).
- Securities regulators in Canada intend to develop new guidance and initiatives to educate issuers about the disclosure of climate change-related risks, opportunities and financial impacts\(^22\).
- The Federal Finance Sector Review has recently added to climate disclosure to their remit\(^23\), presenting opportunities to integrate sustainability considerations into financial reform.

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Capitalizing on Sustainable Finance: A Growth Opportunity for Toronto’s Financial Sector

Private sector

Public sector

Other Initiatives

• In 2017, the Global Cleantech Innovation Index ranked Canada fourth globally, scoring first for funding available.
• The TSX has 90 sustainable technology listings, the highest number globally, with a combined market value of over $40B (currency in Canadian dollars unless otherwise specified).
• Canada’s responsible investment (RI) market is continuing to experience rapid growth with a 49% increase from 2014 to 2016. Responsible investing represents 38% of the Canadian investment industry.
• All five of Canada’s largest banks (RBC, Scotiabank, BMO, TD and CIBC) are members of the Carbon Pricing Leadership Coalition, a global network of major corporations that support carbon pricing to bring down emissions and drive investment in sustainable growth.
• In 2018, two Canadian financial services firms, Sun Life Financial and CIBC, were ranked in Corporate Knights’ global index of the world’s 100 most sustainable companies.
• The Insurance Bureau of Canada (IBC) has signed on to UN Environment’s Principles for Sustainable Insurance.

• In April 2018, the Government of Canada announced the creation of an Expert Panel on Sustainable Finance to study opportunities for the Government to help advance sustainable finance, noting that, “Accelerating action to support sustainable finance is an important part of Canada’s G7 presidency.”
• Federal authorities are taking steps to respond to emerging sustainable finance policy issues – including through allocations of public financing for sustainable technology and the establishment of the Social Innovation and Social Finance Steering Group.
• Several large Canadian pension plans have recently announced plans or reviews to reduce portfolio carbon intensity, boost investments in green assets and/or to consider climate change risks more broadly.

Government leadership also plays an important role in driving sustainable finance and Canada’s federal government has set out ambitious targets and plans for reducing carbon emissions in alignment with the Paris Agreement under the backstop of a carbon pricing plan.

While this domestic momentum is positive and promising, it lacks a coherent, collaborative strategy to overcome barriers and clarify opportunities to galvanize go-forward action. As it stands, sustainable finance is frequently treated as a cost centre or compliance mechanism within Canadian financial institutions rather than as presenting an immense opportunity to be unlocked. An evaluation of Toronto’s sustainable finance maturity as compared to that of other global financial centres is presented in Section III of this report.

OPTrust, CPPIB and Caisse de depot et placement du Quebec (CDPQ)
Canada and the sustainable economy opportunity

There is growing consensus regarding the imperative to transition. To take a do-nothing approach could cost Canada’s economy between $21 and 43 billion dollars per year (or 1% of GDP) by 2050 as a result of coastal flooding, loss of natural resources and ecosystems and human health deterioration\(^\text{34}\), to say nothing of the human impacts such as displacement.

In the effort to minimize the harmful financial, social and environmental costs of climate change and capitalize on the adaptation opportunities it presents, the world has begun one of the most capital intensive industrial transitions in history. Scientists have estimated that additional global investment of nearly US$500 billion per year is required by 2030 in order to achieve a 1.5°C limit to the increase of average temperatures (or US$320 billion per year for a limit of 2°C).\(^\text{35}\) These investments include upgrades to energy transmission and storage, development of renewables and widespread efficiency improvements to reduce consumption.

Parallel research from the Brookings Institute puts the cumulative figure at US$4.1 trillion between 2015 and 2030 under a 2°C scenario, but notes that "[this figure] does not factor in expected reduced operating expenses from low carbon technologies such as renewables, which could reduce operating expenses by a further [US]$5.1 trillion.\(^\text{36}\)

The national opportunity

The opportunity to strengthen Toronto’s sustainable finance performance and capture the potentially significant associated revenue streams starts first within Canada. Regardless of how our national and regional policy continues to evolve, it remains a fact that we have not yet made significant progress in reducing our national carbon footprint (Figure 1).\(^\text{37}\) This translates to an ongoing opportunity for our various domestic industry sectors to continue to innovate around and invest in large-scale carbon reduction, and for our financial sector to support this through sustainable finance activities. At a sector level, our oil and gas industry is focused on reductions across a wide variety of sources, including industrial efficiency improvements, waste-heat recovery, reductions in methane and use alternative energy. Likewise, our transportation sector is linked with major opportunities regarding the electrification of personal vehicles, trucks and public transport. Improving energy efficiency standards for buildings is yet another example.

Realizing any of these opportunities at scale requires the participation of the financial sector in the form of capital raising and investment support, which would contribute significant fees and revenues to the sector. Recent estimates published by Corporate Knights show that potential financial sector revenues associated with financing our national sustainable economic transition could reach $27 to $110 billion per year by 2025\(^\text{38}\).
The global opportunity

It is important to recognize also that a global financial hub is not just concerned with financing activities within its own borders. Toronto has a history of supporting capital markets at a global scale, for example through the international investment activities of our pension funds and as a leading facilitator of access to capital for the global mining industry. While there is ample opportunity to finance our national transition to a sustainable economy, the global opportunity represents even greater promise.

Methodology

Sustainable finance hub: a definition

The objective of this study is to assess the feasibility of positioning Toronto as a sustainable finance hub for North America. The first task, therefore, is to define what that means. The basic ingredients of a sustainable finance hub that were considered for this study are:

- A competitive traditional financial industry to provide infrastructure, financial and human capital and a supporting business environment
- Significant activity and potential with regard to sustainable financing

For the purposes of this study, sustainable finance activity was generally assessed against the ten dimensions of sustainable finance identified by the UN Environment Inquiry into the Sustainable finance activity global summary: 39

- Major banks headquartered and operating in the centre are engaging in green and sustainable finance across their lending book and capital markets activities.
- Financial centres are issuing, underwriting and investing in green bond — and credit rating agencies are factoring in environmental risks.
- Stock exchanges, market participants and securities regulators in the centre are integrating sustainability factors and advancing environmental solutions.
- Providers and regulators are increasingly analysing the relationship between insurance and climate change and are providing new insurance products for the green economy.
- Asset owners and managers in the centre are integrating ESG factors along the value chain and are reallocating capital supported by pension and other regulators.
- National and provincial regulators and public finance institutions are supporting best practice and crowding in private capital.
- Efforts are underway by city and regional authorities to mobilize finance for local green initiatives such as energy-efficient retrofits, waste management and resource efficiency, electric vehicle infrastructure and mass transit expansion.
- Analysis, legal, accounting and financial data providers as well as professional bodies in the financial centre are providing sustainability expertise to their clients.
- Universities, NGOs, consultancies and coalitions are providing the insight and impetus to leadership by the financial centre on sustainability.

Specialized forms of sustainable finance are flourishing including carbon markets, impact investing, cleantech, green fintech and social stock exchanges.
Approach

The analysis and conclusions of this study are organized around three key questions:

Where are we today?

We present the current landscape for sustainable finance best practices and performance against which Toronto’s potential as a sustainable finance hub can be assessed.

Where could we be?

We assess the potential of Toronto to become the North America hub for sustainable finance by examining market opportunities for the financial services industry and challenges and barriers to getting there.

How do we get there?

We present calls to action, informed by our research and interviews, for achieving Toronto’s potential as a sustainable finance hub for North America.

The opportunities identified and conclusions drawn in this report are based on analysis from both primary and secondary research. Our primary research consisted of interviews with over 70 stakeholders from the finance, oil and gas, renewable energy, service provider, public and environmental and non-profit sectors (See Appendix B for a list of stakeholders engaged). As part of our secondary research, we examined a wide range of research, reports and other sources to identify leading practices and innovative methods of expanding the reach of sustainable finance around the world. These examples helped to shape our view of how Toronto fits within the global sustainable finance hierarchy.

We note that this report contains a number of acronyms as well as terms whose definitions may vary elsewhere. These are each defined on first use within the body of the report; a complete list of definitions can be found in Appendix A.
III. Where are we today?

Growing Toronto’s capacity as a sustainable finance hub must begin with an assessment of our current state. As defined above, a sustainable finance hub pairs the backbone of a strong financial centre with significant sustainable finance activity. Here, we consider Toronto’s traditional strengths, which most famously lie in its strong global banks, pension funds, investment dealers, insurance companies and asset managers. We also assess how our city performs as compared to other leading financial centres in terms of sustainable finance. This comparison of Toronto against other cities helps to identify and shape our opportunities for action and also to understand which other North American cities represent our strongest competition in this field.

**Toronto as a Financial Centre**

Toronto has long been recognized as a leading global financial centre. Our banks, insurance companies and pension funds are globally renowned and consistently demonstrate sound financial performance and risk management practices. Toronto as a financial centre benefits from a high quality talent pool both in the financial sector and supporting professional services. Our city regularly ranks in the Top 10 of the Global Financial Centres Index (GFCI®): in 2018 Toronto ranked 7th globally and 2nd in North America.

**2**nd largest financial centre in North America by employment, and higher concentration of financial sector employment than New York or London

**#1** Most stable banking sector in the G7 and one of the most stable in the world

**5** of the world’s 40 largest banks by market capitalization (2018) and in the top 25

**3** of the world’s 15 largest life insurers

**#3** for global pension assets as a percent of GDP

**1**st among global stock exchanges for mining, oil and gas and cleantech listings

**25%** growth in employment over the last ten years while employment in all US financial centres has decreased
**Toronto as a Sustainable Finance Centre**

Global scan of leading practice

To understand where Toronto sits as compared to other global cities in sustainable finance activity, we researched best practices in sustainable finance globally, specifically related to the ten key factors of a Sustainable Finance Hub as referenced in Section II. We performed a jurisdictional scan for sustainable finance best practices amongst the G7 countries as well as Luxembourg, which has demonstrated global leadership in this area.

Figure 2 highlights some of our key findings, with specific attention paid to each city and/or country’s most recent data on green bond activity based on bonds “certified” by Climate Bonds Initiative [CBI] or “listed” on a stock exchange, sustainable investment or loan activity and best practices relevant to the Toronto market. The identified best practices and their potential application in Toronto are discussed further below.

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*The GFCI uses 103 quantitative “instrumental” factors including factors such as Business Environment Rankings and Operational Risk Ratings from the Economist Intelligence Unit (EIU) and Ease of Doing Business Index and the real interest rate from the World Bank.*

*We acknowledge the work performed by Corporate Knights to compile some of these data points and best practices in their Financial Centres for Sustainability report (a precursor to the establishment of the FC4S)*
Figure 2 - Sustainable finance activity global summary

References:
1 Calculation from Climate Bonds Initiative labelled green bonds data: https://www.climatebonds.net/cbi/pub/data/bonds
2 https://www.i4ce.org/benchmarking-the-greenness-of-financial-centres/
3 Retrieved from CBI Green bonds Underwriters League Table: https://www.climatebonds.net/resources/league-table
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Tokyo (Japan)
“Middle of the pack but growing”
**Green bond value:** $10B as of Aug 2018

**Disclosure:**
- Pension plans required to disclose how ESG factors are addressed in SIP&Ps in Ontario
- Obtained G7 commitment to TCFD implementation

**Policy and Public Finance:**
- Federal carbon pricing plan

Paris (France)
“Getting it right”
**Green bond value:** £23.1B as of late 2017

**Education:**
- 17 Academic institutes, 10 think-tanks, 8 specialized curricula related to sustainable finance

**Banking:**
- 3 out of top 10 banks from 2017 CBI Green Bond Underwriters ranking have HQ in Paris

London (UK)
“Early adopter and global finance hub”
**Green bond value:** £10.1B as of late 2017

**Insurance:**
- Critical work with Lloyd’s of London done on stress tests of environmental risks and how it can impact the insurance market

**Policy and Public Finance:**
- Established first Green Bank with initial capitalisation of £3.8B, but now privatized

New York (USA)
“North American stalwart”
**Green bond value:** $4.7B as of late 2017

**Banking:**
- 6 out of the top 10 banks from the 2017 CBI Green Bond Underwriters ranking in NYC
- California has a Green Bank that invests in green projects throughout the world

Paris (France)
“Getting it right”
**Green bond value:** £23.1B as of late 2017

**Education:**
- 17 Academic institutes, 10 think-tanks, 8 specialized curricula related to sustainable finance

**Banking:**
- 3 out of top 10 banks from 2017 CBI Green Bond Underwriters ranking have HQ in Paris

Luxembourg
“A hidden powerhouse”
**Green bond value:** ~€50B as of late 2017

**Debt and Equity Capital Markets:**
- All bonds must be certified with CBI to be listed; required ex-ante and ex-post review
- Luxemburg Stock Exchange largest holder of green bonds globally (US$50B for first 6 months), over 50% globally

**Policy and Public Finance:**
- Luxembourg government contributes €30 million as a first-loss guarantee to mitigate the risk for private sector actors when co-investing in clean funds

Frankfurt (Germany)
“Green loans leader”
**Green bond value:** €26.6B as of late 2017

**Disclosure:**
- Pension funds must inform its beneficiaries in writing of whether, and, if so, how, it takes ethical, social and ecological interests into account in the way it invests the contributions paid

Milan (Italy)
“Punches above its weight”
**Green bond value:** €9.8B as of late 2017

**Banking:**
- Major banks financed over US$31.3B of renewable energy capacity between 2007 and 2014

**Policy and Public Finance:**
- Government has committed to design new financial instruments to improve the energy efficiency of buildings

Tokyo (Japan)
“Moving forward”
**Green bond value:** $2.06B as of late 2017

**Policy and Public Finance:**
- Ministry of Environment released Green Bond Guidelines in 2017 with hopes of spurring investors.
- Government interest subsidy to specified financial institutions which prepare loan programs for low carbon projects (worth ¥2.1B FY 2016)
The strengths of the G7 cities as sustainable finance centres lie in their ability to provide a supportive environment for sustainable investment, policy and action. Each of these centres has their own leading performance examples in different areas, for example significant green bond issuance in Luxembourg and the provision of interest subsidies to financial institutions providing low-carbon loans in Tokyo. London has its now private green investment fund and Milan’s banks have a significant portfolio of renewable energy projects.

Toronto’s emerging strength is evident too. We are seeing a surge in green bond issuances from both public and private sector players, for example the single-biggest green bond issuance in Canada by CPPIB (the first globally by a pension fund) and the first global issuance by a life insurer (Manulife). Many of our banks are furthering their international prominence by working with the Carbon Pricing Leadership Coalition (a global public-private sector initiative to study effective carbon pricing systems and policies) and committing to the implementation of the TCFD recommendations. The Global Cleantech Innovation Index ranked Canada fourth globally in terms of sustainable finance activity and quality, placing first for funding available.17

There remains, however, significant potential to expand Toronto’s sustainable finance activity and expertise. In this context, we consider what Toronto can learn from its peers:

- **Paris** has a significant academic research circle, being the only G7 city with academic curricula, institutions and think-tanks dedicated to sustainable finance. Toronto and Canada currently have modest academic activity related to sustainable finance. **Key leading practice:** A local research and learning base

- **Luxembourg**, ranking 14th on the GFCI ratings, is the world leader in green bond issuance as a result of its creation of the platform for that sustainable finance activity: the Luxembourg Stock Exchange (LSX) has created a separate green bond exchange with specific listing criteria. It provides the capability for investors to “layer” green bonds, a favourable treatment for bonds that may have a different risk/reward profiles. Additionally, it recently launched the world’s first “forestry covered” bond, promoting sustainable forestry in Sweden, offered in Swedish Kroner and valued at $750 million. **Key leading practice:** Seeking out new and innovative bond issuances

- **New York** and **Paris** host the headquarters of eight out of the top ten banks from the 2017 CBI’s Green Bond underwriters table. This has been fairly consistent since CBI started tracking these issues in 2013. Canadian banks have come in and out of the top 20, with RBC and TD each being listed several times in recent years. **Key leading practice:** Local underwriters driving green bond issuance

- Many countries have programs to de-risk sustainable projects for either investors or underwriters. **Luxembourg** provided first-loss investments for projects that qualify under certain sustainable standards; **Tokyo** provided interest subsidies to banks who are financing sustainable projects; **London** opened the first green bank (but since privatized it) and numerous **US** states have programs to provide favourable terms to sustainable projects. This de-risking of sustainable projects through capital or financing subsidies sends a signal to the market that the valuation of sustainable projects is changing; these programs reduce uncertainty as well in payback periods for investments and time to scale for large GHG reduction projects. Canada has some examples of this already: Sustainable Development Technology Canada (SDTC) provides funding for new sustainable projects; however, there is limited financial sector involvement in this program. **Key leading practice:** A systematic early and de-risked innovation and investment ecosystem for sustainable projects, supported by government
Capitalizing on Sustainable Finance: A Growth Opportunity for Toronto’s Financial Sector

Sustainable finance indices

**Global Green Finance Index**

The GGFI ranks over 100 global cities, including the cities assessed above, with respect to their viability as sustainable finance centres using a variety of criteria, including carbon intensity of investments, ESG disclosure, the regulatory environment around sustainable finance, carbon or green bonds activity and other global data provided by the World Bank and other organizations. GGFI scores each city on “green finance quality” (market depth and breadth) and “green finance penetration” (market volumes). The rankings with respect to the full surveys for the G7 finance capitals and Luxembourg are shown in Table 2, and those for the North American cities assessed are shown in Table 3.

Table 2 - GGFI rankings for Green Finance Quality and Penetration (G7 Cities plus Luxembourg)

<table>
<thead>
<tr>
<th>City</th>
<th>Green Finance Penetration Rank (global, out of 47 cities)</th>
<th>Green Finance Quality Rank (global, out of 47 cities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2</td>
<td>=6</td>
</tr>
<tr>
<td>Paris</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>=19</td>
<td>19</td>
</tr>
<tr>
<td>Tokyo</td>
<td>=19</td>
<td>22</td>
</tr>
<tr>
<td>Milan</td>
<td>=26</td>
<td>28</td>
</tr>
<tr>
<td>Toronto</td>
<td>=30</td>
<td>=34</td>
</tr>
<tr>
<td>New York</td>
<td>43</td>
<td>=30</td>
</tr>
</tbody>
</table>

G7 cities perform well in terms of penetration, but New York, Milan and Toronto lag behind. Similar results are seen for quality, with London, Paris and Luxembourg in the top six and Milan and Toronto well behind.

San Francisco and Washington were the top North American performers in green finance quality, tied at tenth place globally. Toronto, however, was named fourth in North America in green finance quality and was also identified as a centre whose green finance offerings were expected to improve over the next two years.

Table 3 - GGFI rankings for Green Finance Quality and Penetration (North American results)

<table>
<thead>
<tr>
<th>City</th>
<th>Green Finance Penetration Rank (North American results)</th>
<th>Green Finance Quality Rank (North American results)</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Washington DC</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Toronto</strong></td>
<td>4</td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Boston</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Chicago</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Mexico City</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>New York</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>
It should be noted that the GGFI incorporates a large number of indicators that are not explicitly related to sustainable finance (for example air quality and cost of living). In order to focus on sustainable finance activity, specifically, raw data made available by the report authors for certain of the sustainable finance indicators was reviewed. Of the approximately 50 global cities for which data was available for each indicator, Toronto performed in the top ten in the areas of climate-aligned bond issuance and the ratio of non-renewable to renewable energy financing.

A summary of Toronto’s global rankings by indicator is shown in Table 4. Further details regarding the methodologies used by GGFI to perform the rankings can be found on that entity’s webpage.

Table 4 - Toronto’s global ranking in select sustainable finance indicators (GGFI data)

<table>
<thead>
<tr>
<th>Sustainable finance indicators – GGFI data</th>
<th>Toronto’s global rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate-aligned bonds outstanding (dollar value in US$, 2017)</td>
<td>6 (of 57)</td>
</tr>
<tr>
<td>Conventional to new energy finance (value of financing of non-renewable energy vs. renewable energy, 2013-2016 data)</td>
<td>8 (of 53)</td>
</tr>
<tr>
<td>Green bonds issued (dollar value in US$, 2017 data)</td>
<td>11 (of 47)</td>
</tr>
<tr>
<td>Financial centre green-alignment (analysis of regulatory alignment and support for sustainable finance, 2016 data)</td>
<td>18 (of 50)</td>
</tr>
<tr>
<td>Corporate “clean” revenues vs. fossil-fuel revenues (2016 data)</td>
<td>23 (of 50)</td>
</tr>
<tr>
<td>Corporate carbon intensity (2016 data)</td>
<td>23 (of 38)</td>
</tr>
<tr>
<td>Corporate sustainability disclosure rates (2015-2016 data)</td>
<td>26 (of 50)</td>
</tr>
</tbody>
</table>

Finance Montreal study

A benchmarking study recently commissioned by Finance Montreal of ten global cities as sustainable finance hubs followed a methodology that assessed sustainable finance demand, supply and overall ecosystem (including regulatory and academic activity) through a broad perceptions-based survey as well as overall strength as a traditional finance centre based on select metrics. This research placed Toronto 5th as shown in Table 5.

Table 5 - Finance Montreal sustainable finance hub benchmark results, 2015

<table>
<thead>
<tr>
<th>City</th>
<th>Overall rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>1</td>
</tr>
<tr>
<td>Paris</td>
<td>2</td>
</tr>
<tr>
<td>New York</td>
<td>3</td>
</tr>
<tr>
<td>Boston</td>
<td>4</td>
</tr>
<tr>
<td>Toronto</td>
<td>5</td>
</tr>
<tr>
<td>Montreal</td>
<td>8</td>
</tr>
</tbody>
</table>

*Amongst North American cities, only data for Toronto and New York was made available. Without more comprehensive data, further analysis regarding Toronto’s performance within North America could not be performed.
While London, Paris, New York and Boston (as well as other non-G7, non-North American cities) outperformed Toronto, New York’s overall performance was significantly buoyed by its prowess in traditional financial activities. Amongst the North American comparators, the scores for perception of sustainable finance activity were much closer, with Toronto following behind New York and Boston by a much smaller margin than it did London or Paris. This indicates that Toronto remains competitive within North America and there is a viable opportunity to pull ahead.

Summary of findings

Overall, the leading practice scan and review of independent indices indicate that successful sustainable finance activities are being implemented in different markets around the world, but best practices are not necessarily widely shared. Certainly, Toronto ranks favorably based on certain research sources, with recognition of its green bond market in particular (despite the lack of listed or certified bonds). London and Paris and to a certain degree New York are most commonly observed in a leadership role and other North American cities (San Francisco, Washington and Boston) are showing promise. This underscores that action is required to keep pace. Without a cohesive strategy to collaboratively chart a pathway to a lower-carbon economy and the related financial activity growth is likely to be slow or disjointed.

Figure 3 - Summary of Toronto’s strengths, weaknesses, opportunities and threats as a sustainable finance hub

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Top 10 Global Financial Centre, 2nd in North America</td>
<td>• No systematic effort to attract and/or underwrite green bond/debt issuances</td>
</tr>
<tr>
<td>• Ranked #2 globally in “soundness of banks”</td>
<td>• A lack of early government/private investment in game-changing low-carbon technology</td>
</tr>
<tr>
<td>• Strong ESG disclosure rules for investments and pension funds</td>
<td>• Lack of ESG disclosure by TSX-listed firms</td>
</tr>
<tr>
<td>• Momentum with green bond issuances</td>
<td>• Immature sustainable finance academic base</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities*</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leverage Toronto’s college and university network to build a local hub for sustainable finance</td>
<td>• Smaller players, such as Luxembourg, are specializing and growing in influence to become global leaders</td>
</tr>
<tr>
<td>• Combine the strength of the big banks and globally significant asset owners to produce a cohesive roadmap for sustainable finance activity</td>
<td>• San Francisco, Washington and Boston have growing influence as financial and sustainable finance hubs in North America</td>
</tr>
<tr>
<td>• Work with cleantech sector to define funding needs, especially for high-risk, low-carbon technology</td>
<td>• States in the US are fostering thriving sustainable finance environments in spite of national politics</td>
</tr>
<tr>
<td>• Better define “sustainable” so banks can properly value sustainable investments</td>
<td></td>
</tr>
</tbody>
</table>

*Preliminary opportunities highlighted from the research discussed in this section. See Section V for a more fulsome assessment of Toronto’s opportunities.
IV. Where could we be?

The size of the prize

Responsible investment

Sustainable finance represents a significant opportunity for the financial sector. Globally, the responsible investment market has reached nearly US$23 trillion. Many of the world’s leading wealth managers have recently ramped up their sustainable product and service offerings including BNP Paribas, UBS, Morgan Stanley and JP Morgan Asset Management.

Canada’s responsible investment assets under management (AUM) is continuing to experience rapid growth, estimated at 22% between 2014 and 2016 (an increase of US$357 billion). The Responsible Investment Association estimates that responsible investing now represents 38% of the Canadian investment industry, with management of nearly $1.5 trillion of AUM incorporating ESG integration strategies.

Taking a new approach to values-based investing represents a growth opportunity for Canada’s global banks and insurers to boost their already sizable AUM (currently valued at $2.6 trillion) in the coming years.

Green bonds

Canadian outstanding bond issues explicitly labelled as “green” stood at over $10 billion in August 2018, with close to $5 billion of that issued in 2018 alone. This dramatic increase follows trends globally, which saw green bond issuances more than triple since 2015 (Figure 4).

Canadian outstanding bond issues explicitly labelled as “green” stood at over $10 billion in August 2018, with close to $5 billion of that issued in 2018 alone. This dramatic increase follows trends globally, which saw green bond issuances more than triple since 2015 (Figure 4).

Global labelled green bond issuance trends

This trend is expected to continue, with targets for the global market for green bonds set at US$1 trillion by 2020. The unlabelled market is even more promising. CBI estimates there is over $39 billion in unlabeled climate-aligned outstanding issues in Canada, which is illustrative of the extent of the sustainable finance activity occurring outside of narrow tagging mechanisms currently in place.
Infrastructure

With respect to infrastructure, a global build-out valued at over US$90 trillion is anticipated between 2018 and 2040, including a specific focus on emerging markets. The gap between current infrastructure investment trends and the investment needed for the world to achieve the UN SDGs (including goals related to climate action and clean energy) is projected to be over US$6.5 trillion between 2016 and 2025 (Figure 5).

Global infrastructure projections until 2025

<table>
<thead>
<tr>
<th>Year</th>
<th>Current trends ($ trillions)</th>
<th>Investment need to align with SDGs ($ trillions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>0.0</td>
<td>3.0</td>
</tr>
<tr>
<td>2017</td>
<td>0.5</td>
<td>3.5</td>
</tr>
<tr>
<td>2018</td>
<td>1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>2019</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>2020</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2021</td>
<td>2.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2022</td>
<td>3.0</td>
<td>6.0</td>
</tr>
<tr>
<td>2023</td>
<td>3.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2024</td>
<td>4.0</td>
<td>7.0</td>
</tr>
<tr>
<td>2025</td>
<td>4.5</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Figure 5 - Projected global infrastructure investment needs

Six of the top 12 infrastructure investors in the world are from Canada (including Toronto-based Brookfield, CPPIB, Ontario Municipal Employees Retirement System [OMERS] and Ontario Teachers’ Pension Plan [OTPP]). Working together with global capital markets teams at the banks to develop low-carbon infrastructure investment vehicles offers potential to generate annual yields of $41 billion by 2025, according to research by Corporate Knights. Leading pension funds that set the standard for how Canada’s $3.6 trillion pension assets are managed are already leveraging this opportunity with PSP Investments and OTPP, each deploying $1.6 billion into renewable energy assets in 2017. The CPPIB announced plans in 2018 to invest more than $3 billion in the renewable energy sector as it works to ensure the CPP Fund is well-positioned for the expected global transition to a lower-carbon economy, and OMERS is scaling up its renewable energy portfolio as well.

The opportunity: quantified

Recent research published by Corporate Knights seeks to assess the scale of the sustainable finance opportunity as it relates to Canada’s financial sector. By 2025 in an ambitious scenario, Corporate Knights estimated that up to $110 billion in annual revenue is available for Canadian financial institutions across the banking, capital markets, insurance and wealth management. This includes the incremental domestic revenue (revenue from the “greening” of existing domestic markets) as well as global opportunities in wealth management, infrastructure investment and green bonds underwriting. This potential revenue is broken down more specifically in Table 6.
Table 6 – Financial sector opportunity for transition to sustainable economy

<table>
<thead>
<tr>
<th>Sector source of funds</th>
<th>Opportunity range (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greening and Green Residential Homes/Buildings (Interest)</td>
<td>$4,490 – $17,980</td>
</tr>
<tr>
<td>Greening and Green Commercial Buildings (Interest)</td>
<td>$2,680 – $10,720</td>
</tr>
<tr>
<td>Greening Personal Transportation (Interest)</td>
<td>$550 – $2,210</td>
</tr>
<tr>
<td>Greening Public Transport Infrastructure (Interest)</td>
<td>$610 – $2,430</td>
</tr>
<tr>
<td>Greening Heavy Freight Trucks (Interest)</td>
<td>$490 – $1,940</td>
</tr>
<tr>
<td>Greening Electricity Generation (Interest)</td>
<td>$1,330 – $5,310</td>
</tr>
<tr>
<td>Greening Oil, Natural Gas, Pipelines (Interest and Underwriting)</td>
<td>$1,470 – $5,890</td>
</tr>
<tr>
<td>Greening All Other Heavy Industry (Interest and Underwriting)</td>
<td>$1,120 – $4,480</td>
</tr>
<tr>
<td>Global Clean Infrastructure Investment (Yields)</td>
<td>$10,280 – $41,120</td>
</tr>
<tr>
<td>Labeled Green Bonds (Underwriting)</td>
<td>$105 – $420</td>
</tr>
<tr>
<td>Wealth Management for Sustainable Finance (Fees)</td>
<td>$4,500 – $18,100</td>
</tr>
<tr>
<td><strong>Total (numbers may not add due to rounding)</strong></td>
<td><strong>$27,650 – $110,600</strong></td>
</tr>
</tbody>
</table>

To put these results in context, the top 12 biggest financial firms in Canada had revenue of approximately $435 B in 2017[68] – the $110 billion potential sustainable finance revenues could represent up to 14% of current revenue, according to Corporate Knights.

“...green finance is a major opportunity. By ensuring that capital flows finance long-term projects in countries where growth is most carbon intensive, financial stability can be promoted. By absorbing excess global saving, equilibrium interest rates can be raised and macroeconomic stability enhanced. And by allocating capital to green technologies, the prospects for an environmentally sustainable recovery in global growth will increase.”

Mark Carney,
Governor of the Bank of England and Chairman of the G20’s Financial Stability Board
Who’s taking advantage of this opportunity?

One significant opportunity for capital markets teams in particular is to help identify strategic opportunities for Canadian energy companies to tap into growing markets for sustainable commodities. The vast feedstock contained in the oil sands combined with existing petrochemical infrastructure is a competitive differentiator for Canada. This offers a potentially significant opportunity to diversify income and increase revenues in the energy sector through extraction and value-added processing including the production of synthetic and bio-based sustainable materials and fuels.70

Some examples of existing success stories include:

• In 2013, Alberta-based TransAlta Corp. spun off TransAlta Renewables in an initial public offering (IPO) on the TSX. Five years later, TransAlta Renewables, once a side-business, has tripled in value and is now worth over $3 billion71, a third more than the parent corporation. TransAlta retained a 70% stake in TransAlta Renewables, which arguably helped the company weather recent changes in the energy market, and it is now resurgent as it recalibrates to fit in with Alberta’s planned transition away from coal power. Transactions such as these represent opportunities for the financial sector which are yet to be realized at their full potential.

• Neste Oil, a traditional fossil fuel refiner from Finland now earns 25% of its annual €11.7 billion revenues (and close to half its profits) from refining biofuels. Over the past five years, Neste Oil has generated a total return of 640%72, outpacing the S&P Global Oil Index benchmark by more than a factor of 40.

• Over the course of a decade, the Danish National Oil and Gas Company invested heavily in onshore and offshore wind to the point where renewable power now comprises 60% of its revenue. It has since rebranded as Ørsted, generating a 79.6% total return since its IPO in 2015, beating its traditional benchmark over that period by a factor of three.73

Developing expertise in navigating, lining up capital and financing these diversification success stories would be invaluable for Canada’s resource sector. It could also be an exportable skill for Canada’s capital market teams for resource companies around the world who are struggling with strategy and strained balance sheets, but looking for ways to align their businesses with the long-term growing demand for sustainable commodities.
Barriers to progress

As Corporate Knights has estimated and practical examples have shown, there is a large opportunity for the financial sector in facilitating the transition to the sustainable economy. But, we must not forget about the barriers.

A key objective of the stakeholder interviews conducted for this study was to identify the barriers and challenges that our financial institutions and supporting market stakeholders face in pursuing sustainable finance objectives, in particular in the areas identified as gaps for Toronto above. While some challenges were unique based on the firm, the stakeholder type or an investee’s industry, there was clear consensus across several fronts. A summary of these common themes is presented in Table 7 and each barrier is discussed further below.

Table 7 - Summary of key barriers to progress

<table>
<thead>
<tr>
<th>Identified barriers</th>
<th>Financial services</th>
<th>Top GHG emitting sectors in Canada (Environment Canada, 2016):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Oil &amp; gas (26%)</td>
</tr>
<tr>
<td>1. Lack of sustainable finance standards</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>2. Lack of dedicated sustainable finance cluster collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Lack of national transition strategy or pipeline of sustainable projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Lack of transparent, easy to access ESG information, products and services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Misaligned incentives for energy efficiency investments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Uncertain payback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Uncertainty about what will scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Capital constraints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Regulatory impediments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Lack of momentum; misconception of the size of the opportunity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Lack of sustainable finance standards

This barrier was identified by the vast majority of interviewees as one of if not the biggest challenge to overcome. While specific sustainable finance standards and definitions exist for certain financing mechanisms (e.g., the Green Bond Principles and Green Loan Principles), a comprehensive taxonomy across all major functions of the finance industry (and industry more broadly) does not. Investors and bankers are hindered by this insomuch as they are overly conservative in determining what investments are green-tagged. As well, existing standards are relatively binary in their assessment of what is sustainable, an approach that misses the opportunity to support traditionally “non-sustainable” industries as they transition. All of this leads to underreporting of sustainable assets which hides the true scale and growth of sustainable finance activities. A proper accounting of sustainable finance activity is a critical step to enabling a more strategic approach to prioritize and invest in sustainable growth prospects.

2. Lack of dedicated sustainable finance cluster collaboration

Most of the stakeholders interviewed for this study are taking action on the sustainable finance opportunity in their own way; however, there is a general lack of collaborative effort across industries to come together on sustainable finance challenges to create a cluster dynamic, for example, of the nature seen with the technology sector in Silicon Valley. Successful industry clusters reflect a delicate yet deep balance of competition and collaboration in which firms benefit from the resources, infrastructure and business environment attributes of the local industry as a whole. Toronto has not yet reached this level of collaboration when it comes to sustainable finance.

3. Lack of national pipeline of sustainable projects or transition strategy

Canada lacks a cohesive investment strategy to move towards a sustainable economy for our high-emitting industries. A strategy in this case refers to a detailed roadmap of the nature and extent of investment required (frequently infrastructure, but also low-carbon technology or general purpose lending) to achieve Canada’s reduction targets under the Paris Agreement. Benefits of such a strategy might include:

- Allowing investors to understand how large gigatonne-reduction projects fit into the bigger, longer-term transition picture, making them more attractive for investment (as compared to small, one-off carbon reduction projects that tend to be more easily accepted)
- Reducing potential missed opportunities to match capital providers with capital seekers through the medium of a transparent list of opportunities
- Better demonstrating the nature and scale of opportunity when it comes to sustainable finance to attract more private capital

4. Lack of transparent, easy to access ESG information, products and services

Consumers and markets require information – preferably easy to access information – to make investment decisions. The lack of relevant ESG information provided by TSX listed firms greatly inhibits market feedback mechanisms. There is a common misconception that resource economies may be disinclined to disclose ESG information, but this not borne out as evidenced by the example of the Australian Stock Exchange, which has world-class ESG information disclosed by its listed companies, while TSX-listed companies on average lag in the middle of the pack.

While ESG products and services do exist, it can often be challenging for retail investors in particular to grasp how analysis was performed, what standards were used and why certain investments passed the tolerance threshold and others did not. It can also be challenging for wealth management professionals to efficiently and meaningfully diagnose beneficiary preferences on ESG matters in the absence of clear standards and user-friendly tools. Millennial investors are increasingly trading “traditional” investments for value-based investments; however, the financial sector is not yet prepared to respond to this demand due to data availability and analysis limitations.
5. Misaligned incentives for energy efficiency investments

Also known as the ‘split incentive’, this barrier is particularly important to the buildings sector where energy efficiency benefits do not accrue to the individual or entity paying for the benefit. For example, this can occur in cases where a building owner upgrades a building with better insulation or better windows and the tenant, who pays the electricity or heating bill, is the one who benefits from the energy bill savings. This hinders energy efficiency investments in large buildings, an area with significant GHG reduction potential.

6. Uncertain payback

Uncertain payback related to traditional energy efficiency investments and more risky, large-scale GHG reduction pilot technologies is a barrier to achieving higher levels of investment in this area. Such investments are often not made by larger, risk-averse investors and significant capital providers are in some cases hesitant to participate without evidence that a technology is proven and close to market.

7. Uncertainty about what will scale

Uncertainty about what will scale refers to the inertia exhibited by both industry and financial institutions in investing in early stage, un-proven technologies. Under the umbrella of sustainable finance, some investments will succeed and others will inevitably fail in the search for what will be able to scale-up to deliver the gigatonne-level reductions that our economy requires. While Sustainable Development Technology Canada (SDTC) provides some support to early-stage development projects, our core financial institutions struggle with how to identify and service entities at this stage due in some cases to a lack of understanding of the new technology and its risk profile or an unwillingness to take on a first loss position.

8. Capital constraints

Many of our high-emitting industries are currently hindered by excessive debt and lack of borrowing capacity. They are therefore unlikely to be able to finance the necessary transition spend through conventional methods under existing conditions.

9. Regulatory impediments

Canada’s finance sector is governed by myriad regulators, including the Department of Finance Canada, the Office of the Superintendent of Financial Institutions (OSFI; banking), the Canadian Council of Insurance Regulators (CCIR; insurance), the Canadian Association of Pension Supervisory Authorities (CAPSA; pensions) and the securities administrators of each individual province and territory (securities) to name a few. Service provider standard setters such as the Accounting Standards Board (ASB) also have a significant role to play. At an aggregate level, the mandates of these entities have not been aligned with sustainable growth priorities, hindering the extent to which they can or do push the organizations in their purview to take action.

Other more specific regulatory barriers include a rigid and outdated building code and capital requirement restrictions.

10. Lack of momentum; misconception of the size of the opportunity

The culmination of all of the barriers identified above, including, specifically, a lack of fulsome awareness of the scale of the sustainable finance opportunity, contributes to a general lack of momentum and commitment to the transition across the financial and non-financial sectors. While leading actors (typically, those with significant global reach and resources) in each sector are certainly making positive progress in their own ways, average progress remains low. This is borne out in the slow progress to adopt the TCFD recommendations amongst other examples.
V. How do we get there?

After analyzing Toronto’s current state in sustainable finance and considering best practice examples as well as our unique barriers to process, we have identified seven critical calls to action and a series of longer term ambitions for the financial sector, government and other stakeholders to advance Toronto and Canada as a North American sustainable finance hub. While they are voluntary in nature, we strongly encourage the financial sector, the public sector, industry, academia and other stakeholders to work together to consider how to address these significant growth opportunities.

Below, we have highlighted and described in detail those options assessed as critical to Toronto’s future as a sustainable finance hub.

Table 8 - Strategic option evaluation criteria

<table>
<thead>
<tr>
<th>Criteria 1: Impact on long-term sustainable finance activity</th>
<th>Criteria 2: Ease of implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range: Low ➔ Medium ➔ High</td>
<td>Range: Complex ➔ Average ➔ Simple</td>
</tr>
<tr>
<td>Considerations:</td>
<td>Considerations:</td>
</tr>
<tr>
<td>• Reduction of material financing barriers</td>
<td>• Extent of stakeholder involvement</td>
</tr>
<tr>
<td>• Ability to crowd-in private capital</td>
<td>required and anticipated current state</td>
</tr>
<tr>
<td>• Alignment with evolving global leading practice</td>
<td>of buy-in</td>
</tr>
<tr>
<td>• Anticipated growth in Toronto’s brand and capability as a</td>
<td>• Upfront investment and resources</td>
</tr>
<tr>
<td>sustainable finance hub</td>
<td>required</td>
</tr>
</tbody>
</table>

Option evaluation

Over the course of the study, a series of strategic opportunity options were identified and evaluated. The options were sourced from best practice research and stakeholder feedback and were designed specifically to address – in whole or in part – the identified list of barriers discussed above. Option assessment criteria were defined based on the core objectives of this study, namely to enhance Toronto’s positioning as a sustainable finance hub. The criteria used for evaluation are shown in Table 8.
Opportunities

The opportunities presented in this section have been segmented into the following categories:

- **Calls to action:** system-wide initiatives that could be undertaken by the public and private sector to position Toronto as a prominent sustainable finance hub in North America. Calls to action are aligned under three key themes:
  - Theme 1: Understanding and measuring the sustainable finance opportunity
  - Theme 2: Exploiting the sustainable finance opportunity
  - Theme 3: Enhancing collaboration

- **Longer-term ambitions:** additional high-impact opportunities that we believe to be key to the long-term objective, but that we recognize will take considerable cooperation amongst diverse stakeholders to advance and will require more fulsome analysis to determine the appropriate approach in the Canadian environment.

A summary of the identified calls to action is presented in Table 9, followed by detailed discussion by theme. Links between the calls to action and the ten dimensions of sustainable finance hubs as summarized in Section II are indicated where relevant.

### Table 9 – Summary of calls to action

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Opportunity</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Theme 1: Understanding and measuring the sustainable finance opportunity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Establish a sustainable finance classification system, or ‘taxonomy’</td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
<tr>
<td>2</td>
<td>Review financial institution balance sheets and income statements and tag qualifying sustainable exposures and revenue</td>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
<tr>
<td>3</td>
<td>Build a national pipeline of potential sustainable and resilient infrastructure projects</td>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
<tr>
<td></td>
<td><strong>Theme 2: Exploiting the sustainable finance opportunity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Develop strategies within financial institutions which empower business units to innovate and capitalize on the sustainable finance opportunity</td>
<td>High</td>
<td>Complex</td>
<td>2-3 years</td>
</tr>
<tr>
<td>5</td>
<td>Work with the public sector to establish new, innovative financing methods</td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
<tr>
<td></td>
<td><strong>Theme 3: Enhancing collaboration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Establish a new Sustainable Finance Institute to strengthen cross-sectoral capacity and knowledge sharing</td>
<td>Medium</td>
<td>Average</td>
<td>Quick win</td>
</tr>
<tr>
<td>7</td>
<td>Create a joint forum for the financial sector and fintech industry on sustainable finance</td>
<td>Low</td>
<td>Simple</td>
<td>Quick win</td>
</tr>
</tbody>
</table>
Calls to action

Theme 1: Understanding and measuring the sustainable finance opportunity

<table>
<thead>
<tr>
<th>Call to action #1</th>
<th>Establish a sustainable finance classification system, or ‘taxonomy’</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
</tbody>
</table>

**Summary actions**

- Draft Canadian sustainable finance taxonomy and sustainable transition taxonomy
- Drive national stakeholder engagement and validation process

**Details**

In order to build awareness about the already significant size of the sustainable finance space and inspire actors to seize upon opportunities, a common definition of sustainable finance is required. Taxonomy is the foundation that makes it possible to tag and measure financial sector sustainable economy exposures, which is critical for the effective adoption of many of the opportunities within this report.

Current industry classification systems create barriers for sustainable economy financing and do not allow easy tagging or tracking of sustainable assets or revenues. For example, many banks classify investments using SIC codes which group coal and wind power in the same category. This further prevents securitization of financing activities through green bonds, which continue to be challenged by charges of green washing where uncertainty exists about the true environmental benefit of the underlying assets. While specific sustainable taxonomies exist for certain financing mechanisms (Green Bond Principles and Green Loan Principles), a comprehensive taxonomy across all major functions of the financial industry does not.

In addition, Canada is still in the early stages of understanding how to appropriately guide and support our heavy industries in successfully making the transition to a low-carbon future. Financing mechanisms that recognize the positive benefits of certain transitionary activities despite the fact that they might not fully meet a commonly accepted definition of sustainable would help our economy to bridge this gap.

The vast majority of financial and non-financial (e.g., energy) organizations interviewed for this study expressed a desire for a consistent, transparent and practical definition of what qualifies for sustainable finance.

The European Union has released a draft sustainable taxonomy and will release a formal sustainable taxonomy in the first quarter of 2019, which is expected to be complimented with a green supporting factor, whereby qualifying assets will receive lower capital risk weights. The initial scope for the EU sustainable taxonomy does not include clean transition themes, nor will it provide a segmented revenue framework to enable financial institutions to report their sustainable exposures and income in a consistent, comparable manner.

The vast majority of financial and non-financial (e.g., energy) organizations interviewed for this study expressed a desire for a consistent, transparent and practical definition of what qualifies for sustainable finance.

The Euro

Given Canada’s large, energy transition-exposed resource sector and large financial sector, there is an opportunity to define a globally applicable made-in-Canada sustainable taxonomy that includes transition elements as well as a template for financial sector actors to consistently account for their exposures and income from sustainable finance activities. In order for a made-in-Canada sustainable taxonomy to be successful, it will be critical to define a sustainable position that is both meaningful to carbon-intensive industries and seen as credible by global investors. One litmus test for credibility, for example, would be that fixed income investments that meet the Canadian sustainable taxonomy would qualify for major green bond indices including the S&P Green Bond Index and The Bloomberg Barclays MSCI Green Bond Index.

Work on an early draft of a Canadian sustainable taxonomy has already begun with TFI’s participation. The drafting will be followed by a thorough stakeholder validation process.
Leading practice alignment

- Strong alignment with action plans of global leaders; for example:
  - The EU has also recognized the criticality of a standardized taxonomy and is in the process of developing one under the EU Action Plan on Sustainable Finance77.
  - Norway’s Roadmap for Green Competitiveness likewise strongly recommended the development of a sustainable taxonomy to foster the development of sustainable financial products, improve customer transparency and allow for better oversight of the relative contributions of individual firms78.
  - UK Green Finance Taskforce put forward recommendations to Government to align with the EU framework79.
  - While some overlap (and mutual learnings) can be expected to the initiatives described above, a Canadian version could reflect certain nuances of our economy including the sustainable transition component, which the Europeans are not addressing.

Barriers overcome

- Lack of ‘sustainable’ finance standards

Potential implementation challenges

- Securing sufficient stakeholder alignment to establish a de-facto national standard

Relevant sustainable finance hub dimensions

- Policy and Public Finance
- Investment
- Debt Capital Markets
- Equity Capital Markets
- Banking
- Insurance
### Call to action #2

<table>
<thead>
<tr>
<th>Review financial institution balance sheets and income statements and tag qualifying sustainable exposures and revenue</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
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</tbody>
</table>

#### Summary actions

- Review balance sheets and tag sustainable assets to assess current state and inform go-forward sustainable investment strategies

#### Details

Following the establishment of a Canadian sustainable taxonomy as addressed above, investors, insurers, and banks could be encouraged to review their balance sheets and income statements for the purposes of identifying qualifying sustainable exposures and revenue. The purpose of such a review would be to understand the current state of sustainable exposure— to the extent possible based on data available—to inform go-forward sustainable finance strategies. As well, it is expected that this review would assist entities in identifying gaps in their data collection process or system capabilities that should be addressed to enable fulsome sustainable asset tracking in the future.

#### Leading practice alignment

- Report from the G20 Sustainable Finance group recommends balance sheet tagging to promote the quantification of sustainable assets which could lead to greater securitization
- 10 leading European Banks (ABN AMRO, BBVA, Berlin Hyp, HSBC, ING, Lloyds, SEB, Suedtiroler Volksbank, Triodos, and UniCredit) are beginning to identify, analyze, and promote green finance for housing and real estate through the direct attribution of environmental characteristics in their lending and debt capital markets operations.

#### Barriers overcome

- Lack of 'sustainable' finance standards

#### Potential implementation challenges

- Needs a clear taxonomy for defining sustainable balance sheet exposures

#### Relevant sustainable finance hub dimensions

- Investment
- Banking
- Insurance
Call to action #3

<table>
<thead>
<tr>
<th>Build a national pipeline of potential sustainable and resilient infrastructure projects</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td></td>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
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</tbody>
</table>

Summary actions

- Develop national sustainable and resilient infrastructure project pipeline linked to sustainable taxonomy and the Pan Canadian Framework on Clean Growth and Climate Change
- Consider developing a national capital raising plan linked to the pipeline to match providers and users of capital based on the pipeline
- Assess opportunity to incorporate sustainable infrastructure into the mandate of the federal Infrastructure Bank

Details

Canada has a significant sustainable infrastructure gap. On the other hand, investor demand for sustainable infrastructure investment opportunities is substantial and currently unmatched by the supply of viable projects (as demonstrated by the consistency of green bond oversubscriptions). A sustainable infrastructure pipeline that captures the spectrum of national sustainable infrastructure would be a vital resource to communicate the investment opportunity to the financial sector and to encourage project developers to develop viable models to serve the addressable market. Such a project pipeline would need clear rules for inclusion which could be based off of the sustainable taxonomy described elsewhere in this report with explicit linkages to the Pan-Canadian Framework on Clean Growth and Climate Change. Consideration could also be given to opportunities to associate this effort with that of the Canadian Infrastructure Bank.

During the interviews conducted for this paper, institutional investors, especially those with long-term liabilities like insurers and pension funds, expressed an interest in increasing allocations to infrastructure assets as a result of their inflation-linked long-term returns. For defined benefit pension funds, increasing investment in infrastructure assets can help reduce deficits. Analysis by Macquarie suggests that for every £1 billion in defined benefit pension funds allocated from corporate bonds to infrastructure debt, a reduction in pension fund deficits of £270 million could be achieved.

Leading practice alignment

- Australia maintains a comprehensive list of national infrastructure priorities, with the latest iteration identifying over $55 billion in projects with a further $25 billion identified and already in development at the time of the announcement (figures in Australian dollars). The information is publically available through a dedicated website.
- CBI recently supplemented this by publishing a comprehensive list of over 400 green infrastructure investment opportunities in Australia and New Zealand in order to “…help meet the growing demand for green investment opportunities – including green bonds – as well as to support the two countries’ respective transition to low-carbon economies.”

Barriers overcome

- Lack of national transition strategy or pipeline of sustainable projects

Potential implementation challenges

- Requires central coordination by the federal government
- Must follow the release of the sustainable taxonomy

Relevant sustainable finance hub dimensions

- Policy and Public Finance
Theme 2: Exploiting the sustainable finance opportunity

<table>
<thead>
<tr>
<th>Call to action #4</th>
<th>Develop strategies within financial institutions which empower business units to innovate and capitalize on the sustainable finance opportunity</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Complex</td>
<td>2-3 years</td>
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</table>

Summary actions

- Encourage Canada's large financial institutions to think about climate change strategically and proactively, in the context of enabling a multi-decade industrial and service economy transition.
- Engage Boards, executive and operating committees in the development of products and investment structures which drive demand and returns for sustainable finance initiatives.
- Develop the pipeline of sustainable finance talent in Toronto.

Details

Sustainable finance is still mainly housed in the compliance, philanthropy or public affairs groups of financial institutions, which are challenged by insufficient resources to scale up sustainable finance activity on par with the opportunity as well as a need to manage myriad other sustainability priorities simultaneously. In reality, sustainable finance is a revenue-generating opportunity and efforts in this area should be driven by those with the responsibility for revenue and return generation. Empowering business units to innovate and capitalize on the sustainable finance opportunity has the potential for significant revenue and returns for financial institutions.

Certain suggestions for specific strategic actions were raised over the course of the interviews conducted for this paper. These are included here to encourage further debate and discussion:

- Capital markets
  - Develop strategies and investment vehicles to enable institutional investors to boost exposures to the US$90 trillion sustainable infrastructure build-out between 2018-2040, including a specific focus on emerging markets where there are superior yields
- Wealth management
  - Tap into growing demand for sustainable investing with tools and products
  - Boost capacity and availability of tools to enable investment advisers to ask about, and then respond to, retail investors’ preferences about the sustainable impact of their investments, as a routine component of financial advice
- Institutional investment
  - Boost sustainable infrastructure exposures with focus on emerging markets, which offer superior yields
- Insurance
  - Seek ways to better align insurance coverage and pricing with climate change risk (e.g., resilient homes or electric vehicles)

In order to fully capture the opportunity at hand, Canadian financial institutions will likely need to invest in developing sustainable finance talent and expertise within business unit teams though in-house development and talent acquisition.
### Barriers overcome
- Lack of dedicated sustainable finance cluster collaboration
- Lack of transparent, easy to access ESG products and services for retail customers

### Potential implementation challenges
- Obtaining “buy-in” from business unit heads
- Sustainable finance talent and expertise
- Misconception regarding the scale of the opportunity (see theme #1 opportunities)

### Relevant sustainable finance hub dimension
- Banking
- Investment
- Insurance
Call to action #5

<table>
<thead>
<tr>
<th>Work with the public sector to establish new, innovative financing methods</th>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Average</td>
<td>1-2 years</td>
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</tbody>
</table>

Summary actions

- Establish coordinated efforts to recommend strategies for government funding and payback mechanisms to help de-risk sustainable technologies and energy efficiency innovations

Details

Some volatility must be expected as promising but unproven clean technologies are created. Payback uncertainty as technologies mature as well as unknowns regarding what technologies will ultimately scale to deliver the carbon reductions required are key barriers for financial institutions. The role of the public sector should be to help bridge the gap where capital markets are not ideally positioned to meet the required financing demands. Opportunities for government to support the development and commercialization of sustainable technologies in ways that would address specific, identified barriers could include:

- Setting up a public fund with the mandate take on junior debt to enable promising first of its kind clean technologies to crowd in private capital and build pilots at scale.
- Implementing well-designed property assessed clean energy (PACE) programs that enable contractors and developers to be paid up front for energy efficiency retrofits, fuel switching and resilient low-carbon new builds, with the payback occurring through a property tax bill increase.
- Purchasing subordinated tranches (i.e., first-loss tranches) in the first series of sustainable infrastructure bonds or asset-backed security (ABS) issuances.

Leading practice alignment

- PACE programmes in the US have financed $3.4 billion in green building projects
- Partial credit guarantee: Guaranteeing payments for the principal and interest on debt issuance up to certain percentage for sustainable energy
- Cornerstone stake: An investment that occurs early in the investment process so as to increase chances of success and to play a demonstration role to attract other investors. (UK Green Investment Bank, energy efficiency unlisted fund offering)
- Blending: Strategic mixing of concessional, non-concessional and for profit financing to attract risk-capital (UK Green Investment Bank in unlisted equity investment for wind project)
- Fund seeding: Public investment to help establish private equity (PE) funds that specialise in green projects

Barriers overcome

- Misaligned incentives for energy efficiency investments
- Uncertain payback
- Uncertainty about what will scale
- Capital constraints

Potential implementation challenges

- Requires political buy-in for funding allocation
- Requires adequate input/advice from financial sector to be effective

Relevant sustainable finance hub dimensions

- Policy and Public Finance
- Investment
- Banking
- Insurance
Theme 3: Enhancing collaboration

**Call to action #6**

| Establish a new Sustainable Finance Institute to strengthen cross-sectoral capacity and knowledge sharing |

<table>
<thead>
<tr>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Average</td>
<td>1-2 years</td>
</tr>
</tbody>
</table>

**Summary actions**

- Establish a new Sustainable Finance Institute to bring together the finance sector and other stakeholders to work on critical sustainable finance issues
- Incorporate an academic sub-entity to study and build solutions for identified analytical challenges, including the implementation of the TCFD recommendations as a top priority
- Develop fulsome sustainable finance strategy for Toronto

**Details**

Individual stakeholders within Toronto's financial community, including TFI, have made great strides in pushing Canada's sustainable finance agenda forward. However, we lack a dedicated entity to convene stakeholders, identify research priorities and lobby for action. The entity's mandate could include advancing the Canadian sustainable finance conversation to overcome the identified lack of momentum/commitment and the development of local sustainable finance talent and expertise. It could also include coordinating the development of a fulsome sustainable finance strategy for Toronto. Specific actions could include coordinating ongoing development of taxonomies and standards; liaising and coordinating with regulators and non-financial sectors (e.g., clean tech); convening of conferences, fora, symposia and working groups; and, importantly, helping to serve the brand for Toronto as a sustainable finance hub.

An academic sub-entity could also be considered to help address sector-wide analytical challenges related to sustainable finance. Overall, constrained analytical capabilities prevents the financial sector from (a) understanding the true value and opportunity of sustainable finance activities; (b) innovating for new products and services; (c) analyzing risk for optimal pricing and management; and, (d) monitoring performance against sustainable finance objectives. In particular this has been observed in conjunction with somewhat muted efforts to implement the TCFD recommendations. Canadian investors often cite a lack of transparent, reliable tools to execute carbon analysis on investment portfolios as a barrier to implementation. An independent centre for sustainable finance analytics based within one or more of Toronto's many leading educational institutions could help to harness our city's combined academic and financial prowess to collectively progress our understanding and ability to exploit the sustainable finance opportunity. A first priority could be to lead the development of models and tools for portfolio- and entity-level analysis of climate risk and carbon exposure.

**Leading practice alignment**

- The UK Green Taskforce acknowledge similar challenges and recommended the establishment of a Green Finance Institute, supported by a Centre for Climate Analytics.
- Finance for Tomorrow is an institute convening the French finance sector and other stakeholders with the common objective of advancing the sustainable finance agenda within France and internationally.

**Barriers overcome**

- Lack of dedicated sustainable finance cluster collaboration

**Potential implementation challenges**

- Funding

**Relevant sustainable finance hub dimensions**

- Policy and Public Finance
- Knowledge
- Investment
- Banking
- Insurance
- Specialist (cleantech)
Create a joint forum for the financial sector and fintech industry on sustainable finance

<table>
<thead>
<tr>
<th>Impact</th>
<th>Effort</th>
<th>Time horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Simple</td>
<td>Quick win</td>
</tr>
</tbody>
</table>

Summary actions

- Align with existing local fintech bodies to convene dialogue on joint financial and fintech opportunities related to sustainable finance

Details

In 2017, Toronto ranked 4th among the most attractive global centres for fintech as noted by the Institute for Financial Services Zug.85 The Toronto-Waterloo Corridor now boasts the second highest density of technology start-ups in the world.86 Expanding on some of the challenges identified in call to action #4, there is an opportunity for our city to take better advantage of this industry to assist in addressing both internal analytical and external transparency and product and service delivery challenges in the sustainable finance space. For example, fintech can help bankers deliver innovative solutions to customers (e.g., Scotia iTRADE sustainable investing tools) or deliver efficiency and transparency to the green debt market through blockchain (e.g. Stockholm Green Digital Finance’s Green Assets Wallet project).

Many markets around the world have or appear likely to develop green fintech alliances or hubs to seek combined solutions to sustainable finance opportunities. While this may be the right eventual course of action for Toronto, too, a practical preliminary step may be to convene a roundtable of key financial sector and fintech players to identify specific areas of opportunity and explore the best structure for working together on this issue going forward. Canada’s federal government is demonstrating support for collaboration between these two important industries, by introducing regulations to make it easier for financial institutions to partner with fintechs and consulting on open banking (i.e., data sharing to foster innovation). Alignment with the MARS Discovery District’s Finance & Commerce initiative would be a positive way to begin this dialogue.

Leading practice alignment

- The Global Sustainable Digital Finance Alliance, co-launched by ANT Financial and UN Environment, seeks to “…address the potential for digital finance and fintech-powered business innovations to reshape the financial system in ways that better align it with the needs of sustainable development.”
- The UK Green Taskforce Report recommended the establishment of a green fintech hub to “serve as the national centre for businesses, data and solution providers and researchers to coordinate and collaborate to develop commercially viable green fintech solutions”.
- Stockholm Green Digital Finance is a not-for-profit Centre tasked to accelerate green finance and investment through fintech innovations.

Barriers overcome

- Lack of dedicated sustainable finance cluster collaboration

Potential implementation challenges

- Minimal

Relevant sustainable finance hub dimensions

- Banking
- Investment
- Specialist (fintech)
Longer-term ambitions

Incorporating sustainable finance risk weights within regulatory capital requirements

Capital requirements for financial institutions are set by the Capital Division within OSFI to protect against excessive risk taking and insolvency. There is a growing global movement seeking to reflect the systemic risk-reducing nature of sustainable finance in national capital requirements (often called a sustainable “supporting factor”). The European Commission in charge of financial regulation for the European Union is looking positively at an EU Parliament proposal to lower capital requirements for banks for green assets in accordance with the definition provided by CBI. Introducing such a supporting factor could reduce the perceived risk attached to sustainable investments that qualify, offering the banks the financial inducement of financing loans with a higher proportion of cheaper debt rather than equity.

The main benefit of this is that externalities would be better reflected. A side benefit is that conducting sustainable finance activities would then become more attractive for financial institutions, that they would seek to engage in them more frequently and to a greater extent and that they would or could pass on a portion of the savings resulting from the capital requirement adjustment to borrowers.

While there is potential for such measures to impact the flow of money, using capital requirements to motivate capital flows should be approached with caution – green or sustainable isn’t necessarily safer than alternative allocations. While there is some emerging research suggesting that green infrastructure and green mortgages can be less risky, it is premature to conclude, for example that green mortgages are categorically lower risk than standard mortgages. It is also widely acknowledged, however, that climate change and environmental risks are not properly accounted for by financial institutions. Additionally, some stakeholders interviewed for this report expressed concern that current capital adequacy regimes are out of date and do not reflect actual risk characteristics of certain types of assets, such as infrastructure investments. For example, some of the definitions of capital and risk-weighted assets used by regulators are more than ten years old and do not properly reflect the lower risks associated with, for example, buildings that have implemented flood protection measures to guard against expensive damages from intensifying precipitation patterns.

As elsewhere, this would be a significant policy change for Canada that carries many considerations, starting with the establishment of a clear definition (or, taxonomy) of activities that constitute sustainable finance by OSFI. Other considerations include how to model the appropriate level of adjustment and how to consider the interaction of macro-level reductions in physical climate change risk and micro-level company- or project-specific risk. While the case for an adjustment may not yet be fully established, it is something that OSFI and other stakeholders could consider studying carefully.

Aligning regulatory mandates

Financial standards have a significant impact on achieving Canada’s clean growth goals. While the omission of clean growth from the core mandate of the financial standard-setting bodies may not prevent regulators or the finance sector from taking action, it has likely resulted in the actions being more sporadic and less effective than might otherwise be the case.

Several central banks have already adopted sustainable investing practices or are considering how they might modify their investment policy to include such practices. The Bank of Canada could also consider applying sustainable investing practices to the management of its investment portfolio including complying with TCFD guidance.

In addition to the Bank of Canada, our financial regulators could be considered for sustainable mandate alignment. Key bodies include: the Department of Finance Canada, OSFI, CCIR, CAPSA, provincial and territorial securities regulators and ASB.

Developing sustainable finance benchmarks

The investment world is heavily driven by benchmarks. Any fund or portfolio is inevitably compared to a benchmark index to determine whether it has met or exceeded market performance. Sustainable-themed portfolios, however, may experience higher volatility and are challenged to meet short-term returns from, for example, the large public technology stocks. Investigating options for establishing alternative benchmarks for sustainable finance instruments and asset classes may help to drive significant new investment.

Advancing the national energy transition conversation

Presently, Canada is hindered in advancing our sustainable finance positioning by the lack of a comprehensive national path to a lower-carbon future, including what a sustainable growth future means at a sector level for our high-emitting industries. These industries have a vital opportunity and important role to play in scaling sustainable energy and fuel, material and product alternatives to meet expected future demand. Many recognize this and have initiated their transition in large and small ways; however, the questions remain of when is the right time to transition and at what pace?

A national roadmap and strategy would be a significant and highly impactful milestone to galvanize our country for the transition ahead. Progress in this area continues to be challenged, including due to important sector-level barriers and concerns.

One option to encourage progress in this area is the establishment of a long-term low-carbon economy transition roundtable jointly led by industry and the financial sector with the objective of designing our national transition roadmap. Such an initiative could provide considerable momentum and financial opportunity in moving toward our sustainable growth goals.
VI. Conclusion and next steps

The findings of this study point to the opportunity available to Toronto’s financial sector in seeking leadership in sustainable finance. The calls to action and additional longer-term ambitions identified in this report require attention across the financial and non-financial sectors as well as by government, regulators, academia and other industry bodies. Through the careful consideration and adoption of these proposed actions, Toronto’s financial institutions have the opportunity to develop a leading global sustainable finance hub which can contribute to the growth of the sector, and better management of climate risk in Canada.

As the commissioner of this report, TFI’s role is to engage with the various stakeholders and facilitate discussion regarding a potential strategy for a sustainable finance hub in Toronto. To further this analysis and discussion, next steps could include that TFI (or a new Sustainable Finance Institute) consider conducting an in-depth study of the cluster dynamics of Toronto’s sustainable finance community. By thoroughly mapping and assessing the industry at this level (which was outside of the scope of this study), further opportunities may be uncovered and more extensively analyzed and measured.

In all of this, sector-wide collaboration is critical to success; and we look forward to continuing the dialogue and witnessing the growth to come.
## Appendix A: Glossary of terms and acronyms

### Term definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Cleantech</td>
<td>Clean technology; an industry of products or services that serve to reduce GHG emissions, waste or other harmful environmental impacts</td>
</tr>
<tr>
<td>COP 21</td>
<td>The 21st Annual Conference of the Parties of the United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>EU HLEG Report</td>
<td>Financing a Sustainable European Economy, a report issued by the EU’s High-Level Expert Group (HLEG) on Sustainable Finance. The HLEG consists of 20 experts appointed by the European Commission to provide advice on actions to enhance sustainable finance activity, reduce environmental-related financial system risk and deploy related policies within the EU</td>
</tr>
<tr>
<td>Fintech</td>
<td>Financial technology; an industry of digital and technology products that serve the financial sector or its customers</td>
</tr>
<tr>
<td>G20</td>
<td>International forum for the governments and central bank governors from Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States and the European Union</td>
</tr>
<tr>
<td>G7</td>
<td>The Group of Seven (G7) is a group consisting of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States</td>
</tr>
<tr>
<td>HLEG</td>
<td>See EU HLEG Report</td>
</tr>
<tr>
<td>Green bond</td>
<td>Fixed income financial instrument whereby proceeds are used specifically to fund projects that create net positive environmental or climate impacts</td>
</tr>
<tr>
<td>Green Finance Taskforce</td>
<td>See UK Green Taskforce Report</td>
</tr>
<tr>
<td>Open banking</td>
<td>A system or standard of wide-spread sharing of financial data to enable digital product and service innovation in the financial sector and by third parties</td>
</tr>
<tr>
<td>PACE</td>
<td>Property Assessed Clean Energy; a financing mechanism that enables contractors and developers to be paid up front for energy efficiency retrofits, fuel switching and resilient low-carbon new builds, with the payback occurring through a property tax bill increase</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Paris Agreement</td>
<td>Refers to the global agreement within the United Nations Framework Convention on Climate Change (UNFCC) to deal with climate change adopted on December 12, 2015 in Paris.</td>
</tr>
<tr>
<td>Responsible investment</td>
<td>The process of incorporating ESG factors into investment decisions</td>
</tr>
<tr>
<td>Sustainable / low-carbon transition</td>
<td>The gradual shift toward this future state is referred to as the sustainable transition</td>
</tr>
<tr>
<td>Sustainable finance</td>
<td>Investment activities relating to climate risk mitigation and adaptation and the transition to a low-carbon economy</td>
</tr>
<tr>
<td>Sustainable economy / low-carbon economy / low-carbon</td>
<td>The sustainable economy refers to a future economic state that is powered by low-carbon energy sources and balances climatic stability with long-term economic growth</td>
</tr>
<tr>
<td>Task Force on Climate-related Financial Disclosures</td>
<td>An industry led body established by the Financial Stability Board and chaired by Michael Bloomberg to provide recommendations on how to address gaps in the information disclosed on the financial impact of climate risk across the investment value chain</td>
</tr>
<tr>
<td>UK Green Finance Taskforce Report</td>
<td>Accellerating Green Finance, a recommendations report issued by the UK’s Green Finance Taskforce. The Green Taskforce is panel of financial sector leaders convened by the UK Government to study options to grow green finance activity and achieve the UK’s carbon reduction targets</td>
</tr>
</tbody>
</table>
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABS</td>
<td>Asset-backed security</td>
</tr>
<tr>
<td>ASB</td>
<td>Accounting Standards Board</td>
</tr>
<tr>
<td>AUM</td>
<td>Assets under management</td>
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<tr>
<td>BNC</td>
<td>National Bank of Canada (in French: Banque Nationale du Canada)</td>
</tr>
<tr>
<td>CAPSA</td>
<td>Canadian Association of Pension Supervisory Authorities</td>
</tr>
<tr>
<td>CCIR</td>
<td>Canadian Council of Insurance Regulators</td>
</tr>
<tr>
<td>CBI</td>
<td>Climate Bonds Initiative</td>
</tr>
<tr>
<td>CCU</td>
<td>Carbon Capture and Utilization</td>
</tr>
<tr>
<td>CHP</td>
<td>Combined Heat and Power</td>
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<tr>
<td>CMHC</td>
<td>Canada Mortgage and Housing Corporation</td>
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<tr>
<td>COP 21</td>
<td>See term definition</td>
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<tr>
<td>CPA</td>
<td>Chartered Professional Accountant</td>
</tr>
<tr>
<td>CPPIB</td>
<td>Canadian Pension Plan Investment Board</td>
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<tr>
<td>CSP</td>
<td>Concentrated solar power plant</td>
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<tr>
<td>EDC</td>
<td>Export Development Canada</td>
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<tr>
<td>EF</td>
<td>Electric fleet</td>
</tr>
<tr>
<td>ESG</td>
<td>Environmental, social, and governance</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EV</td>
<td>Electric Vehicles</td>
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<tr>
<td>FC4S</td>
<td>Financial Centres for Sustainability</td>
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<tr>
<td>FCM</td>
<td>Federation of Canadian Municipalities</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<tr>
<td>GFCI</td>
<td>Global Financial Centres Index</td>
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<td>GGFI</td>
<td>Global Green Finance Index</td>
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<td>GHG</td>
<td>Greenhouse gas</td>
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<tr>
<td>GRI</td>
<td>Global Reporting Initiative</td>
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<tr>
<td>HLEG</td>
<td>High-Level Expert Group (on Sustainable Finance; EU)</td>
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<td>IBC</td>
<td>Insurance Bureau of Canada</td>
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<td>IETA</td>
<td>International Emissions Trading Association</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
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<tr>
<td>NYSCRF</td>
<td>New York State Common Retirement Fund</td>
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<td>OMERS</td>
<td>Ontario Municipal Employees Retirement System</td>
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<td>OSFI</td>
<td>Office of the Superintendent of Financial Institutions</td>
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<td>OTPP</td>
<td>Ontario Teachers’ Pension Plan</td>
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<tr>
<td>PACE</td>
<td>See term definition</td>
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<tr>
<td>PV</td>
<td>Photovoltaic</td>
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<tr>
<td>REDD</td>
<td>Reduced emissions from deforestation and degradation</td>
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## Appendix B: Interview list

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<td>Canada Infrastructure Bank</td>
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<td>Canada's Expert Panel on Sustainable Finance</td>
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<td>CIBC</td>
<td>Oxford Sustainable Finance Programme</td>
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<td>Pembina Institute</td>
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<td>Export Development Canada</td>
<td>Siemens Canada</td>
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<td>FCM Green Fund</td>
<td>Standard Life</td>
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<td>Finance Canada</td>
<td>Stikeman Elliott</td>
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</table>

| RI | Responsible investment |
| RIA | Responsible Investment Association |
| ROE | Return on equity |
| SDTC | Sustainable Development Technology Canada |
| SMES | Superconducting magnetic energy storage |
| TCFD | Task Force on Climate-related Financial Disclosures |
| TFI | Toronto Finance International |
| TSX | Toronto Stock Exchange |
| UN | United Nations |
## References


3. FC4S. About us. Retrieved from https://www.fc4s.org/about-us


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<table>
<thead>
<tr>
<th>Financial Institutions of Canada</th>
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<td>Thinking Capital</td>
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<td>University of Waterloo</td>
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Capitalizing on Sustainable Finance: A Growth Opportunity for Toronto’s Financial Sector


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38 Corporate Knights (2018, September). Size of the Prize: How Bay Street could make $110 billion from climate change solutions.


Capitalizing on Sustainable Finance: A Growth Opportunity for Toronto’s Financial Sector


56 Climate Bonds Initiative data, current as of the date of this report. Retrieved from https://www.climatebonds.net/cbi/pub/data/bonds


61 Corporate Knights (2018, September). Size of the Prize: How Bay Street could make $110 billion from climate change solutions.


66 Corporate Knights (2018, September). Size of the Prize: How Bay Street could make $110 billion from climate change solutions.

67 Ibid.


Estimated from Bloomberg Terminal data

Ibid.

Ibid.


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