

FINAL REPORT of the **EXPERT PANEL** on **SUSTAINABLE** **FINANCE**

Mobilizing Finance for
Sustainable Growth



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of Canada

Gouvernement
du Canada

Canada

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PREFACE

Dear Minister McKenna and Minister Morneau,

We thank you for the honour of serving as Canada's Expert Panel on Sustainable Finance. We have embraced the opportunity to immerse ourselves in this growing and fast-evolving field, and explore how Canada's public and private sectors can together accelerate our transition to a smarter, more resilient and more prosperous economy.

Soon after our appointment in spring 2018, we began consulting with a diverse cross-section of leaders and experts to help narrow our focus to the most impactful and actionable areas of sustainable finance for Canada, including the role of climate-related financial disclosures. The insights from these consultations formed the basis of our Interim Report released last fall. That discussion paper was used to facilitate targeted cross-country and international consultations with financial services, industry, governments, regulators, professional bodies, think tanks, academia, and others. During this process, we held 11 roundtable events across Canada, received 57 written submissions, and undertook hundreds of bilateral consultations. We are tremendously grateful to the many individuals and organizations that generously shared their expertise, insight and experience.

Since our journey began, we have seen a marked improvement in awareness and action on sustainable finance issues from Canadian businesses, regulators, investors and others. We have heard encouraging examples of innovative leadership and commitment to change. However, Canada has much further to go and significant untapped potential to realize.

This Final Report, *Mobilizing Finance for Sustainable Growth*, lays out a package of recommendations aimed at 'connecting the dots' between Canada's climate objectives, economic ambitions and investment imperatives. The recommendations seek to leverage Canada's financial acumen to facilitate and accelerate market activities, behaviours and structures that - at scale - could put Canada and its key industries at the forefront of the transition to a climate-smart economy.

The Panel would like to thank you for your foresight in launching this initiative. We would also like to thank the following organizations for hosting roundtables to facilitate our consultations on important themes: The Public Policy Forum, The Ivey Foundation, Caisse de dépôt et placement du Québec, Royal Bank of Canada, Suncor, the City of Vancouver, CPA Canada, Toronto Finance International, Ernst and Young, Baker McKenzie and the Canada Green Building Council.

Lastly, we would like to thank the secretariat to the Expert Panel on Sustainable Finance: Michael Chan, Warren Goodlet, Derek Hermanutz, David Meredith, Rachael Moltner, Kelly Nimmo, Mark Radley, and Sarah Takaki.

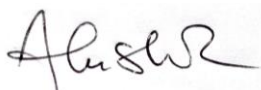
Thank you,



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EXECUTIVE SUMMARY

Canada has a strong, diversified and resource-rich economy; a world-leading financial sector; and excellent capacity for innovation. By harnessing these advantages, Canada can be among the leaders in the global transition to a low-emissions future, as a trusted source of climate-smart solutions, expertise and investment. Realizing this ambition will require a committed alliance between business, government and civil society; and determined investment. This Final Report is about mobilizing financial services to deliver the investment, ingenuity and influence needed to realize Canada's leadership opportunity and secure a sustainable economic future.

The effects of climate change are upon us. Shifting weather patterns are amplifying the natural risks we already face – floods, storms, heat and drought – leading to more frequent and extreme loss events. Preparing for, and adapting to, the current and future impacts of climate change is a critical aspect in managing risk to our communities, businesses and ecosystems. As the effects of climate change are becoming more evident around the world, we are also seeing shifts in consumer preferences, innovation, economic activity, competitive advantage and wealth creation. Consumers are increasingly looking for services and products with a smaller environmental footprint. Climate-smart innovations are no longer marginal alternatives - they are becoming a massive global market opportunity yielding quality jobs. With these shifts, sound environmental stewardship is increasingly intersecting with market access and becoming a critical source of sustained competitive advantage.

While the Government has put forward a plan to underpin Canada's transition - the *Pan Canadian Framework for Clean Growth and Climate Change* (PCF) - and begun implementing key policies, the role of financial markets in driving this change has yet to be fully leveraged. Finance is not going to solve climate change, but it has a critical role to play in supporting the real economy through the transition. The emerging field of 'sustainable finance' is focused squarely on channelling financial sector expertise, ingenuity and influence towards the challenges and opportunities posed by climate change.

The potential for sustainable finance to accelerate transition and help households and businesses manage new climate risks is already well recognized by a number of Canada's international peers, including the European Union, the United Kingdom and China. Major financial centres in these countries are beginning to implement the recommendations of their sustainable finance task forces, with ambitions to become global hubs in this

market. Canada has the means and the opportunity to stand among these global leaders as a decision-maker rather than a decision-taker in the global market for sustainable products, services and investments.

Recognizing the opportunity, Canada's Minister of Environment and Climate Change and Minister of Finance jointly appointed the Expert Panel on Sustainable Finance in April 2018 to explore opportunities and challenges facing Canada in this field, and to present the Government with a set of recommendations to scale and align sustainable finance with our country's climate and economic goals.

Following extensive consultations, the Expert Panel delivered an Interim Report in October 2018 that laid out the state of play in Canada, identifying factors critical to developing and scaling priority financial markets and products.

This Final Report – *Mobilizing Finance for Sustainable Growth* – presents a package of practical, concrete recommendations focused on spurring the essential market activities, behaviours and structures needed to bring sustainable finance into the mainstream. If Canada is to meet its long-term objectives, sustainable finance must become, simply, finance. In other words, climate change opportunity and risk management need to become business-as-usual in financial services, and embedded in everyday business decisions, products and services.

The Panel's 15 recommendations for achieving this goal are grouped into three mutually reinforcing pillars:

Pillar I: The Opportunity

Canada should put forward a renewed long-term vision for its transition, with focused policies to help businesses and investors of all sizes effectively respond to the economic opportunity. Mapping Canada's climate goals into clear industry competitiveness visions and capital plans would spell out the size and horizon of the investment opportunity. Meanwhile, an incentive for Canadians to make climate-smart investments would drive demand for financial products and services that promote sustainable outcomes.

- Recommendation 1: Map Canada's long-term path to a low-emissions, climate-smart economy, sector by sector, with an associated capital plan.
- Recommendation 2: Provide Canadians the opportunity and incentive to connect their savings to climate objectives.
- Recommendation 3: Establish a standing Canadian Sustainable Finance Action Council (SFAC), with a

cross-departmental secretariat, to advise and assist the federal government in implementing the Panel's recommendations.

Pillar II: Foundations for Market Scale

Canada's public and private sectors should invest in the essential building blocks needed to scale the Canadian market for sustainable finance to mainstream status. These foundations include authoritative and decision-useful climate information; effective climate-related financial disclosures from businesses and investors; legal clarity around the obligations of investment fiduciaries; financial regulation that addresses climate risk; and a supportive and climate-informed ecosystem of professional services providers.

- Recommendation 4: Establish the Canadian Centre for Climate Information and Analytics (C3IA) as an authoritative source of climate information and decision analysis.
- Recommendation 5: Define and pursue a Canadian approach to implementing the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).
- Recommendation 6: Clarify the scope of fiduciary duty in the context of climate change.
- Recommendation 7: Promote a knowledgeable financial support ecosystem.
- Recommendation 8: Embed climate-related risk into monitoring, regulation and supervision of Canada's financial system.

Pillar III: Financial Products and Markets for Sustainable Growth

Recognizing Canada's unique economic makeup, the Panel has identified several opportunities to develop and scale up market structures and financial products that would have particular impact in facilitating Canada's transition and adaptation. These opportunities align closely with Canada's PCF and support the financing needs of critical segments of the Canadian economy such as clean technology, oil and natural gas, infrastructure, buildings, and electricity generation and transmission.

- Recommendation 9: Expand Canada's green fixed income market, and set a global standard for transition-oriented financing.
- Recommendation 10: Promote sustainable investment as 'business as usual' within Canada's asset management community.
- Recommendation 11: Define Canada's clean technology market advantage and financing strategy.
- Recommendation 12: Support Canada's oil and natural gas industry in building a low-emissions, globally competitive future.
- Recommendation 13: Accelerate the development of a vibrant private building retrofit market.
- Recommendation 14: Align Canada's infrastructure strategy with its long-term sustainable growth objectives and leverage private capital in its delivery.
- Recommendation 15: Engage institutional investors in the financing of Canada's electricity grid of the future.

We encourage governments at all levels, regulators, businesses and investors to consider these recommendations in charting Canada's course toward a sustainable, prosperous, and resilient future.

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INTRODUCTION

The relationship between the economy and the environment is at a vital inflection point. As more climate change impacts materialize and international activity to reduce greenhouse gas (GHG) emissions mounts, Canada's aspirations for a thriving economy, workforce and environment must become one and the same.

As a resource-rich economy, Canada's path to sustainable growth will require simultaneous efforts to combat the physical and financial effects of climate change, while helping our key industries competitively navigate the growing intersection between global market access and environmental stewardship. This intersection is already manifesting in a progressive new generation of markets aimed at overcoming the challenges - many of which show substantial growth opportunity. With the right focus and ambition, Canada has the innovative capacity and technical expertise to secure a competitive advantage, or even global leadership, in many of these markets.

Achieving Canada's sustainable growth potential will require a sea change in the interaction between innovation, policy and regulation, consumer behaviours, risk management, and investment patterns. In each of these areas, the financial system plays a critical role in directing capital flows, managing complex risks and unlocking opportunity. Our financial sector is highly capable of the task and has reason to be vested in the long-term outcomes and ample opportunity along the way. However, markets will not move at scale without a more decisive long-term strategy backed by public and private leaders.

Every year, new reports and media headlines give a sobering view of the global climate outlook. Last fall, the UN Intergovernmental Panel on Climate Change documented the severe climate change impacts to come, even if the world succeeds in limiting the average increase in global temperature to 2°C above pre-industrial levels. More recently, the Government of Canada's *Changing Climate Report* concluded that Canada is warming at double the global average. Even in a 2°C global warming scenario, Canada is predicted to warm by 4°C on average, with the North warming by double that.

It is not an exaggeration to say that our future hinges on how we respond to this challenge. The Insurance Bureau of Canada cites dramatic increases in losses due to severe weather over the last 10 years, with \$1.9 billion in insured damage in 2018 alone. To stave off the worse risks associated with an above 2°C warming scenario, Canada and the rest of the world will need to reduce GHG emissions growth to near zero by early in the second half of this century.

There is a clear and urgent imperative for governments, businesses and the financial community to work together to make deep emissions cuts in virtually every sector, while adapting our markets and built environment to inevitable and extreme climate-related weather events.

Under the Paris Agreement, Canada stands with the international community in a commitment to strengthen the global response to climate change, including by limiting global warming to well below 2°C. Canada's nationally-determined commitments under the Paris Agreement are anchored by a target to reduce domestic GHG emissions by at least 30% below 2005 levels, by 2030. The Government has outlined plans to meet this target in the *Pan-Canadian Framework on Clean Growth and Climate Change* (PCF) and has also outlined a scenario for 80% GHG emissions reductions below 2005 levels by 2050 in the *Mid-Century Strategy for a Clean Growth Economy*. These documents are referenced frequently in this report.

With the proliferation of activity to reduce emissions intensity and build climate change resilience worldwide, it appears that the transition to a clean, climate-smart economy is underway. Efforts are accelerating across countries and industries. Several of Canada's G20 peers – including China, the EU, the UK and France – are implementing the recommendations of their sustainable finance task forces, and positioning their financial systems to facilitate and prosper from new and evolving market opportunities. Canada can act with other global leaders as a 'shaper' rather than a 'taker' of the decisions that will set the global context in which our economy operates.

Canada's economic and natural assets are unique; we require solutions geared to our own national context.

Companies around the world are investing heavily to develop the technologies and skills to supply the world with lower-cost, cleaner energy and natural resources. Staking Canada's claim in these markets will require a commitment by our high-emitting sectors to reduce

their ecological footprints and set out innovative growth strategies that will secure their competitive standing in a rapidly evolving global economy.

At the same time, we need to embrace our technical strengths to advance clean technologies across all sectors of the economy, and find innovative ways to solve the world's environmental challenges while creating quality jobs and export opportunities along the way.

Financial markets will play a fundamental role in directing necessary capital flows, managing complex risks and unlocking economic potential. Markets work best when assets are properly valued; however, in today's market economy, climate factors are often mispriced and climate risks are generally underappreciated. Prices and incentives that reflect climate risk are critical if we are to continue prospering from our natural wealth while transitioning to new, cleaner solutions over time.

Canada has a world-leading financial system with a well-earned reputation for sound governance, risk management and regulation. Our considerable strengths in conventional finance will play a critical role in delivering the financing ingenuity and capital flows required to execute Canada's transition and resilience objectives. However, this will not occur under status quo financial patterns. Sustainable growth requires climate change management and mitigation to become embedded in our everyday decision-making.

About this Report

The Expert Panel on Sustainable Finance ("the Panel") delivered an Interim Report in October 2018 that reviewed the state of sustainable finance in Canada, and identified factors critical to scaling financial markets and products for sustainable and climate-resilient growth. In that report, the Panel defined 'sustainable finance' as:

Capital flows (as reflected in lending and investment), risk management activities (such as insurance and risk assessment), and financial processes (including disclosures, valuations, and oversight) that assimilate environmental and social factors as a means of promoting sustainable economic growth and the long-term stability of the financial system. The conditions for sustainable economic growth are to meet the needs of the present without compromising the future.

Discussions around climate action tend to focus on reducing harmful emissions to mitigate future impacts, but we are already paying for the effects of climate

change today.¹ Under even the most optimistic scenarios, increasingly severe and extreme weather conditions will continue to cause significant ecological destruction and human and financial hardship. Sustainable finance is both about building resilience to those widespread impacts and preventing further exacerbation.

This Final Report of the Expert Panel - *Mobilizing Finance for Sustainable Growth* - presents a package of recommendations aimed at aligning mainstream financial activities with the transition to a competitive low-emissions, climate-smart economy. The recommendations derive from extensive cross-country consultations and international discussions undertaken over the last year. Together, they reflect a widely held view that accelerating the transition to a sustainable economy in Canada will require a fundamental restructuring of multiple market, economic and institutional systems. Though the recommendations center on finance, in some cases it is necessary to address the underlying behaviours and practices for financing to be attracted to the right places, and achieve its targeted impact.

The Final Report's 15 recommendations fall under three pillars: The Opportunity, Foundations for Market Scale, and Financial Products and Markets for Sustainable Growth. To the extent possible, the recommendations are specific, practical and actionable. Some, by necessity, are more directional and will need further deliberation and consultation, or may be influenced by other domestic or international outcomes.

Pillar I - The Opportunity addresses the need to shift Canada's climate change conversation from burden to opportunity. The focus is on establishing a concrete vision and capital plan for Canada's course toward a competitive low-emissions, climate-smart economy; offering Canadian businesses, financial firms and individuals the ability to connect with that vision through investment and savings; and ensuring that government and industry join forces to pursue opportunity and manage risk.

Pillar II - Foundations for Market Scale focuses on the essential building blocks to mainstream sustainable finance in Canada. Without these elements – such as information and disclosure, legal clarity and supportive professional services – market development and investment in this field will continue to lag, and sustainable finance will remain an add-on to mainstream capital market activities.

Pillar III - Financial Products and Markets for Sustainable Growth aims at developing and scaling market structures and financial products that could offer transformative economic benefit to Canada in building a low-emissions, climate-smart future. These recommendations align closely with the themes of the PCF, and focus on the financing needs of critical sectors of the economy such as clean technology, oil and natural gas, infrastructure, buildings, and electricity generation and transmission. Some of these areas need a targeted nudge to drive scale, while others have yet to develop.

The recommendations across all three pillars are highly interconnected and designed to mutually reinforce. They are by no means exhaustive, but instead focus on stimulating financial activities and markets that the Panel believes have the potential to help deliver Canada's economic and environmental ambitions. While the recommendations were prepared with a federal mandate, Canada's ambitions will require integrated, multijurisdictional and cross-sector collaboration. The imperative need not be federal to be national.

Canada is committed to creating a cleaner, more innovative economy that reduces emissions and protects the environment, while creating well-paying jobs and promoting robust economic growth. Responding to climate change presents an opportunity for Canada to secure its competitive position in an environmentally-conscious global marketplace; and deliver low-emissions, climate-smart solutions to Canada and the world. The future is in our hands. It is time to collectively reset our growth trajectory and finance the actions needed to accelerate the transition that is already underway, securing a thriving and resilient economy as we go.

¹ Whether through physical risks (such as extreme weather damages) or transition risks (such as unplanned and abrupt

changes or disruptions to businesses or assets, or reputational damage).

In formulating its recommendations, the Panel was guided by a set of principles that reflect crosscutting themes from stakeholder discussions. These principles will have continued relevance to implementation efforts.

Impact-Driven: Successful long-term outcomes for Canada will require targeted early action and a proactive response to opportunity and risk, focusing on efforts that will push forward key transition and resiliency goals.

Globally Connected and Relevant to Canada:

We can shape our own future, or risk the international community doing it for us. Alignment with, and influence on, international policy and market development are essential, but relevance to the Canadian economy is paramount.

Designed to Spur Innovation: Regulatory and financial systems should motivate and empower businesses and financial services to leverage innovation as a source of sustainable growth.

Scaled by Private Capital: The scale of financing and capital reallocation needed along Canada's transition path will require sustainable finance and investment to become business as usual for private markets. Risk and reward must align for that to occur.

Mitigation and Adaptation-Focused: Adapting to climate change and mitigating GHG emissions are both essential priorities in Canada's climate plan, and actions to address either one should be mutually reinforcing.

Informed by Transparency: Policy and economic decision-making requires accurate, consistent and timely information, putting a premium on disclosure and transparency.

Coordinated and Aligned: Consolidated leadership across and between our public and private sectors is essential to generating transformational change and avoiding fragmented effort. Governments at every level must set the example and compel parallel action in the private sector.

Inclusive and Just: The costs of climate change and the benefits of transition will not be distributed equally across communities, regions and sectors. Change will bring significant new opportunities but also inevitable disruption, which need to be considered holistically across the country.



PILLAR I. THE OPPORTUNITY

Recommendations 1-3 address the need to shift Canada's climate change conversation from burden to opportunity. The focus is on establishing a concrete vision and capital plan for Canada's path to a competitive low-emissions, climate-smart economy; offering Canadian businesses, financial firms and individuals the ability to connect with that vision through investment and savings; and ensuring that government and industry join forces to pursue opportunity and manage risk.

Recommendation 1. Map Canada's long-term path to a low-emissions, climate-smart economy, sector by sector, with an associated capital plan.

Lead:² Environment and Climate Change Canada (ECCC) and Finance Canada, in consultation with federal, provincial, territorial, Indigenous and private sector partners.

The transition to a clean, climate-smart economy is underway, and there is broad-based agreement among business and finance that things need to accelerate. At the same time, consultations revealed a general lack of appreciation for the magnitude and pace of investment required to realize our Paris target of a 30% reduction in emissions or a mid-century scenario (e.g., an 80% reduction).

Typically, governments set policy and regulatory standards and allow markets to adjust on their own. However, given the short timeframes and scale of investment required to meet our climate objectives, the Government may need to provide more direct cues. Providing clarity on a proposed pathway for meeting Canada's 2030 target and mid-century scenario – and the role the private sector could play in financing this pathway – would give a concerted nudge to the adjustment process and help 'connect the dots' between our country's climate objectives and investment imperatives.

The Pan-Canadian Framework on Clean Growth and Climate Change (PCF) provides a comprehensive overview of the major steps Canada must take to meet its 2030 emissions reduction target.³ Implicit in this analysis are large capital investments in major sectors of the economy. These investment requirements should be

² For each recommendation, the Panel has identified a lead, or set of leads, that it views as best placed to take ownership and drive progress. The key leads are in bold.

³ In particular, the PCF lays out plans for carbon pricing and other emissions standards, and maps out the implications of those measures for major sectors of Canada's economy.

made more explicit, as a means of communicating the size and scope of the market opportunity. Since investors expect a future return, they will also require a sense of how our industries will 'win' in the shifting global marketplace.

More specifically, the federal government should work with the provinces and the private sector to develop a capital plan that maps out the necessary investments and level of ambition for innovation and global competitiveness across key sectors of Canada's economy. The capital plan would include financing requirements and sources – both public and private – and would identify critical financing gaps.

Furthermore, with 2030 barely a decade away, we need to consider the plans and investments required to achieve Canada's longer-term climate aspirations and keep pace with international competition. Industries and markets need this horizon and visibility - and the certainty brought by reinforcing policy signals - to make sustainable long-term investment decisions and accurately price risk and opportunity.

The Panel views these plans as an extension of the PCF, or the *Pan-Canadian Framework 2.0*. The PCF 2.0 extends beyond the PCF in three critical dimensions: (i) looking beyond 2030, to 2050, to provide the longer-term horizon needed to mobilize investment; (ii) articulating a long-term policy framework and roadmap for low-emissions, climate-resilient growth; and (iii) developing a capital plan for the country to realize its ambitions.

Acknowledging that the PCF 2.0 is a significant undertaking, we see it as one of the most critical exercises the federal government can take to bring mainstream capital market participants into the action.

a) Develop a Mid-Century Transition Path⁴ that lays out concrete outcome-based objectives and performance metrics for the following:

- Net emissions reduction objectives for 2050 that align with Canada's commitments to the Paris Agreement, with 2030 as a critical milestone;
- The priorities laid out in the current PCF and Mid-Century Strategy⁵ as well as any additional areas of potential market advantage or innovation not captured in those strategies;

⁴ Using the scenario methodology from the *Mid-Century Strategy for a Clean Growth Economy*.

⁵ Including: increased capacity for electrification and clean electricity, energy efficiency and demand side management; abatement of CO₂ and non-CO₂ GHG emissions in heavy emitting sectors; innovative approaches

- Realistic yet ambitious low-emissions, climate-smart competitiveness visions for each of Canada's key industries; and
- The estimated costs of climate change effects associated with Canada's current and projected rate of warming, set against the projected outcomes from major climate adaptation and mitigation initiatives.

A shared view of Canada's long-term priorities, circumstances and commitments at the macro, regional and sector levels is critical to informing investment planning and policy.

b) Review Canada's policy framework to ensure it aligns with, and reinforces, the objectives of the proposed Mid-Century Transition Path.

Finance and industry look to policies and regulations for essential cues on government priorities and expectations. The federal government should work with provincial and municipal partners to ensure that relevant policies, regulations, standards, and codes (current and planned):

- Reflect the ambitions of the proposed Mid-Century Transition Path;
- Provide clear, consistent implementation mechanisms and economic signals for governments, businesses and the financial sector to effectively align their long-term activities to; and
- Maintain rigour while avoiding undue administrative burden or redundancy.

An explicit carbon price outlook is arguably the most efficient way to account for the externalized cost of emissions in markets. The Panel supports the federal government's decision to move forward with a national carbon price, and encourages a clear pricing outlook for 2023 and beyond.

Additional policy and regulatory measures would provide necessary signals as well, such as accelerated net-zero emissions type⁶ and resiliency-based building codes, or more stringent fuel and vehicle standards.

Together, recommendations a) and b) above articulate key elements and related policy measures to realize

to moving people and freight and the way people live, work and consume; as well as necessary investment in resilient infrastructure, including natural GHG sequestration.

⁶ Pembina Institute. (2018). Types of Green Buildings. Retrieved from: <https://www.pembina.org/reports/green-buildings-infographic-2018.pdf>

Canada's mid-century ambitions. This exercise should be approached collaboratively between the government, private sector, and civil society, to ensure that outcomes capture practical execution and market realities.

c) Develop a capital forecast that scopes the necessary investments by public and private sources to realize Canada's 2030 and mid-century objectives, sector by sector.

The importance of sector-based project pipelines and capital plans to underpin national climate goals is referred to frequently in our discussion of financial products and markets under Pillar III. Examples of these plans include:

- Establishing Canada as a global leader in decarbonizing high emitting sectors such as oil and natural gas, minerals and mining, agriculture, transportation and commercial buildings;
- Related strategies for increasing clean technology development, commercialization and adoption;
- Maximizing the potential for clean, flexible electricity across the country and incorporating it into energy transition strategies for transportation, buildings and industrial processes; and
- A national resilient infrastructure plan.

A high-level approximation of the capital requirements underpinning the proposed Mid-Century Transition Path offers a credible line of sight to the necessary type, scale, and pace of investment and innovation required between now and 2050, with 2030 as an important milestone. It also helps draw attention to critical industry funding gaps, which inform requirements for public-private co-investment and placement of incentives. Using buildings as an example, the capital plan would articulate the capital needs and potential sources to move Canada's major building types (e.g., commercial, residential, government and the MUSH⁷ sector) to a net-zero emissions or net-zero emissions type standard.

Any capital forecast relating to climate action and the clean transition will naturally be highly uncertain, given the evolving and long-term nature of these themes and the rapid advances in solution-driven technological innovation. For this reason, it will be important to refresh capital estimates as Canada advances towards its goals, as new technologies develop, and as new opportunities emerge.

Taken together, we call the elements of Recommendation 1 the PCF 2.0, which underpins many of the recommendations that follow. In the Panel's view, this package of: a clear vision for international leadership and competitiveness, a mid-century policy horizon and an accompanying capital plan, offers a critical 'north star' to guide industry and finance in delivering Canada's transition and resilience imperatives.

The OECD's *Developing Robust Pipelines for Low-Carbon Infrastructure* provides useful insight into emerging global precedents by governments and other public institutions to develop national project pipelines and mobilize private finance into those projects. One of those examples is the UK's experience in building an offshore wind market. Until recently, the development of bankable offshore wind energy projects was hindered by prohibitively large investment barriers facing early-stage projects. The UK identified and targeted these investment barriers, employed policy instruments, designed capacity auctions and established institutions to foster offshore wind technologies in the country. Today, the UK is the world's largest market for offshore wind, with almost 40% of the global installed capacity.

Recommendation 2. Provide Canadians the opportunity and incentive to connect their savings to climate objectives.

The Panel heard that Canadians are too often confronted with the impending threat and cost of climate change, and rarely informed of - or offered the ability to connect with - the opportunity in transition and climate-smart investment.

Canada's retail investment space is dominated by index-based and mutual funds that are generally absent of emissions or climate considerations. Consultations suggest that this stems from a limited and inconsistent awareness of these factors among individual investors and their investment agents or advisors. Without broader awareness, there is limited demand for climate-conscious products, and thus little motivation on the part of intermediaries to understand the related preferences of clients.

Measures to enable and encourage Canadians to contribute to sustainable outcomes through their retail investments would create a virtuous circle in which:

⁷ Municipalities, Universities, Schools and Hospitals

- Retail investment providers are motivated to understand the sustainability-related preferences of their clients, and increase their expertise in relevant market themes and products;
- Canadians feel part of the solution, increasing their curiosity, interest and expectations from the financial industry;
- Awareness of, and education about, sustainability principles and climate-related opportunities extend to a more significant segment of the Canadian population and become integrated into mainstream investment markets;
- Demand drives the supply of new best-in-class financial products and incentivizes parallel progress on climate-related financial information, disclosure and taxonomies; and
- More capital is mobilized toward low-emissions, climate-smart investments.

Recommendation 2.1. Create a financial incentive for Canadians to invest in accredited climate-conscious products through their registered savings plans.

Lead: Finance Canada, in consultation with the private sector.

In the Panel's view, bringing climate change into regular savings discussion is a first step in raising awareness and reinforcing the virtuous circle described above. This can be accomplished by providing a tax-based financial incentive for Canadians to invest in accredited climate-conscious products, such as green bonds, through their registered savings plans (such as RRSPs) or defined contribution (DC) pension plans.

- a) Offer increased contribution space and a 'super tax deduction' for contributions to registered retail savings plans earmarked for accredited climate-conscious products.** This approach will appeal to both savers who use all of their contribution space in registered plans, as well as the many Canadians with unused contribution space.⁸

Specifically, the Panel proposes that the program provide: (i) taxable income deductions greater than 100% on eligible contributions, combined with (ii) an extended fixed-dollar contribution limit available only for eligible investments.

Investments that support Canada's climate adaptation and decarbonization efforts are evolving. This incentive program must come with robust accreditation and eligibility criteria to protect savers and ensure they are investing in products that offer the potential for real climate impact (see Recommendation 2.2).

- b) Offer a mirror deduction for registered DC pension plans and group pension programs, to widen program reach.** Once sustainability principles become more integrated into mainstream markets and key fundamentals (such as disclosures and taxonomies) mature, plan providers should be encouraged to offer default plan options that invest in climate-conscious investments.

As retail agents, advisors and plan custodians prepare options for their clients and plan participants, additional segments of the financial sector will become engaged on the issues.

Recommendation 2.2. Define a roster of eligible investment products and develop robust accreditation standards for the super deduction program, in collaboration with the financial sector.

Lead: Finance Canada, in consultation with the financial sector.

Robust eligibility and assurance criteria for the super deduction program are critical to maintaining integrity and avoiding 'greenwashing'. While accreditation standards develop, initial program eligibility could include green bonds that meet the Green Bond Principles (GBP)⁹ as well as ETFs and mutual funds that are dominated by such GBP-aligned green bonds.

Over time, the standards should encompass the evolving realm of investments that support Canada's climate adaptation and decarbonization efforts, including transition and resilience bonds¹⁰ and themed low-emissions, climate-smart indices and funds. Standards should also evolve alongside innovation, market patterns and other international developments; including progress on sustainability taxonomies and the possible development of a Canadian stewardship code, as discussed in Recommendation 6.¹¹

⁸ In 2016, only about 1.4 million individuals maximized their TFSA contributions (roughly 5% of eligible Canadians) while about 22 million eligible tax filers had unused RRSP contribution room.

⁹ Process guidelines for green bond transparency and disclosure developed by International Capital Markets

Association to promote product integrity.
<https://www.icmagroup.org/>

¹⁰ See Recommendation 9

¹¹ Commitment to the stewardship code should be factored into the assessment of product providers under the accreditation program.

In due course, provinces should assess the formal responsibilities of Canadian investment advisors and agents in engaging clients on their sustainability preferences and communicating the merits of related investment options. This ties to the longer-term need for clearer standards of conduct (Recommendation 6), better data and user-friendly analytic tools (Recommendation 4), and accelerated training and competency building on climate-related matters within the financial support ecosystem (Recommendation 7).

Recommendation 3. Establish a standing Canadian Sustainable Finance Action Council (SFAC), with a cross-departmental secretariat, to advise and assist the federal government in implementing the Panel's recommendations.

Lead: Finance Canada and Environment and Climate Change Canada (ECCC), with other government departments.

Capturing opportunity and instituting systematic change in a rapidly shifting economic and physical landscape will require steady focus and collaboration. **The federal government's first measure in implementing the recommendations of this report should be to launch a public-private Sustainable Finance Action Council (SFAC) as Canada's axis for strategic focus, partnership and knowledge exchange.**

The proposed Council will offer advisory and facilitation support to the federal government in the technical implementation and oversight of the Panel's recommendations, particularly where it concerns private sector collaboration and financing, or cross-collaboration with other specialized advisory bodies.¹² Decision authority will remain with the Government.

The private sector is the Government's best source of industry and market insight when formulating finance-oriented sustainability policy and strategy agendas, to ensure that proposed directions are as practical and effective as possible. The private sector will also play a fundamental role in delivering the financing ingenuity and capital flows required to execute Canada's sustainable growth objectives. A platform for transparency and alignment in this regard is essential.

The council's operating principles will be to:

- Mobilize action in the private sector and convene

relevant players to contribute insights to the development of strategy, policy and market levers;

- Facilitate and assess the progress of public-private working groups, ensuring that strategic efforts align and reinforce; and
- Advise the federal government on priorities in light of new information and market conditions.

Practical focus areas for the proposed Council are discussed throughout this report. At a high level, these include:

- Providing a sounding board for public development of Canada's Mid-Century Transition Path and PCF 2.0 (Recommendation 1);
- Contributing to the development of product accreditation criteria and program structuring for a climate-oriented registered savings incentive (Recommendation 2);
- Formulating the terms of reference and governance structure for the proposed Canadian Centre for Climate Information and Analytics (Recommendation 4);
- Coordinating a government-sponsored research effort to develop base climate-related scenarios (Recommendation 5);
- Supporting the development of a Canadian stewardship code (Recommendation 6);
- Promoting awareness and capacity building on relevant climate-related matters throughout the professional financial support ecosystem (Recommendation 7);
- Supporting the development of Canadian green and transition-oriented taxonomies (Recommendation 9); and
- Exploring ways to embed more sustainable finance products and forward-looking strategic insights into Canadian indices, or to create new standard sustainability indices (Recommendation 10).

The SFAC should be jointly sponsored by ECCC, Finance Canada and NRCan, and chaired by a member of the private sector with sufficient influence and familiarity with the issues at hand. The deputy ministers of each sponsoring department should sit on the Council, along with 10-15 prominent industry, financial, academic and civil society representatives. An experienced federal-level secretariat should support the Council, and coordinate interdepartmental activities.

¹² Such as the newly announced Pan-Canadian Expert Collaboration.



PILLAR II. FOUNDATIONS FOR MARKET SCALE

Recommendations 4 through 8 outline the essential building blocks for mainstream engagement on sustainable finance in Canada. Without these elements – such as reliable information and disclosure, legal clarity and supportive professional services – market development and investment in this field will continue to lag, and sustainable finance will remain an add-on to mainstream capital market activities.

Recommendation 4: Establish the Canadian Centre for Climate Information and Analytics (C3IA) as an authoritative source of climate information and decision analysis.

Lead: Environment and Climate Change Canada (ECCC) and Statistics Canada, in partnership with the private sector and academia.

Access to reliable and consistent climate data - and the ability to turn that data into relevant financial insight - is essential for sustainable business decisions. The abundant scientific climate change data available today is hosted in disparate locations and formats. Access is difficult and costly for large institutions, and often prohibitively expensive for smaller ones. Tools to translate that data into tangible impacts to a business, city or portfolio are virtually non-existent. As a result, much of the financial system is just beginning to understand how to assess, measure, and manage climate risk and opportunity.

Climate change will have unpredictable impacts over multiple time horizons (short, medium and long). Decision-makers will need to be comfortable navigating both the known and unknown, sometimes relying on imperfect, mutable data. However, a single national hub synthesizing key information from Canada's consortia of climate, economic, academic and financial data centres into practical datasets and decision analytics would help alleviate Canada's critical information gap. This resource is important to many of the objectives noted throughout this report and may have commercial value as more climate impacts transpire.

Access to reliable data would inform a wide array of activities, including but not limited to: insurance, debt and equity underwriting decisions; community and infrastructure development; asset and risk management; public policy; innovation; taxonomy development; financial disclosure; and financial, consulting and legal support services. It would also free up private sector capacity for more proprietary, value added analysis.

In 2018, the federal government launched the Canadian Centre for Climate Services (CCCS), which serves as an authoritative source of climate information and expertise. Budget 2019 proposed a \$15.2 million initiative for Natural Resources Canada to establish a virtual Canadian Centre for Energy Information delivered by Statistics Canada. The Panel sees an opportunity to converge these foundations and add valuable dimensions, such as:

- Controlled¹³ interoperability with other public and private sources of data;
- Tools to adapt scientific information into decision-useful economic and financial analysis; and
- Aggregated industry data hubs.

The intersection between data and analysis is the focus of the proposed Canadian Centre for C3IA.

a) Design the C3IA as a multi-stakeholder 'hub and spoke' platform synthesizing information from Canada's consortia of climate, economic, academic and financial data centres.¹⁴ The platform would provide one-stop, broadly available access to:

- Complete, authoritative, decision-useful and interoperable climate information; and
- Practical climate-oriented financial, economic, and corporate analysis.

b) Convene an early working group to scope the C3IA's terms of reference and governance structure.

The Panel recommends that the C3IA institute a long-term membership and governance model akin to the Global Risk Institute (GRI).¹⁵

Under the GRI model, the C3IA's co-sponsors - ECCC and Statistics Canada - would each commit 10-year public funding and invite strategic private sector partners to contribute long-term funding and expertise. ECCC and Statistics Canada each bring essential resources and knowledge, while private sector partnership offers access to information, tools and techniques that add industry context and analytical capacity.

An independent advisory board of C3IA members would oversee the new Centre's strategic direction and mandate, and would partner with the proposed SFAC to extract industry use cases and feedback on platform design.

The Centre's mandate should begin with a limited scope and plan for expanded functionality over time. Key functions should include:

- Curating datasets for commercial and academic stakeholders focused on sustainable finance, including clean technology and financial technology innovators; large banks and insurers; securities and investment analysts; and the venture capital community.
- Using innovations such as blockchain to create a securely interconnected network of data sources and industry data hubs.
- Becoming a centre of excellence for broad source, use case-based financial and corporate climate analysis. Initial offerings might include: model climate scenarios to support stress-testing analysis in line with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations; financial product tagging to support the development of sustainable finance taxonomies; physical risk analysis for the built environment; or an anonymous annual average of internal carbon shadow pricing to inform policy, prudential requirements and internal analysis.¹⁶
- Establishing appropriate principles and protocols for data quality, protection and ownership.

¹³ With respect to privacy and ownership rights.

¹⁴ Examples of key spokes include: the Intact Centre on Climate Adaptation; Ouranos; the Centre for Global Change Science; the Vector Institute; the Geneva Association; the Canadian Institute of Actuaries; the Pacific Climate Impacts Consortium; the Prairie Climate Centre; Environment and Climate Change Canada; the Bank of Canada; OSFI; and official sector data sources such as the

National Energy Board, Natural Resources Canada, and Statistics Canada.

¹⁵ GRI provides a strong example of a membership-based model convening balanced leadership from across Canada's financial industry.

¹⁶ Almost 1,400 major international companies from across the economy and some large development banks have committed to applying a shadow internal carbon price to 'future-proof' their investment decisions.

Recommendation 5. Define and pursue a Canadian approach to implementing the recommendations of the TCFD.

Despite global recognition that the economic and business implications of climate change are real and far-reaching, reporting of climate-related financial risk and opportunity is just beginning. Thoughtful climate-related disclosure enables investors and other stakeholders to see how a company views its resilience to climate change, and to what extent that company is adapting its governance, strategy, risk management practices, and metrics and targets accordingly.

A reliable, consistent and comparable bottom-up view of climate risk exposure is essential to proper assessment and pricing, which in turn avoids systemic risk implications and helps direct investment to clean innovation. This is particularly relevant to Canada, given the severe physical and financial risks associated with our country's accelerated rate of warming.

Institutional investors are dissatisfied with the state of corporate climate-related reporting in Canada,¹⁷ noting a general inability to determine whether non-disclosure reflects legitimate immateriality or a lack of internal focus. Investors are turning to third-party providers that face the same information barriers, making meaningful assurance difficult.

In 2017, the private sector-led TCFD put forward recommendations for more relevant, consistent and comparable climate-related financial disclosures by companies and financial institutions. The TCFD premise is that strengthening the disclosure of climate considerations across core business functions¹⁸ will spur organizational focus while generating the information that markets and policymakers need to assess risk and opportunity, and build trust.

The TCFD's recommendations appear well on their way to becoming the global benchmark not only for climate-related reporting, but also for the measurement and governance of climate issues. They have public support from hundreds of world-leading financial organizations, with a combined \$110 trillion in assets under management. Leading reporting frameworks and standards organizations¹⁹ are working to align their guidance to the TCFD framework, to minimize the reporting burden on issuers.

¹⁷ See: Report on Climate Change-Related Disclosure Project, Canadian Securities Administrators, 2018.

¹⁸ Governance, strategy, risk management and metrics/targets.

TCFD is in many respects a private sector framework to uniformly assess risk and opportunity. While not in the Panel's remit, consultations suggest that, over time, Canadian companies should use the framework to consider broader sustainability issues. This view aligns with the recommendations in the Canadian Coalition for Good Governance's *The Directors' E&S Guidebook*.

Countries and international organizations have begun articulating their expectations for alignment with the TCFD recommendations - some on voluntary bases, and some mandatory. In its *Budget 2019*, the federal government expressed its support for the framework and encouraged phased adoption by major Canadian companies and federal Crown corporations.²⁰ This announcement puts Canada on the path with other global efforts to integrate climate-related considerations throughout the investment and supply chains.

Implementation of the TCFD framework will take time, and there are valid challenges to overcome. However, the Panel expects intensifying pressure on companies and investors to adopt. The reporting challenges are surmountable, and offset by the opportunity for companies and investors with sound sustainability practices to share their value-creating story with global audiences. Improved transparency shows commitment by Canada and its key sectors to sustainability and continuous improvement, which is becoming a key brand differentiator. Enhanced disclosures can also set the basis for new best-in-class climate and transition-oriented capital market products (Recommendations 2 and 9).

The Panel heard that while a number of prominent issuers are already reporting or preparing to report in line with the TCFD framework, there are barriers to immediate widespread adoption. These center around: compliance timeframes; lack of data and expertise for proper risk assessment and scenario planning; cost and capacity of smaller issuers to adopt; lack of knowledge support in the professional ecosystem; and legal risk associated with reporting forward looking information, especially in mainstream financial reports.

¹⁹ Including the Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI), Carbon Disclosure Standards Board (CDSB) and the Principles for Responsible Investment (PRI).

²⁰ *Budget Plan 2019*, Government of Canada.

Recommendation 5.1. Endorse a phased 'comply-or-explain' approach to adoption of the TCFD framework in Canada.

Lead: Finance Canada, in partnership with provincial regulators.

The Panel agrees with the federal government's support for a phased approach to adopting the TCFD's recommendations, beginning with large companies and Crown corporations. It also recognizes that there are limited direct federal levers for mandating disclosure. However, across hundreds of consultations, there was a persistent call for greater certainty and guidance on long-term reporting expectations. In the Panel's view, TCFD implementation should be phased in under a mandatory "comply-or-explain" regime in Canada. Given jurisdictional dynamics, this will require close partnership with provinces.

Under a comply-or-explain regime, the default expectation is for companies to disclose in line with the TCFD recommendations ("comply"). Non-disclosure is allowable only on the basis of a preparer's analyzed and reported conclusion that they see themselves as materially unaffected by climate change, with explanation as to why ("explain"). Ontario introduced similar requirements on board gender diversity in 2016, and since then the number of companies with one or more female board members has increased.²¹

In the near term, the federal government should give context to its *Budget 2019* announcement by conveying its support for a comply-or-explain reporting framework in Canada. In this messaging, the federal government should:

- State the intention to partner with provinces and territories and other decision-makers to accelerate and enhance climate-related financial disclosures in Canada;
- Express support for Canadian participation in collaborative international initiatives to accelerate the adoption, quality and comparability of climate-related disclosures; and encourage similar on-the-

ground efforts by key industries. Collaboration enables issuers to pool resources and intellectual capacity in addressing industry-specific reporting challenges and setting benchmark practices²² and

- Point to the growing body of guidance on good board governance as it relates to climate-related disclosures.²³

Recommendation 5.2. Provide clarity to issuers on the recommended scope and pace of TCFD implementation.

Lead: Finance Canada, with ECCC, and in partnership with provincial regulators.

- a) **The Panel recommends a two-phase implementation approach (see Table 1) with a completion timetable that distinguishes between large and smaller firms (see Table 2).** While issuers of all sizes should begin working on all feasible aspects of the TCFD framework as soon as practically possible,²⁴ staging considers subject matter complexity and relative reporting capacity.

Implementation of Phase 1 should begin with wider-known aspects of the TCFD that many companies already disclose (or are preparing to) such as qualitative descriptions of governance, strategy and risk management. Phase 2 covers aspects of the TCFD that will likely require better information accessibility and enhanced analytic capacity, such as climate metrics, targets and scenario analysis.

By the end of Phase 2, issuers should be prepared to report on underlying assumptions, calculations, estimates and scenarios, including their use of established standards or industry-specific guidance, if applicable. Investment fiduciaries should also disclose the considerations behind their chosen index benchmarks, given the influence of those choices on broad asset selection and risk concentration.²⁵

²¹ Ontario Sets Gender Diversity Targets, Government of Ontario, 2016.

²² Such as: the Canadian Bankers Association TCFD Working Group, UNEP FI TCFD pilot project, the World Business Council for Sustainable Development's TCFD Preparer's Forums, the World Economic Forum's Alliance of CEO Climate Leaders; and the forthcoming Investor Leadership Network's TCFD Guide.

²³ Such as: the Canadian Coalition for Good Governance's *The Directors' E&S Guidebook*; the World Economic Forum's

How to Set Up Effective Climate Governance on Corporate Boards, the International Centre for Pension Management's *Climate Change for Asset Owners*, and CPA Canada's *Climate Change Training for Business Leaders*.

²⁴ Issuers should begin preparing for and reporting elements of Phase 2 prior to completing Phase 1.

²⁵ More on benchmarks in Recommendation 10.

Table 1. Implementation Phases²⁶

Phase 1	
Governance	<ul style="list-style-type: none"> Describe the board's oversight of climate-related risks and opportunities. Describe management's role in assessing and managing climate-related risks and opportunities.
Strategy	<ul style="list-style-type: none"> Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
Risk Management	<ul style="list-style-type: none"> Describe the organization's processes for identifying and assessing climate-related risks.
Metrics & Targets	<ul style="list-style-type: none"> Disclose Scope 1 and 2 GHG emissions and related risks, or an appropriate alternative metric.

Phase 2	
Strategy	<ul style="list-style-type: none"> Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
Risk Management	<ul style="list-style-type: none"> Describe the organization's processes for managing climate-related risks. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.
Metrics & Targets	<ul style="list-style-type: none"> Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. Disclose, if appropriate, Scope 3 Greenhouse Gas (GHG) emissions and related risks. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

- b) Large companies and financial institutions should be given a five-year implementation timeline to allow sufficient time to develop internal controls and capacity, per the Completion Timetable (see Table 2). Small and medium-sized companies should be allotted an additional two years, to allow time for clearer precedents, more reliable and affordable information and more established professional support.

Table 2. Completion Timetable

Company Definition	Phase 1	Phase 2
Market Cap > \$8B	End of 2022 (≈3 years)	End of 2024 (≈5 years)
Market Cap > \$2B and Revenue > \$1B		
Companies below these Thresholds	End of 2024	End of 2026

Financial Institution Definition	Phase 1	Phase 2
Schedule 1 Banks Life and P&C Insurance	End of 2022 (≈3 years)	End of 2024 (≈5 years)
Pension Plans and Investment Boards with AUM >\$20B		
Companies with Premiums >5% of Market Share		
Other Banks Life and P&C Insurance	End of 2024	End of 2026
Pension Plans and Investment Boards with AUM <\$20B		
Companies with Premiums <5% of Market Share		

- c) The federal government should sponsor a research effort under the C3IA (Recommendation 4) to develop two or three base climate-related scenarios, including a 2°C or lower scenario.

Translating climate science into forward-looking financial scenarios is a particularly challenging element of the TCFD recommendations, and progress is at a nascent stage. It is, however, a critical aspect of investment and risk analysis, and requires accelerated focus and expertise.

²⁶ Adapted from *Recommendations of the Task Force on Climate-related Financial Disclosures* (Figure 4).

Climate scenario analysis is not intended to forecast the future. It is meant to examine the exposure and vulnerability of long-term business strategy and performance to various hypothetical climate change pathways, and their associated physical, transition and litigation risk potential. The value of this exercise is less about the specifics of the scenarios themselves, and more about corporate leadership thinking critically about the longer-term risk and opportunity environment, and investors understanding key sensitivities.

While no single scenario will be universally applicable, a starting point for comparability would help spur financial analysis and avoid myriad issuers 'reinventing the wheel'. From there, individual issuers and industry groups can customize the scenarios and build out proprietary analysis.²⁷ This effort should be prioritized as an early initiative under the proposed SFAC (see Recommendation 3).

- d) Climate disclosures should be included in financial filings or annual reports by the completion of Phase 2.** The financial support ecosystem, and accounting and auditing functions in particular, will need to build capacity in these areas; as will boards of directors (see Recommendation 7).

The Panel heard strong support for a transitional "safe harbour" provision to address issuer concern that disclosing longer-term or uncertain information could expose them to legal liability. A safe harbour rule for climate-related disclosures would protect company directors and officers from legal or regulatory liability over reported information, contingent upon the proof of adequate processes and controls for reporting rigour. Consultations suggest that this assurance would help encourage increased reporting uptake while climate information and understanding continues to develop. In Recommendation 6, the Panel suggests the formation of a legal task force to explore this and other relevant topics.

Recommendation 5.3. Work with federal, provincial and industry partners to clarify the materiality of climate-related financial disclosures.

Lead: Finance Canada, in collaboration with provincial governments and financial regulators.

Coherence and alignment between federal laws related to corporate governance and securities laws at the provincial and territorial level helps eliminate confusion and frustration in the marketplace.

At the federal level:

- Modify the Canada Business Corporations Act – Part XIV Financial Disclosure to require federally incorporated companies to include climate-related disclosures in their annual reports.

At the provincial level:

- Consider incorporating central aspects of the TCFD recommendations into baseline credentials and professional development requirements for dealer members under the Industry Regulatory Organization of Canada (IIROC). IIROC, or other associations supporting its membership, could leverage federal funding to deliver targeted training and education (see Recommendation 7).
- Encourage provincial governments to consider phasing in a TCFD framework to guide the disclosures of provincial Crown corporations.
- Encourage the Canadian Council of Insurance Regulators and Canadian Insurance Services Regulatory Organizations, the Canadian Securities Administrators, and the Canadian Association of Pension Supervisory Authorities to harmonize provincial regulatory approaches in line with the TCFD implementation approach described under 5.2. The Office of the Superintendent of Financial Institutions (OSFI) could work to share best practices and coordinate efforts between these bodies.

At the market level:

- Encourage the TSX to update its Primer for Environmental & Social Disclosure in line with the United Nations' Sustainable Stock Exchanges Initiative's *Model Guidance on reporting ESG Information to Investors*.²⁸ The TSX could then consult provincial regulators and Canadian investors

²⁷ Industry collaboration to advance the development and integration of physical and transition climate risk modeling and stress testing is beginning to ramp up, with active efforts at institutions such as the Geneva Association, the Insurance Bureau of Canada and the Network for Greening the Financial System, among many others.

²⁸ *How Stock Exchanges Can Grow Green Finance*, Sustainable Stock Exchanges Initiative, 2017.

to set a minimum reporting standard²⁹ as a listing requirement.

- Encourage Canadian asset managers to consistently seek more transparent reporting on climate issues from the companies they invest in, and to be more transparent in their own disclosures.

Recommendation 6. Clarify the scope of fiduciary duty in the context of climate change.

Our understanding of fiduciary duty sets the basis for broad investment behaviours, risk treatment and related governance procedures. In general, the financial system is adept at accounting for risks and uncertainty in markets, and ensuring that portfolios and businesses are resilient to external shocks or stresses. Panel consultations and a growing body of literature suggest, however, that widely used interpretations of fiduciary duty and materiality are lagging the evolving reality of climate change and its financial implications.³⁰ This stems largely from a legacy perception that ESG factors, such as climate change, are non-financial and therefore outside of, or in opposition to, the remit of fiduciary duties.

Landmark legal judgments and a proliferation of public studies and statements³¹ are debunking this belief.³² Legal practitioners indicated to the Panel that fiduciaries that fail to consider relevant long-term ESG matters, such as climate-related risks or the potential for stranded assets, could expose themselves or their firms to legal liability for various claims.

Over 1,200 climate change actions have been filed against governments and corporations in more than 30 jurisdictions, including 950 in the US. Cases filed in Canada, the US, Australia, the UK, the EU, New Zealand, Brazil, Spain, and India allege that governments and corporations have taken insufficient action to mitigate or adapt to climate threats.³³

Progressive Canadian investors have led the debate on the need to consider climate issues as a long-term value driver, and have taken steps to do so. Under the UN-backed Principles for Responsible Investment, 2,250

financial organizations representing \$83 trillion in AUM have committed to integrating ESG issues into corporate and investment analysis and decision-making processes, but approaches and interpretations remain inconsistent.

Considering this, the Canadian Government has a clear opportunity and imperative to clarify that fiduciary duty today does not preclude the consideration of relevant climate change factors.³⁴ In fact, evolving sustainability principles and international best practice increasingly require such considerations.

Note: The following recommendations come with the recognition that provincial regulation governs important aspects of the financial sector, and each province has its own regime related to pension funds, securities regulation and general corporate law.

Recommendation 6.1. Issue a public statement from the Minister of Finance articulating that the consideration of climate factors is firmly within the remit of fiduciary duty.

Lead: Finance Canada.

The Minister's statement should:

- Encourage fiduciaries to consider material climate-related matters in their oversight of risk management; strategy; board composition, structure and practices; performance metrics; and disclosures;
- Highlight the importance of appropriately integrating long-horizon climate-related factors in asset management and reporting frameworks; and
- Announce plans to commission a legislative review of fiduciary duty in the context of climate change, to clarify formal guidance and expectations.

Recommendation 6.2. Establish a legal task force to assess and report on the two matters below.

Lead: Finance Canada, with Innovation, Science and Economic Development Canada (ISED), and in collaboration with the proposed SFAC.

- (i) Avenues to clarify the need for corporate and investment fiduciaries to take account of long-term

²⁹ That is consistent with the proposed phased TCFD implementation approach.

³⁰ *Time to Act*, Sarra, J. & Williams, C., 2019. *Fiduciary Duty and Sustainable Finance – Clarifying the Legal Concept*. (Working Paper), Waitzer, E, 2019.

³¹ See: *People Department Stores Inc. (Trustees of) vs. Wise* (2004); *BCE Inc. vs. 1976 Debentureholders* (2008); UNPRI's *Fiduciary Duty in the 21st Century*; *Best Interests in the Long Term: Fiduciary Duties and ESG Integration*, Gary, Susan N. (2019); *University of Colorado Law Review*, 90 (731).

³² *Comment Letter on Report on Climate-related Disclosures*, CFA Institute, 2019.

³³ *Climate Change: Liability risks – A rising tide of litigation*, Clyde & Co.

³⁴ Or other material ESG factors, which fall outside the Panel's remit.

climate factors and related systemic risk considerations in their oversight;³⁵ and

- (ii) The viability of a safe harbour rule for climate-related financial disclosures made in good faith and with due process, as discussed in Recommendation 5.

Recommendation 6.3. Establish climate-related disclosure legislation for federally-regulated pension plans, and encourage provincial regulators to consider similar requirements.

Lead: Finance Canada.

The federal government should require federally-regulated pension plans to disclose in their *Statement of Investment Policies and Principles* whether and how climate issues are considered, including the rationale for any non-consideration, following the early example set by Ontario. Other provincial regulators should be encouraged to introduce similar requirements.

A Statement of Investment Policies and Procedures (SIPP) describes a pension plan's operating procedures, objectives and policies for the management and investment of plan assets.

Recommendation 6.4. Support the development of a Canadian Stewardship Code for investment fiduciaries.

Lead: The proposed SFAC.

The federal government should partner with the SFAC to identify a relevant public or private (non-profit) body to take the lead in developing a Canadian Stewardship Code. Various bodies have led the development of similar codes in other jurisdictions.³⁶ In some cases, an industry association was delegated to create voluntary standards; in others, a conduct authority mandated codes.

Such a code should build on work by the International Corporate Governance Network (ICGN) and others to outline how fiduciaries should account for climate change and other material ESG matters. As an incentive for adoption, alignment with the code should be considered as a prerequisite for participation in the

registered savings accreditation program discussed under Recommendation 2.

Though outside of its remit, the Panel would encourage a similar review of fiduciary scope in the context of ESG more generally.

Recommendation 7: Promote a knowledgeable financial support ecosystem.

The financial sector relies on a professional support ecosystem³⁷ to provide specialized business intelligence. This broad advisory community helps businesses understand, scope and navigate challenging terrain and new opportunity.

Despite efforts to date, a shortage of professional training, education and collaborative exploration on topics related to climate change and sustainable finance is causing a critical proficiency gap. This gap is hindering understanding, analysis and decision-making related to climate risk and opportunity.

Consultations suggest that a 'chicken and egg' dynamic is at play, where professional service firms find it uneconomic to build capacity and expertise until there is apparent or foreseeable demand from clients. Demand is not escalating rapidly because of limited disclosure requirements and a generally low application of sustainable finance principles.

Industry associations serve as essential platforms for information transfer, knowledge building and best practice guidance. They are well versed in raising awareness and expertise among their cohorts. However, most industry associations are supported by membership fees and are generally already at capacity in terms of their ability to drive large initiatives.

To accelerate climate awareness and competencies among the support ecosystem, stronger direction on expectations and funding assistance are likely required. Once knowledge and capacity progress, certification programs, standardized tools and advisory standards can take shape.

³⁵ Which might involve amendments to federal acts that set out fiduciary duties, including: the Bank Act, Insurance Companies Act, Pension and Benefits Standards Act, or the Canada Business Corporations Act.

³⁶ International precedents include the UK's and Japan's Stewardship Codes, Hong Kong's Principles for Responsible

Ownership, the European Shareholder Rights Directive, and Australia's Asset Owner Stewardship Code.

³⁷ Encompassing accountants, auditors, rating agencies, stock exchanges, investment advisors, research firms, third-party non-audit assurance providers, lawyers, brokers, engineers, urban planners, data providers, and business schools.

Recommendation 7.1. Reserve a pool of federal funding for non-profit and professional service providers facilitating education, training and collaborative initiatives to improve understanding and action on climate-related financial risks and opportunities.

Lead: Environment and Climate Change Canada (ECCC) and Natural Resources Canada (NRCan), with Finance Canada.

The program should target professional and not-for-profit associations that service the financial sector, as well as business schools.³⁸ Eligible projects should have the primary objective to strengthen baseline knowledge and proficiency on climate-related financial matters through targeted training and education, accreditation standards and continuous professional development requirements.

This should include facilitation of joint financial sector initiatives aimed at improving dialogue between investors and companies on the importance of climate change management, such as the collaborative engagement platform proposed under Recommendation 10.2. If such a platform emerges, investors will look for professional support, underpinning the need for this ecosystem to get up to speed.

A user-friendly application process should set out clear funding criteria, with an allowance for multi-year funding, as program development and broad-based education can take time to implement fully. Post-mortem reporting should be required, particularly as it relates to experimental initiatives. The Government can look to the proposed SFAC (Recommendation 3) for input on funding criteria and project selection.³⁹

Once the program is operational, the Ministers of ECCC and NRCan should point eligible institutions to it and encourage immediate, widespread uptake.

Recommendation 7.2. Support efforts by Chartered Professional Accountants of Canada (CPA Canada) to develop a climate lens for accounting, auditing and assurance standards in Canada.

Lead: Finance Canada and NRCan, in partnership with CPA Canada.⁴⁰

The accounting, auditing and assurance industry plays a core role in ensuring the accuracy of financial information that companies and investors use to make decisions, including whether financials accurately capture the realities and risks of climate change. This is a new and complex topic for the accounting profession; training and guidance will be needed.

CPA Canada should immediately formulate guidance on an appropriate climate lens for Canadian accounting, auditing and assurance practices. It is particularly important that climate considerations become factored into the carrying value of an asset or fair value of an investment, per applicable accounting standards. Finance Canada and NRCan should jointly support this critical effort.⁴¹

Similar efforts are emerging internationally. The Australian Accounting Standards Board's recently released *Practice Statement 2: Making Materiality Judgements* provides guidance on climate-related disclosures and financial statement materiality assessment, with specific mention of a required disclosure of how climate change risks are factored into fair value calculations.

The Panel applauds CPA Canada's collaboration with NRCan to initiate training programs to help Canadian business leaders recognize and anticipate the emerging financial impacts of climate change, and better respond to the increasing demand for enhanced climate-related disclosure. This work should continue alongside the Panel's recommendation.

³⁸ For example, climate change training modules should be implemented in directors' courses such as ICD, Collège des Administrateurs ACS, and the College of Directors.

³⁹ The Panel recommends at least semi-annual approval dates to start.

⁴⁰ CPA Canada is one of the largest national accounting organizations in the world and its reach extends into the business, government, education and non-profit sectors.

⁴¹ This effort is consistent with the investor recommendations on audit and assurance in CPA Canada's recent *Progressive Investors and Corporate Disclosure*.

Recommendation 8: Embed climate-related risk into monitoring, regulation and supervision of Canada's financial system.

Canada has an advanced financial regulatory framework and strong supervision. This foundation has enhanced confidence in the system and shielded us from severe dislocation and loss during difficult market environments, such as the 2008 financial crisis. Since our economy and savings are strongly tied to emissions-intensive industries, and climate impacts are already pervasive and volatile, it would be prudent to establish similar resilience to the possible prudential and systemic risks arising from climate change. In the words of Bank of Canada Governor Stephen S. Poloz, "the importance of climate-related issues for financial stability and monetary policy have become increasingly clear. This is particularly true for Canada, where resources play a vital role in our economy and where the natural environment is a defining feature of our national identity."

Climate change is not a discrete risk factor, or even set of factors, but a macro disruptor across systems, industries and geographies. It will have transformative economic impacts and require close assessment from both a prudential and systemic risk management perspective.

The world's central banks and financial regulators are in the early stages of investigating the implications of climate change for the economy and the financial system. This is a significant undertaking, and no one country or body will have all the answers. The Panel supports the Bank of Canada's decision to join the Central Banks and Supervisors Network for Greening the Financial System (NGFS)⁴² as well as the decision of OSFI to join the Sustainable Insurance Forum.⁴³ By participating in these forums, Canada can both benefit from, and contribute to, the experience of others - accelerating progress and increasing international consistency in the assessment of climate risks.

The necessary next step, as underscored throughout the Panel's consultations, is for Canada's financial regulators to be more active in promoting financial system resilience to climate risks by providing clear supervisory expectations and policy signals. As stated by Bank of England Governor Mark Carney, "perhaps for the first

time in financial regulation, firms are both thanking their supervisors for raising an issue and pushing us to go further, with some asking for more prescriptive recommendations and others for mandatory disclosures." ⁴⁴ With stronger signals, financial institutions should accelerate the integration of climate risks and opportunities into their strategies, in turn accelerating the adoption of sustainable finance.

In making the following recommendations, the Panel points to the *first comprehensive report of the NGFS* and its planned initiatives as a useful and authoritative source of direction and context.

Recommendation 8.1. Formally integrate climate risks into the supervision of federally regulated financial institutions, and provide clear guidance on related regulatory expectations.

Lead: The Bank of Canada and OSFI.

a) The Panel supports the Bank of Canada's decision to build climate-related risks into its Financial System Review process and develop a multi-year research plan focused on climate-related risks to the macroeconomy and the financial system. This work will help underscore that climate-related risks are a source of financial risk and that relevant financial institutions⁴⁵ and supervisors need to develop analytics and supervisory approaches to manage these risks, including forward-looking scenario analysis and stress tests.

The Panel recommends that macroeconomic forecasting and financial stability monitoring take into consideration:

- (i) Financial institutions' exposures to the physical impacts of climate risks, particularly those which can be exacerbated by shifts in climate and weather patterns (e.g., floods, fires, and extreme heat and wind);
- (ii) Transition risk to key sectors arising, for example, from shifting global policy and market conditions; and
- (iii) Regular temperature- and event-based stress testing, including a scenario that reflects the proposed Mid-Century Transition Path and PCF 2.0 (Recommendation 1), as well as a high-emissions scenario reflecting the increased

⁴² A global consortium of central banks and financial supervisors working to define and promote best practice in climate risk management for the financial sector, and conducts analytical work on green finance.

⁴³ A global network of leading insurance supervisors and regulators seeking to strengthen their understanding and

responsiveness to sustainability issues for the business of insurance.

⁴⁴ *A New Horizon – Speech by Mark Carney, Bank of England, 2019.*

⁴⁵ Including pension plans.

physical and regulatory risk associated with warming above 2°C. The Bank of Canada can leverage the work being undertaken by the NGFS as it develops scenario analysis models.

b) OSFI should articulate its climate risk management expectations for all federally regulated financial institutions, similar to its recent communication to property and casualty insurance companies.^{46 47}

A principles-based approach to regulation has served Canada well, and we do not recommend that OSFI impose highly prescriptive guidance on climate risks. However, a clear supervisory statement on OSFI's priorities and plans for assessing materiality, governance, management, disclosure,⁴⁸ and stress test resilience in the context of climate risk would help to encourage financial institutions to take a more proactive and strategic approach.

Given the range of possible outcomes from climate change, it is appropriate that climate tail risk scenarios (i.e., high impact, low probability events) fall under to the suite of stress tests that financial institutions must discuss with their boards and present to OSFI.

c) Work with like-minded supervisors to consider climate resilience in risk weighting and capital charges, while maintaining a high prudential standard.

The Panel heard that current capital treatment might be impeding economic activity that contributes to emissions abatement, climate resilience and clean innovation, and conversely underpricing risk activities more exposed to shifting climate and environment-related outcomes. The Panel does not suggest that risk weights incorporate "green discounts" simply to influence certain activity, but it does encourage OSFI to consider whether current treatment accurately reflects asset default characteristics in light of the evolving nature of climate risks.

Sustainable infrastructure investment came forward frequently in this regard. Given the tremendous need for private sector investment in sustainable operating infrastructure, and the potential suitability of such long-dated, stable revenue-generating assets for life insurance companies, many suggested reviewing whether the risk weightings of such assets were unduly inhibiting investment in privately financed infrastructure that could contribute to climate resiliency and GHG reductions.

To begin the process, OSFI should work with industry to conduct a historical review and performance assessment to identify past assets that might be considered "green" today (e.g., green mortgages and sustainable operating infrastructure assets) as a potential reference point for fast-tracked changes to capital requirements. This exercise will likely require approximation and assumptions in light of information challenges, but the Panel encourages OSFI to begin now and update as new information becomes available.

Recommendation 8.2. Consider how efforts to enhance regulatory agility can be used to advance high potential transition or climate-oriented financial innovation.

Lead: OSFI.

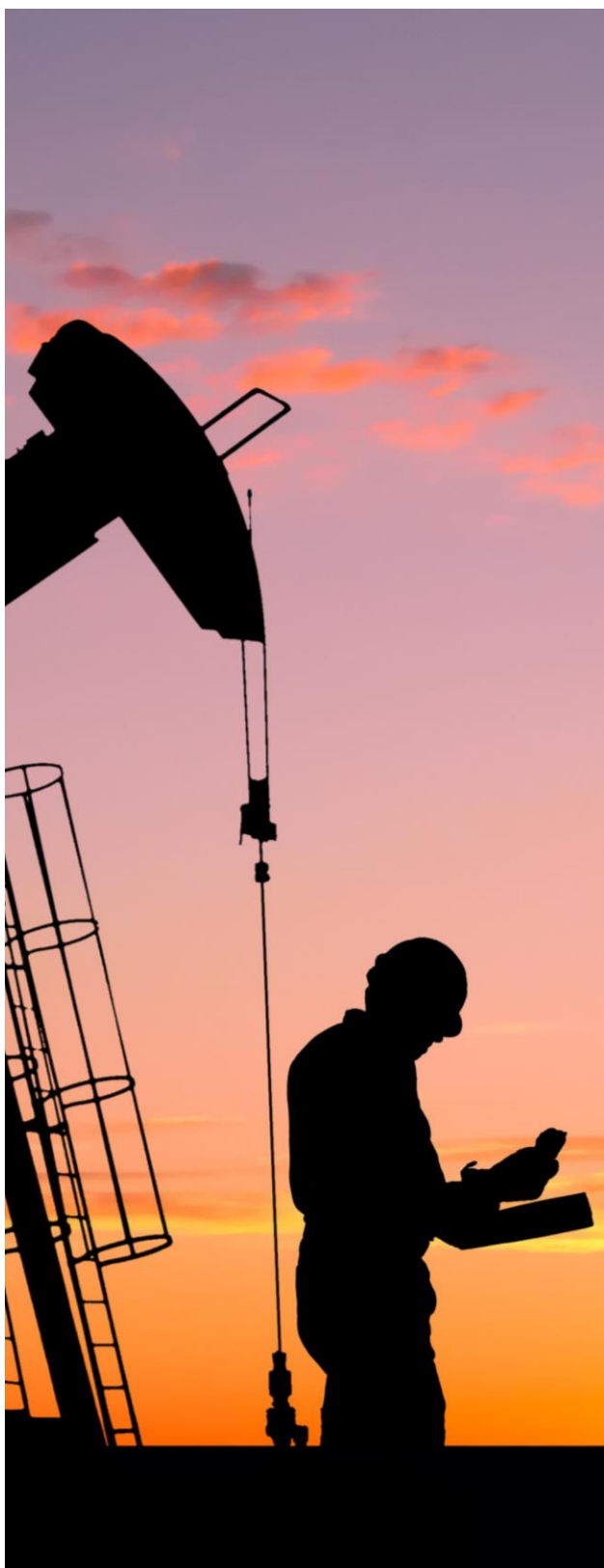
A streamlined, predictable and agile system better enables (and motivates) financial innovators to respond to rapid changes in technology, market dynamics and risk conditions. The Panel encourages federal financial regulators to consult the recently formed External Advisory Committee on Regulatory Competitiveness and the Centre for Regulatory Innovation on ways to remove hurdles for financial innovation of strategic value under the proposed PCF 2.0. Policymakers should consider the potential for targeted regulatory pilots to explore flexible, cost-effective environmental policy instruments, including market-based elements.

The UK's Financial Conduct Authority recently introduced a green finance regulatory sandbox to allow financial firms to test new products and services with consumers in a controlled environment. The program aims to reduce time to market at potentially lower cost, identify necessary consumer protection safeguards, and enable better access to finance.

⁴⁶ The OSFI Pillar, February 2019.

⁴⁷ The UK and Australia have set a particular precedent in consistent regulatory actions and guidance on this subject.

⁴⁸ Disclosure expectations should align with the proposed TCFD implementation approach discussed in Recommendation 5.



PILLAR III. FINANCIAL PRODUCTS AND MARKETS FOR SUSTAINABLE GROWTH

Recommendations 9 through 15 aim at developing and scaling market structures and financial products that could offer transformative economic benefit to Canada in building a low-emissions, climate-smart future. These recommendations align closely with the themes of the PCF, and focus on the financing needs of critical sectors of the economy such as clean technology, oil and natural gas, infrastructure, buildings, and electricity generation and transmission. Some of these areas need a targeted nudge to drive scale, while others have yet to develop.

Recommendation 9. Expand Canada's green fixed income market, and set a global standard for transition-oriented financing.

Fixed income instruments represent the largest, and generally deepest, pool of capital in international markets. Leveraging this asset class to help achieve the goals of the Paris Agreement - and for Canada, the proposed Mid-Century Transition Path - will be key to delivering the scale of financing required to implement essential plans for resilient infrastructure, deep building retrofits, clean electricity generation and transmission and cleaner energy and resource production.

While the dynamics surrounding 'green' fixed income⁴⁹ are promising, and global supply and demand are growing, the market for these products continues to lack depth and liquidity. Reasons for this, which mainly center on insufficient supply and nascent definitions (i.e., taxonomies) and accreditation standards, are detailed in our Interim Report and persist today.

The green fixed income universe continues to diversify. In addition to the more commonly known green bonds and loans, variations of environmentally and socially themed products today include sustainability, climate, blue, and resilience bonds.

Several international initiatives are in the process of advancing standardized taxonomies for green and related investments, and early precedents have

proceeds are invested in projects that will result in meaningful efficiency improvements, better climate

⁴⁹ The most recognized and traded product in this market is a green bond, where proceeds are earmarked for 'green' projects. The issuer - which can be a financial institution, government or company - is responsible for ensuring that

emerged.⁵⁰ However, initial criteria seem to exclude opportunities for GHG emissions reductions brought by innovation within heavy resource and industrial sectors.⁵¹ This restrictive scope could exclude some of Canada's core economic sectors from certain investment mandates, benchmarks, funds, and accreditation standards – even if companies in these sectors are pursuing projects and strategies that lead to better environmental improvements than approved pure green projects.

Recommendation 9.1. Convene key stakeholders to develop Canadian green and transition-oriented fixed income taxonomies.

Lead: Finance Canada, in partnership with Canada's major financial institutions and the Canadian Standards Association (CSA Group).⁵²

Finance Canada, along with Canada's major financial institutions, should support the CSA Group in establishing a Taxonomy Technical Committee (TTC) to develop Canadian green and transition-oriented fixed income taxonomies.

The Panel recognizes the early work by the CSA Group and Toronto Finance International to lead consultations on green taxonomy within Canada's financial industry. This is an important initiative that would benefit from additional support and focus.

Ideally, Canada would adopt a single internationally-aligned taxonomy encompassing not just green definitions, but a broader mapping of transition and resiliency-linked economic activities and asset classes. Because such a taxonomy is unlikely to come forward in the near-term, Canada should begin by adopting an international green taxonomy⁵³ that aligns with its global investment and trade priorities. It should then work either independently, or with other countries with similar resource endowments, to develop supplemental coverage for industry transition activities that are essential to Canada but not captured under current criteria. Canada's taxonomies should be granular enough

to avoid ambiguity, while flexible enough to evolve with policy, demand and innovation.

The Panel sees four practical aspects of the TTC's mandate:

- a) **Consult relevant stakeholders and experts to inventory economic activities that contribute to Canada's transition to a low-emissions, climate-smart economy**, including those in our resource and industrial sectors; as well as sectors or economic activities in Canada that are particularly exposed to climate and environment-related risks (both physical and transition).
- b) **Compare the activities under (a) to the scope of existing and emerging international taxonomies**,⁵⁴ and select a framework for Canada to use as its foundation.
- c) **Invite other countries with similar resource endowments to partner with Canada in scoping a 'transition-oriented' taxonomy category that captures environmentally beneficial projects that do not meet international green criteria**. Examples of such structures are becoming increasingly popular in European⁵⁵ loan markets, but no discernable activity has occurred to date in Canada.

As a first step, the TTC could evaluate whether Canada should adopt the recently launched Sustainability Linked Loan Principles⁵⁶ as a guide for near-term market activity. Observing the market application of these principles would help inform transition taxonomy efforts.

resiliency, or emissions reductions; as defined by accepted taxonomies.

⁵⁰ Such as: Climate Bonds Initiative, Green Bond Principles, International Finance Corporation, FTSE Green Revenues Classification System, and EU Green Finance Taxonomy.

⁵¹ For further discussion on this exclusion: *Clean Financing for Heavy Industry*, Corporate Knights; Council for Clean Capitalism; *Leveraging Sustainable Finance Leadership in Canada*, IISD; *Capitalizing on Sustainable Finance: A growth opportunity for Toronto's Financial Sector*, TFI.

⁵² The CSA Group is an independent, SCC-accredited not-for-profit membership association serving industry, government, consumers and other interested parties in Canada and the global marketplace.

⁵³ As of this report, sustainability-oriented taxonomy standards are underway in China, Japan, the UK, France, the Netherlands, and the EU; as well as by the recently formed International Organization for Standardization Technical Committee 322, the Loan Market Association (LMA), the Loan Syndications and Trading Association (LSTA) and the Asia Pacific Loan Market Association (APLMA).

⁵⁴ The OECD plans to release a similar mapping and analysis of current and emerging global sustainable finance taxonomies in 2020.

⁵⁵ <https://www.bloomberg.com/news/articles/2019-03-06/banks-can-t-afford-to-ignore-the-23-trillion-market-for-doing-good>

⁵⁶ Developed by the LMA, LSTA and APLMA.

As a resource-rich economy with a world-class financial sector, Canada has a unique opportunity to work with global partners to create a standard for fixed income instruments specifically tailored to climate-smart transition activities that, as of now, are not compatible with international green finance standards. These transition-linked products could offer favourable economics (typically a lower interest rate) on the basis of successful achievement of threshold-level improvements in environmental impact and asset performance with respect to energy efficiency.

The Panel heard wide interest in such a product category as a critical capital source for progressive issuers in high-emitting industry sectors seeking to transition their business models, and as an assured tool for investors to support broader transition activities.

The Panel recognizes emerging international efforts to consider transition themes in taxonomy discussions, but integration may take time and outcomes are uncertain. Canada has an immediate need and opportunity to provide leadership. Ideally, Canada's efforts will converge with international standards.

- d) Work with the CSA Group to develop labeling standards for in-scope products and activities, once taxonomies are in place.** Labeling helps inform the degree of sustainable finance activity occurring throughout the financial sector and enables greater ease and accuracy in the tracking, verification, aggregation and trading of such instruments. It can also form the basis of ancillary products, such as themed indices.

This labeling system should be used to track and tag heavy-industry transition financing, for inclusion in the C3IA.⁵⁷

In its deliberations, the TTC should evaluate how best to build capacity and expertise within the Canadian financial community on structuring, underwriting, pricing and transacting green and transition instruments.

Recommendation 9.2. Work with financial sector leaders to accelerate Canada's supply of liquid green and transition-linked fixed income products.

Lead: Finance Canada, in partnership with the financial sector.

- a) Encourage Canada's major banks and asset managers to pursue benchmark transition debt transactions to open the private sector market.** Members of the TTC would be obvious leaders in this effort.
- b) Consider a range of temporary issuance-based incentives.** Green bond issuances have become highly oversubscribed, suggesting a mismatch between current demand and available supply. The Panel heard that the perception of high set-up costs was a barrier to issuance, and as such, the federal government should consider time-limited fiscal incentives to offset cost concerns. These might include:
 - **Tax credits:** Bond investors would receive tax credits in place of interest payments so that issuers do not have to pay a full market interest rate on their green bonds.⁵⁸
 - **Tax exemption:** Bond investors would not pay income tax on interest from the green bonds they hold (so the issuer can pay a lower interest rate). This type of tax incentive typically applies to municipal bonds in the US market.
 - **Interest deductibility:** Bond issuers would receive cash rebates from the government to subsidize their net interest payments. For example, a 1.5x deductibility multiplier could apply to first-time green or transition bond issuers.
 - **Cost reimbursement:** The federal government would reimburse first-time issuers for a portion of the set-up cost for issuing a green or transition-linked facility.

A 'super' tax deduction on climate-oriented investment in registered savings, as described in Recommendation 2, should help stimulate demand and retail investment in tandem.

⁵⁷ Introduced in Recommendation 4.

⁵⁸ Examples of similar programs in the US include the Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QECBs) programs.

- c) **Encourage Canadian asset managers to create pools, and index providers to create indices, of domestic green and transition-linked fixed income product for institutional-scale investment.** Pooled vehicles offer institutional investors scaled access to assets that align with their desired quality, tenor and pricing; while also providing diversification benefits.

Recommendation 10. Promote sustainable investment as 'business as usual' within Canada's asset management community.

While there is uncertainty as to how or when impacts will fully manifest, there is no opting-out of climate effects. Leading asset managers⁵⁹ in Canada and abroad recognize that the ability to understand and manage investment-oriented climate risk and opportunity is fundamental to sustainable growth and long-term value creation. Many have begun integrating sustainability principles into their core investment and ownership approaches,⁶⁰ resulting in a growing body of evidence that a well-designed sustainable investment strategy often enhances risk-adjusted return performance over time.⁶¹

More generally, however, market understanding of the economic significance of climate change, or how to apply a climate change strategy to a broader portfolio, is not well developed. Most companies do not have adequate tools to scan their operations for environmental opportunities or risks, or to prioritize or assess those factors in terms economic impact. This is exacerbated by the popularity of passive investing strategies, benchmarks and indices that are void of climate or sustainability criteria.

Canada's financial system has a critical role to play in delivering the financing ingenuity and capital flows required to execute Canada's sustainable growth objectives, and is highly capable of the task. However, achieving these ambitions will require more systematic uptake by top-level financial leaders, and an asset management system that broadly considers sustainable investment a regular aspect of everyday decisions and business practices.

⁵⁹ Referring to the segment of the financial industry that manages investment funds on behalf of others, including long-term asset owners such as pension plans and insurance companies.

⁶⁰ Including investment strategy and governance, risk management, financial disclosures and incentive structures.

⁶¹ "A review of over 200 sources on ESG performance by Oxford University and Arabesque showed that in the

Overcoming market inertia will require a suite of reinforcing elements to shift long-embedded investment principles and practices toward a new and largely unfamiliar horizon. As noted earlier in this report, these building blocks are:

- A sufficient view of the scale of market opportunity, and the pace of change required to meet our Paris commitments (Recommendation 1);
- A predictable and consistent policy and macroeconomic regulatory environment (Recommendations 1 and 8);
- A richer data environment (Recommendation 4), and more robust climate disclosures (Recommendation 5);
- Clear fiduciary duties (Recommendation 6) and evolved oversight and governance practices surrounding ESG management; and
- Better education and a knowledgeable financial support ecosystem (Recommendation 7).

Their development will take time, and accelerated activity must begin today. Canada's large asset managers are globally leading long-term investors with an influential voice across virtually every industry. These institutions will be key agents in driving wider transparency and integration of environmental opportunities and costs in management processes.

Recommendation 10.1. Encourage Canadian asset managers to assess their internal climate change competency and build capacity where needed.

Lead: Finance Canada and the Bank of Canada, in partnership with Canada's asset management community.

- a) **Articulate the importance of climate-smart investing as an emerging global best practice.**

Understanding that the regulation of asset managers is largely a provincial responsibility, the Minister of Finance should encourage Canada's asset management community to:

- (i) Self-evaluate internal competence on, and integration of, climate matters in long-term strategy, governance and risk management in

overwhelming majority (88%) of companies that focused on sustainability, operational performance was improved, translating to higher cash flows. And meta-analysis of over 2,000 studies confirms that the responsible, as well as the economic case for ESG investment is tangible." *A New Horizon – Speech by Mark Carney, Bank of England. 2019.*

line with their fiduciary duties. Asset owners such as pension plans and insurance companies should do the same for their external managers, where applicable;

- (ii) Consider applying institution-wide 'climate aware' principles across all portfolios, and work with external managers and index providers to adapt traditional benchmarks and indices to better reflect the emerging low-emissions, climate-smart economy (see Recommendation 10.3 for more); and

As discussed in the Panel's *Interim Report*, Canadian indices are more emissions-intensive than the global average. Estimates by the French investment management firm Mirova found that many of the index benchmarks most commonly used to assess asset management performance are compatible with 3.5-5.5°C global warming scenarios. Under Mirova's estimates, the TSX60 is consistent with a 4.6°C scenario. Similar analysis by Blackrock found that the MSCI Canada has higher carbon intensity than most parallel indices, due in part to the prevalence of energy and resource sector firms in the Canadian fund.

- (iii) Consistently integrate climate change considerations into corporate governance and proxy voting principles and priorities.⁶² Publishing these principles and priorities gives companies an early signal on where the institution stands on matters such as:

- Climate change oversight and opportunity analysis across governance, long-term strategy, risk management, and performance evaluation; and
- Disclosures of climate change management strategies and exposures to climate risks (more on this in Recommendation 5).

- b) **The Bank of Canada should regularly convene with Canadian asset managers to exchange information on climate-related financial risk.**

This commitment would provide a clear signal to the priority placed on climate-related considerations in macroeconomic forecasting and financial stability monitoring. Between its broad reach and its participation in the Network for Greening the Financial System, the Bank of Canada has a unique global and cross-industry view that would provide valuable insight to asset managers navigating sustainable investment strategies.

Meanwhile, the industry can provide on-the-ground insights, new information and trends that can filter into national and international efforts to understand how physical and transition risks are likely to circulate within the financial system.

While some competition between financial centres is healthy and constructive in accelerating sustainable finance activity, global cooperation and collaboration at the macro and industry levels are also critical to enhanced understanding of key risks and pursuit of major opportunities.

Recommendation 10.2. Encourage Canada's leading asset managers to establish a national investor-led engagement program, akin to Climate Action 100+, to drive a broader and more consistent dialogue with Canadian issuers.

Lead: Canada's asset management community.

Collaborative engagement is an effective way to facilitate dialogue and drive consensus on what the companies of the future look like. With that view, engagement allows asset managers to directly support companies on the path to competitive advantage in the transitioning economy. It is also an opportunity to hold constructive dialogue with companies particularly exposed to transition or climate risk before considering divestment.

Climate Action 100+⁶³ has set an international precedent for collaborative engagement by major investors. However, the program covers only six of the roughly 250 Canadian companies in the TSX Composite index.⁶⁴ The

⁶² Including shareholder proposals

⁶³ Climate Action 100+ is an initiative of more than 320 investors aimed at engaging companies on improving governance, curbing emissions and strengthening climate-related financial disclosures.

⁶⁴ The six companies in the program's coverage come from the Oil and Natural gas Exploration and Production,

Integrated Oil and Natural gas, Oil and Natural gas Storage and Transportation, and Diversified Metals and Mining sectors. Of the combined 34 companies in these four sectors, the chosen six companies have an average market capitalization of \$50 billion, while the average for the remaining companies is \$4.5 billion.

remaining out-of-scope companies, representing a collective 87% of the index market capitalization, are significantly owned by domestic investors.

Canada's leading asset managers should jointly spearhead a national engagement platform to drive climate consciousness and good governance practices at home. This platform would enable Canada's asset managers to better assess the climate-related opportunities and risks facing domestic companies, and set out consistent engagement priorities accordingly. Though investors are encouraged to continue engaging independently, active partnership enables more effective use of resources and a wider reach.

The initiative can build on an existing Canadian co-engagement platform, such as the Canadian Coalition for Good Governance, which engages on behalf of its institutional investor membership. Not-for-profits involved in program development and operations can access the federal education funding introduced in Recommendation 7.

Company engagements and proxy voting are valuable tools for investors to: (i) learn and share new information and best practices; (ii) understand how companies are managing key risks and opportunities; (iii) influence corporate behaviours; and (iv) constructively address issues in portfolio companies.

Recommendation 10.3. Encourage benchmark providers and users to integrate sustainability considerations into their tools and decisions.

Lead: Finance Canada and the Bank of Canada, in collaboration with the proposed SFAC.

Traditional market benchmark indices remain a dominant driver of capital allocation and risk concentration. Most of today's core benchmark indices are not constructed with climate or sustainability criteria, nor do they provide transparency into forward-looking climate impacts or emissions exposure.

As a result, many incorporate climate scenarios with serious risk repercussions (see box in this section's backdrop). The emerging low-emissions and climate-oriented benchmarks and index methodologies tend to ignore forward-looking strategy and base their selection decisions on conditions today. Because of the relative emissions intensity of our energy and resource sectors, many of these themed strategies exclude Canadian companies. Progressive Canadian companies need a

place to showcase and finance leading transition strategies. And investors looking to invest in transition-related activities and climate resilience need an inclusive mechanism to do.

Finance Canada, the proposed SFAC and the Toronto Stock Exchange should explore measures to expand index criteria to include more sustainable finance products and forward-looking strategic insights, or create new standard sustainability indices. These efforts should draw on global insights brought by participation of the Toronto Stock Exchange in the Sustainable Stock Exchanges (SSE) network. To some extent, this work will rely on enhanced market information and taxonomy development; however, this does not preclude activity today.

Recommendation 11. Define Canada's clean technology market advantage and financing strategy.

Clean technology ('cleantech') innovation is essential to realizing Canada's leadership opportunity in the transition to a low-emissions, climate-smart economy.

Cleantech is a broad-based and rapidly growing field of products, technologies, and services that improve productivity or efficiency; reduce energy consumption; or lessen environmental pollution. Its diverse applications are relevant to virtually every economic industry and geographic region.

This solutions-based asset class will be a key catalyst in breaking the historical correlation between economic growth and harmful emissions, and particularly relevant in transitioning Canada's high-emitting industries toward business models that will enable commercial leadership in a low-emissions world.

With its growing breadth, the cleantech sector is also a potentially significant source of wealth and job creation, offering Canada unique opportunities for competitive advantage in the \$26 trillion global market for clean solutions.⁶⁵

Canada is a global leader in cleantech innovation with a strong record in research and development (R&D) and new company formation, but continues to lag its international peers in commercial scale-up, export and

⁶⁵ *Unlocking the inclusive Growth Story of the 21st Century, New Climate Economy.*

industry adoption.⁶⁶ In part, this reflects the difficulty in obtaining financing. The disappointing return experience from the early 2000s renewables disruption has caused sluggish investment and lending appetite for the sector, particularly for late-stage, long-cycle or capital-heavy ventures.^{67 68}

More recently, however, the risk and return environment looks to be turning a corner. With broad technological advances and a growing global policy imperative for efficient, low-emissions, and climate-smart solutions, the market for clean innovation has evolved substantially. Trade diversification is providing enterprising Canadian companies with opportunities to expand their global footprint, while the shifting risk-return proposition for this asset class is stimulating investor appetite.

Canada is well equipped to provide market-competitive solutions, but a need remains for partnership, investment and policy that will accelerate commercialization and adoption of promising technologies.

The Canadian Government continues to invest heavily in homegrown cleantech innovation to accelerate domestic adoption and to deploy our energy know-how and technology to markets around the world.⁶⁹ It has commissioned several discovery initiatives with public and private stakeholders to identify the key barriers, opportunities and policy imperatives underlying Canada's competitive potential. Those initiatives⁷⁰ remain highly relevant, and the Panel's recommendations below aim to reinforce concentric themes echoed throughout its consultations.

These revolve around the need for: (i) a shared long-term view of Canada's cleantech market advantage, and the necessary collaboration and investment to bring it to fruition; (ii) channels to mobilize patient private investment in areas of strategic priority; (iii) regulatory conditions that support the business case for cleantech

innovation; and (iv) resources for high potential providers to establish their global footprint.

Recommendation 11.1. Define Canada's cleantech competitiveness vision and financing strategy.

Lead: Innovation, Science and Economic Development Canada (ISED) and NRCan, in partnership with the private sector.

Develop a Canadian cleantech competitiveness vision and public-private financing strategy to support the proposed Mid-Century Transition Path and PCF 2.0 (Recommendation 1).

Coordinated focus between public and private stakeholders⁷¹ would help ensure that investments and activities maximize desired outcomes. Canada's cleantech competitiveness vision should map the country's existing and emerging technological strengths, as well as the potential for breakthrough solutions, by order of:

- Relative impact on long-term transition imperatives and climate change goals, particularly for Canada's core emissions-intensive industries⁷²; and
- Economic opportunity, employment potential and global market advantage.

A corresponding capital plan should approximate the scope, sequencing and pace of investment required to deliver Canada's cleantech opportunity pipeline, sector by sector.

⁶⁶ Canadian clean technology exports totaled \$7.8 billion in 2016, compared to China at \$245.2 billion; Germany at \$125.3 billion; and the US at \$113.2 billion.

⁶⁷ Only 3% of private venture funds invested in 2016 went toward cleantech, most of which was in smaller 'capital lite' technology deals that align with traditional holding periods and return hurdles. *Final Report of the Working Group on Clean Technology, Innovation and Jobs*, 2016.

⁶⁸ Long-term and capital heavy technology development projects - such as carbon capture and storage infrastructure or smart grid systems - tend to fall outside of the investment horizon and scale of early stage venture capitalists, as well as the risk mandate and minimum size threshold of institutional investors.

⁶⁹ Under Mission Innovation, Canada, the European Union, and other 20 governments have agreed to double their respective investments in transformative, clean energy

research and development over five years, encourage private sector investment in clean energy technology, and increase collaboration among participating countries.

⁷⁰ The Final Report of the FPT Working Group on Clean Technology, Innovation and Jobs (September 2016); Smart Prosperity Leaders' Initiative (March 2018); Report from Clean Technology Economic Strategy Tables (CTEST): The Innovation and Competitiveness Imperative (September 2018); as well as sector-specific reports.

⁷¹ Including government departments, cleantech Innovators and funders, large investors, climate experts, industry, academia, and other stakeholders.

⁷² Such as energy and resources, food and agriculture, metals and mining, transportation, and construction.

Examples of promising innovations that arose in consultations include, but are not limited to: carbon capture utilization and storage; using solvents to extract oilsands resources; switching to hydrogen, synthetic or biofuels in the transport of freight, aviation or shipping; the use of artificial intelligence or other advanced analytics to produce climate-related data and insights; tall construction using timber; risk-reduced small modular nuclear reactors; new processes for energy intensive materials manufacturing; and circular economy solutions to waste and plastic.

Strategy deliberations should consider the potential for public-private innovation clusters at the regional or sectoral levels, and where government support in those efforts would be most useful. We have seen the success of similar smaller scale industry collaboration models,⁷³ but converting Canada's promising foundation of cleantech innovation into global market opportunity will require broader and deeper efforts. Recommendation 12 discusses a practical example of such a cluster in the oil and natural gas sector.

Recommendation 11.2. Ensure that government-backed cleantech financing supports Canada's long-term competitive pursuits.

Lead: ISED and Finance Canada, in partnership with the private sector.

Review the risk mandates and investment horizons of the entities involved in administering public cleantech funding within Canada, to ensure they align with and promote national objectives. These entities include the various headline programs established in part to support cleantech,⁷⁴ as well as their facilitators - including the Business Development Bank of Canada (BDC), Sustainable Development Technology Canada (SDTC), and Export Development Canada (EDC).

Commentators in the cleantech space list many successes of these programs, but also cite inconsistencies and gaps between the high-level public objectives to promote cleantech innovation and the perceived priorities and flexibility to act under existing risk mandates. ISED's review of programs and agencies under its supervision should ensure that risk mandates (and underlying incentive systems) encourage longer-term investing and balance financial return objectives with broader environmental priorities, particularly as

they relate to national priorities. The review should also seek to promote stronger coordination, mutual investment and handoffs between these bodies.

Recommendation 11.3. Use blended finance models to mobilize private investment in areas of strategic priority.

Lead: ISED and Finance Canada, in partnership with the private sector.

Blended finance refers to the strategic use of public funds or risk capacity to mobilize private capital flows. This can be to scale up commercial finance for new markets, or fund key initiatives that improve public benefits or advance public aims. Further references to its application in this context can be found throughout our discussions of transition innovation in the oil and natural gas sector, building retrofits, sustainable infrastructure development, and electrification (Recommendations 12, 13, 14, and 15 respectively).

a) Look to create privately managed pooled investment platforms for targeted "hard to fund" opportunities, using blended finance to deliver more favourable risk and return characteristics.

Similar models in other jurisdictions have succeeded in crowding in institutional capital by mitigating unique risks associated with significant cleantech projects. They include the New York Green Bank, the Global Energy Efficiency and Renewable Energy Fund, Danish Climate Investment Fund, the Renewable Energy Investment Fund and Climate Investor One.

A Canadian initiative should aim to bring significant sources of patient private capital⁷⁵ to promising early to late-stage technologies that fall outside of domestic lending or investment criteria. This might include capital-intensive technologies, growth capital for later-stage providers or commercial-scale demonstration and deployment projects.

Blended finance can be used to calibrate risk-reward profiles to the needs of private investors, so long as the investments meet necessary criteria,⁷⁶ which should include:

⁷³ Such as the Clean Resource Innovation Network (CRIN) in the oil and natural gas sector, which was allocated \$100 million in *Budget 2019* to support cleantech activities.

⁷⁴ Such as Scientific Research and Experimental Development, Venture Capital Catalyst Initiative, numerous ISED initiatives, National Research Council Canada's

Industrial Research Assistance Program, and other regional development bodies.

⁷⁵ From long-term investors such as pension funds, insurance companies, and fund of funds.

⁷⁶ Criteria should be set forth in consultation with the proposed SFAC, see Recommendation 3.

- (i) At least one credible co-backer from an adopting industry;
- (ii) Structuring to crowd-in a minimum threshold of private capital;
- (iii) Alignment with Canada's cleantech competitiveness vision.

In some instances, capital could be made available to larger, more established companies under the proviso that recipients partner with smaller innovation firms facing capital access constraints.

Institutional investors have expressed interest in such a vehicle, so long as governance conditions resemble those of the funds they invest in today, i.e. that decision authority lies with a private, commercially-minded general partner (GP).

b) Use targeted financial structures and incentives to spur cleantech investment by Canada's venture capital (VC) community.

Cleantech often requires investment at a scale and time horizon outside of the scope of traditional VC. As a result, venture-stage cleantech funding in Canada is relatively modest and sparse, and venture firms have been slow to build internal capacity. With limited ability to secure financing from traditional lenders, this has left Canadian innovators with few avenues to source necessary capital beyond time-consuming government grants.

ISED should look to establish tailored structures that provide VC providers the ability to invest in longer-cycle or capital-intensive cleantech on terms that meet their required investment time horizons and return hurdles. This could involve: (i) supplementary support from the BDC, deployed either through existing VC funds or via directly co-investment in underlying assets; (ii) secondary purchase or subordination mechanisms⁷⁷ for funds holding long-cycle assets; or (iii) new dedicated pools to enable co-investment in major projects alongside institutional investors (for example, as an adjunct to the initiative described under 11.3a).

Recommendation 11.4. Ensure that federal regulation – particularly related to permitting and procurement – promotes agile innovation geared toward global climate objectives.

Lead: ISED, NRCan, Treasury Board of Canada Secretariat (TBS), and Public Services and Procurement Canada (PSPC), in partnership with federal regulators and the private sector.

- a) Explore near-term opportunities to 'fast track' regulatory approvals or establish regulatory 'sandboxes'⁷⁸ for priority solutions under Canada's cleantech competitiveness vision.** ISED should, for example, partner with ECCC and other regulatory departments to develop regulatory sandboxes to enable new innovative technologies to be considered and accelerated.

In exploring ways to support regulatory agility, ISED should look to insights from the External Advisory Committee on Regulatory Competitiveness, the Centre for Regulatory Innovation,⁷⁹ as well as relevant international precedents, on finding the appropriate balance between environmental and commercial priorities.

- b) Utilize a portion of the public procurement budget to showcase the commercial application of proven cleantech solutions.**

The investment prospects of early-stage companies are substantially enhanced when they have credible lead customers, and the private sector often looks to the federal government (as Canada's single largest purchaser) for cues on high potential solutions. Decisive procurement strategies targeting promising Canadian cleantech – particularly in energy purchase, building management and infrastructure development – would help bring products and services to scale while setting a precedent for provincial, municipal and private sector players to follow.

⁷⁷ Where, for example, public sector limited partner (LP) investments allow for earlier distribution to private sector LPs, to align investment opportunities with investor time horizons and return hurdles.

⁷⁸ According to the European Banking Authority, regulatory sandboxes are controlled "safe spaces" in which innovative

products, services, business models and delivery mechanisms can be tested without immediately being subject to all of the regulatory requirements. (2017)

⁷⁹ Announced in the 2018 Fall Economic Statement

c) **Expand the functionality of the Clean Growth Hub to:**

- Help cleantech providers navigate inter-jurisdictional regulatory requirements and funding sources; and
- Facilitate easier networking between cleantech innovators and the investor and business ecosystems.

Recommendation 11.5. Create a federal funding program to enable proven cleantech companies to scale up in new foreign markets.

Lead: ISED, with NRCan and Global Affairs Canada (GAC).

Maximizing the value and scale of innovative Canadian intellectual property requires a global footprint. Several of Canada's OECD and G7 counterparts have implemented programs and policies to support demonstration and export to targeted international markets.

ISED and NRCan, through the Clean Growth Hub, should develop a collaborative funding program with Global Affairs Canada (GAC), Sustainable Development Technology Canada (SDTC) and EDC to offer a 'one-stop shop' for funding and support for feasibility studies, pilots and demonstration projects in foreign markets. A steering committee could develop the program's framework and oversee project origination and due diligence. This committee should ensure that demonstration projects align with national priorities and lead to commercial finance becoming available.

Recommendation 12. Support Canada's oil and natural gas industry in building a low-emissions, globally competitive future.

Lead: Natural Resource Canada (NRCan) and Innovation, Science and Economic Development Canada (ISED), in partnership with industry and the financial sector.

Oil and natural gas production and export is a prominent pillar of the Canadian economy.⁸⁰ It is also our largest source of GHG emissions⁸¹ with a significant impact on air, land, and water quality. While this industry will continue to play a role in the global energy transition, its footprint puts high-intensity segments at heightened risk of market displacement in sustainability-conscious markets.

Last year, Canadian exports of petroleum products topped \$125 billion; that is 65% higher than auto exports, and nearly triple that of base metals (the closest resource-based comparable).⁸²

Although there is considerable debate over the pathway and pace, it is clear that the world is embarking on a clean energy transition. In 2018, a *Generation Energy Council report* commissioned by NRCan highlighted four essential pathways to a sustainable energy future in Canada: (i) wasting less energy, (ii) switching to cleaner power, (iii) using more renewable fuels, and (iv) producing cleaner oil and natural gas. The projected growth in global energy demand will require an integrated mix of all of the above, with a growing bias toward clean, responsibly developed and low-cost sources.

The global investment outlook is becoming increasingly clouded by variable forecasts for long-term fossil fuel demand, paired with questions about the oil and natural gas industry's overall commitment to address its emissions footprint. For Canada, conditions are exacerbated by perceptions of regulatory uncertainty, high compliance costs and long lead times. The result is capital flight, public debate over production expansion and market access and risk of price deflation. Canadian capital spending on oil sands in 2018 was one-third of the investment level in 2014.⁸³

⁸⁰ Canada is the fourth-largest exporter of oil and the fifth-largest exporter of natural gas, with the third-largest proven reserves of oil globally. (Natural Resources Canada. (2018). Crude Oil Facts)

⁸¹ Emissions from the oil and natural gas industry represented 27% of total domestic GHG emissions in 2017.

⁸² *Alberta: Why Scale and Policy Matter*, Peter Tertzakian, 2019.

⁸³ 2018 CAPP Crude Oil Forecast, Markets & Transportation.

As publicly traded entities, Canada's oil and natural gas companies are competing against major sovereign producers (such as state-owned companies in Russia and Saudi Arabia) that face little pressure for transparency or risk of divestment. Even though independent oil companies only produce about 30%⁸⁴ of the world's oil and natural gas supply, their listed status makes them significantly more vulnerable - and responsive - to societal pressures and changing investor attitudes. Divestment from these public companies essentially transfers market share from the minority producers most obliged to act responsibly and transparently, to monopoly producers without similar obligations.

Progressive companies are beginning to collaborate and invest heavily in transition-related research and development (R&D). However, with uncertainty about policy direction, these efforts have focused primarily on energy and cost reduction, with emissions reductions occurring as a positive by-product. Technological and operational efficiency improvements between 2000 and 2016 have resulted in a 29% decrease in oil sands emissions per barrel.⁸⁵

Based on Environmental Performance Index scores produced by Yale University and Columbia University in collaboration with the World Economic Forum, Canada's oil and natural gas industry performs well in terms of energy security and health and safety, but poorly in terms of ecosystem protection and resource management. This comes despite being subject to stringent environmental regulations. Though some of this arises from structural factors and national circumstances, there is opportunity to do better.

If Canadian oil and natural gas companies are to live up to their leadership potential, the focus must shift to innovations that will directly decouple economic growth from emissions. Meanwhile, governments at every level should support industry innovation, while priming global markets for Canada's new generation of products, services and technologies.

The Panel sees three key themes to this industry's growth path: a clean innovation vision and pathway, enhanced industry commitment and transparency, and improved market access.

Note: While geared toward the oil and natural gas industry, these recommendations similarly apply to Canada's other vital resource-based sectors, such as mining, forestry, agriculture and materials production.

Recommendation 12.1. Develop a vision and pathway for clean innovation in the oil and natural gas sector.

a) Convene government and oil and natural gas industry leaders to create a shared vision and strategy for long-term competitive growth in a low carbon economy, underpinned by detailed sectoral innovation roadmaps and capital plans. This vision and strategy should align with the underlying objectives of the proposed Mid-Century Scenario and PCF 2.0.

A long-term industry vision is key to understanding the scope of transformation and capital investment required to align industry growth with Canada's climate commitments. It is also important for building a stronger national consensus on Canada's energy transition, and connecting industry leaders more directly with the emerging cleantech economy.

b) Seed an oil and natural gas clean innovation cluster. Building on the work of existing organizations such as CRIN, COSIA and PTAC; develop a cluster of government representatives, oil and natural gas leaders, innovators, institutional investors, environmental NGOs and researchers, and academic institutions.^{86 87} This cluster would pool capital and expertise, and stimulate the development and commercialization of promising decarbonization and energy conservation solutions, by:

- Bringing patient financing to large-scale and capital-intensive field innovation pilots;
- Jointly addressing critical funding gaps and development hurdles throughout the technology life cycle;
- Accelerating industry-wide adoption of essential solutions, by sharing knowledge⁸⁸; and
- Allowing major oil and natural gas companies to take controlled risks on smaller innovation companies, while giving cleantech innovators their first significant purchase order.

⁸⁴ U.S. Energy Information Administration, 2019.

⁸⁵ *Energy Fact Book 2018-2019*, Natural Resources Canada, 2018.

⁸⁶ Clean Resource Innovation Network (CRIN), Canada's Oil Sands Innovation Alliance (COSIA), and Petroleum Technology Alliance Canada (PTAC).

⁸⁷ By the end of 2017, members of Canada's Oil Sands Innovation Alliance had shared 981 technologies and innovations.

⁸⁸ With appropriate user rights

As much as possible, public contributions should be funnelled directly to the innovation provider. This will most often be mid-sized firms offering proprietary solutions, but may include direct emissions reduction, climate resiliency or environmental conservation measures by oil and natural gas companies. Direct support to companies must be contingent upon significant and measurable outcomes to ensure that funding represents a performance-based incentive, not a fossil fuel subsidy.

- c) **Examine whether federal fiscal incentives adequately support innovations aimed at substantial emissions reductions and climate resiliency measures at all stages of the oil and natural gas production and transmission chain.** This examination should involve a review of the Scientific Research and Experimental Development (SR&ED) program and the recently announced Accelerated Capital Cost Allowance provisions, as well as the potential for net new support.
- d) **Ensure that policies and regulations support and reinforce the oil and natural gas industry's vision for clean innovation and market leadership.** Clear performance-based standards and policies - including but not limited to predictable carbon pricing- gives necessary context and certainty to clean innovation priorities. Meanwhile, industry regulations should maintain rigour while promoting agile innovation toward those priorities.

Recommendation 12.2. Promote enhanced industry commitment and transparency.

Global investors are increasingly asking about the commitment to sustainability and transparency by high-emitting industries. Improved reporting by the oil and natural gas industry on the impact of their operations on energy, water and emissions would demonstrate a commitment to sustainability and continuous improvement.

While the Panel fully acknowledges the concerns by companies or sectors on being first movers on disclosure, it is precisely this leadership that investors are seeking from our oil and natural gas industry.

- a) **Secure a formal industry-wide commitment to responsible production and adequate public disclosures,** similar to the Mining Association of Canada's *Towards Sustainable Mining* statement. This statement should outline how Canada's oil and natural gas companies will meet the world's energy needs in a socially, economically and environmentally sustainable manner; and is a key step in building public trust and a unified industry brand.
- b) **Encourage Canada's oil and natural gas companies to follow the TCFD implementation approach proposed in Recommendation 5, while the federal government champions similar disclosure standards internationally.** Timelier, more reliable and comparable industry data enables more informed risk analysis, policy, investment and lending decisions, as well as solution innovation and public dialogue. A better cross-industry view helps identify where targeted support is needed to achieve maximum emissions reductions.
- c) **Proactively seek avenues for an independent and authoritative ESG performance benchmark for the global oil and natural gas industry.** International benchmarking on environmental, social and governance factors would provide a critical window into Canada's realistic leadership potential in these areas. This work can build on the World Bank's Regulatory Indicators for Sustainable Energy (RISE) initiative⁸⁹, the forthcoming Global Tracking Framework⁹⁰ and NRCan's Energy Fact Book.
- d) **Leverage digital tools such as blockchain to enable real-time, auditable tracking of environmental and social performance from production through to retail.** Major companies are increasingly committing to responsible material inputs along their supply chains, suggesting that retail transparency will become a growing competitive edge. If implemented well, performance tracking could lay the groundwork for fuel labeling similar in concept to NRCan's Energy Star ratings for appliances, the Kimberly Process for diamonds or the Forest Stewardship Council.

As it progresses, industry data and analysis should be assimilated into the proposed C3IA,⁹¹ to inform financial and business insights.

⁸⁹ RISE is the first global policy scorecard of its kind, grading 111 countries in three areas: energy access, energy efficiency, and renewable energy. The report is aimed at helping governments assess whether they have the policy and regulatory framework in place to effectively drive

progress on sustainable energy, and pinpoints where more can be done to attract private capital.

⁹⁰ This is a joint initiative between the World Bank and International Energy Agency (IEA) to track how countries are performing on sustainable energy goals.

⁹¹ Introduced in Recommendation 4

As discussed in Recommendation 9, the Panel heard wide interest in how a market for transition-linked financial products could help bridge the gap between sustainability-focused investors and firms in emissions-intensive industries that are making transition efforts. Transition-linked covenants help assure investors that their capital is contributing to constructive outcomes, while giving progressive companies access to competitively priced capital.

Recommendation 12.3. Improve Canada's ability to supply global markets with cleaner, more responsibly produced oil and natural gas.

Even in relatively rapid transition scenarios, oil and natural gas will remain core components of the energy mix for decades to come. The potential to minimize emissions in the extraction, refinement and processing of these commodities would extend their longevity and market access substantially, and is necessary if we are to limit global warming to less than 2°C above pre-industrial levels.

The Panel understands that pipelines are contentious. But Canadian producers can only invest in clean innovation if they are able to sell their products. Without access to markets, i.e., pipelines, our industry will be challenged to convert profits into better options for the future. Therefore, resolution on Canada's strategy for global connectivity will be necessary if our oil and natural gas industry is to position itself as the responsible supplier of choice.

The imperative for resolution is pressing. Canada's abundance of natural gas has great potential today to displace higher-polluting sources of energy worldwide, but this cannot happen without channels to global demand.⁹²

For oil producers, a commitment to clean leadership (as discussed in 12.2) and a decisive, coordinated strategy to fulfill that commitment (as discussed in 12.1) is critical to retaining and growing long-term market share. Investors and policymakers need transparency to drive capital investment and market advocacy. With a clear pledge from industry, the federal government has an active role to play in promoting Canada as a supplier of choice among global markets, by:

- a) **Working with provincial governments and the private sector to establish the conditions for Canada's oil and natural gas sector to prosper as a leading responsible supplier to the world.**
- b) **Using Canada's diplomatic voice to champion consistent international environmental and social operating standards and disclosure practices.** This advocacy will help level-set and advance global clean energy standards.
- c) **Proactively participating in negotiating the rules and technical scope of Article 6⁹³ of the Paris Agreement, and support Canadian activities that are likely to qualify.** Article 6 is the part of the Paris Agreement that sets the framework for international cooperation to mitigate carbon pollution. It could set the stage for Canada to provide leading clean solutions to international markets.

Recommendation 13. Accelerate the development of a vibrant private building retrofit market.

Canadian buildings represent 11% of domestic GHG emissions, and are more energy-intensive than those of other developed countries with similar climates. A high percentage of this stock will remain operational beyond 2030. Thus, while Canada's climate objectives call for higher standards for new builds, deep improvements to the energy consumption and emissions profile of our existing large-building stock are also an important priority. The federal government has signalled its intent to adopt best-in-class model energy codes for both new and existing buildings. While adoption of the codes themselves is a provincial responsibility, the federal government can support rapid implementation.

Deep retrofit activities are one of the most economical means to improve Canada's carbon footprint and climate resiliency. Efficiency upgrades in buildings tend to focus on marginal measures such as smart thermostats or more efficient windows. While these are useful, more transformative projects targeting large-scale emissions

⁹² Activity is beginning to take place. LNG Canada, a joint venture led by Shell Canada, recently announced a \$40 billion project to build a pipeline across B.C. and a port and terminal that liquefies the gas for overseas export. The B.C. ministries of Finance and Energy estimate that the project will generate \$22 billion in direct government revenue over the next 40 years, and will employ as many as 10,000 people in its construction and up to 950 full-time jobs. According to

estimates, LNG Canada would be the least GHG-intensive large LNG facility in the world.

⁹³ Article 6 enables abatement measures taken in one country to be counted toward the achievement of another country's targets through the concept of the "internationally transferred mitigation outcome".

reductions⁹⁴ are more representative of the scope of activity required to move the needle on Canada's climate targets.

Deep retrofits - which are increasingly becoming self-funded⁹⁵ - allow property owners to simultaneously improve the life span, operating income and value of their buildings, while creating safer, healthier working and living environments. These projects also generate new economic opportunities and employment in everything from the building trades to manufacturers of innovative equipment and materials. Despite the compelling environmental and economic business case for these activities in Canada, the retrofit market remains subdued.

Canada is unique in that the majority of our large office and commercial building stock is managed by a concentrated group of large, institutionally-owned real estate operators with robust operational capacity and access to capital. These operators have pursued opportunistic efficiency and emissions upgrades over time, and many of the buildings under their management have reached high LEED⁹⁶ status. However, there is more to do to reach the net zero standard proposed in the PCF.

Beyond this large base of institutionally-owned stock is a universe of mid-sized and smaller buildings⁹⁷ with myriad owners and lessors, where broad-based activity has not occurred.⁹⁸ Project barriers for smaller operators are well understood, and emanate from a combination of institutional, market and economic inhibitors, as discussed in the Interim Report.⁹⁹ Governments and utilities across Canada have introduced a range of support, incentive and outreach programs to address these barriers, yet market activity has not picked up.

In the residential sector, deeper energy efficiency or climate resiliency projects seem impeded by long payback periods and difficulty in sourcing cash flow-based financing.

Given the unique makeup of Canada's real estate landscape, bringing retrofit activity and financing to

scale will require a suite of holistic and targeted measures. Our first two recommendations address barriers that appear to be hindering project appetite at every level of the commercial building sector; the next three address capital barriers for small and mid-sized building owners/operators as well as homeowners.

Recommendation 13.1. Calibrate Canada's building codes to the proposed PCF 2.0 and develop a capital plan and supports to achieve targets.

Lead: Natural Resources Canada (NRCan).

For Canada's private retrofit market to develop more rapidly, the federal government must set a clear and long-term ambition for building energy and emissions performance within a reinforcing policy framework. A progressive, predictable policy and regulatory framework offers building owners and investors the necessary visibility to plan for a multi-decade investment program.

Specifically, the Panel recommends that NRCan:

- a) Re-examine the scope and timetable of planned model building energy codes¹⁰⁰ and related PCF policy plans in the context of the proposed Mid-Century Transition Path and PCF 2.0.** Both 2030 and 2050 climate-related targets should be set for Canada's real property stock, with consideration for both adaptation and GHG reduction.

In this effort, NRCan should collaborate with provincial governments to harmonize and streamline provincial building codes and encourage performance-based standards that mandate results over prescriptive requirements. Efforts should look to British Columbia's step codes as an example, which provide a predictable roadmap to an ultimate objective that governments and industry can plan for.¹⁰¹

⁹⁴ Such as fuel switching or the addition of insulation and airtightness to the building envelope.

⁹⁵ A number of organizations, such as energy service companies, are operating viable "paid from savings" projects. These providers develop finance and implement retrofit improvement projects on a "turn-key" basis, and guarantee that energy savings will cover their capital and financing cost, which includes the loan repayment.

⁹⁶ Leadership in Energy and Environmental Design certification

⁹⁷ Largely office and multi-family residential buildings, as well as industrial facilities.

⁹⁸ There is also the provincial governments' owned and leased stock, which is primarily in the Municipal, University,

School and Hospital (MUSH) sectors. Some upgrades have been done to this stock, but there is much more to do.

⁹⁹ See also: *A Roadmap for Retrofits in Canada 2*, Canada Green Building Council, 2018.

¹⁰⁰ Model energy code for existing buildings (on track for publication by fiscal year 2022-23) followed by Net Zero Energy Ready codes for new buildings by 2030. The Panel acknowledges that codes are consensus documents developed between multiple public and private stakeholders.

¹⁰¹ Step codes also enable local governments to choose higher levels of performance standards for buildings in their jurisdiction than what baseline building code requires.

- b) **Develop a capital plan to achieve set targets and policy standards, outlining potential priority uses and sources of public and private financing.** This plan will help underline the scale of the market opportunity.
- c) **Ensure federal fiscal incentives and building efficiency initiatives promote expedient building code adoption and emissions reductions, rather than simple efficiency gains, with funding tied to performance gains.**

These facets should be developed in alignment, and designed to mutually reinforce desired outcomes.

Recommendation 13.2. Introduce a mandatory labeling and public disclosure program to enhance the transparency of Canadian building performance.

Lead: NRCan.

Energy efficiency labeling of buildings and associated disclosures can be a catalyst for accelerated upgrade activities, as we have seen in the UK, Australia, and parts of the US. Public access to performance ratings and trends is key to adjusting behaviours and guiding evidence-based underwriting, investment decisions, policy standards and benchmarks. It also sets the foundation for solution-driven innovation.

As a commitment under the PCF, NRCan is currently collaborating with the provinces and territories to develop a mandatory operational energy rating and public reporting mechanism for Canadian buildings, which will be collated to form a national public database. The Panel endorses this initiative, and offers the following additional considerations for program development:

- a) **Consider energy efficiency and source, water usage and physical risk vulnerability in program scope.** The Panel points to the Ontario Energy, Water Reporting and Benchmarking (EWRB) scheme as a potential precedent, as it was negotiated with key industry participants such as REALPAC and the Canada Green Building Council, and is well understood by building owners. The EWRB leverages the existing Energy Star platform, which helps with maintaining consistency across jurisdictions.
- b) **Commit to publicly disclosing ratings for all federal buildings as soon as practically possible.** The Government should also encourage Canadian building owners that disclose under the TCFD

framework or issue public sustainability reporting to include these ratings in their reporting scope.¹⁰²

- c) **Work with provinces to explore similar disclosure requirements for residential homes at the point of sale, lease or transfer,** as is currently the case in the EU.

Once established, the national database should be integrated into the C3IA (Recommendation 4) and used as an education tool to give owners feedback on the relative performance of neighbouring or similar building types.

Recommendation 13.3. Leverage existing federal building upgrade plans under the federal Greening Government Strategy to create a centralized deep retrofit project pipeline for public-private co-investment.

Lead: TBS, in partnership with Finance Canada and the CIB.

Demonstration of retrofit projects is essential to enhancing market understanding of the savings dynamics of retrofits - and how savings can result in new cash flows or credit capacity for repayment of project loans. The federal government can lead this demonstration through federal building retrofits.

As part of the 2016-2019 Federal Sustainable Development Strategy (FSDS), the Government of Canada committed to reducing the GHG emissions from its buildings and fleets by 40% below 2005 levels by 2030 or earlier, and by 80% by 2050. The mandate of TBS' Centre for Greening Government is to provide leadership in the move toward low-emissions, resilient and green Government of Canada operations. The Centre works with a number of government departments and agencies to implement these goals.

The Panel sees a strong opportunity for the federal government and CIB to partner in converting federal building upgrade plans into a centralized project pipeline for public-private co-investment. This initiative would spur development of:

- Standardized modules for large-scale projects, including due diligence, contracting and supplier agreements, project logistics, procurement and employment of innovative technologies, and outcome-based performance reporting; and

¹⁰² Until public standards emerge, private initiatives such as CaGBC's Disclosure Challenge can offer insight into

bourgeoning industry standards for building performance reporting.

- Financing structures to attract mainstream financial participants and facilitate private sector investment in a diversified asset pool, such as themed aggregation vehicles.

This approach may incur a higher cost of funding than issuing government bonds, but the Panel views it as an important step in bridging the commercialization gap while reducing the overall public funding burden to drive down GHG emissions in the commercial building sector.¹⁰³ The program could serve as a template for similar provincial activity, particularly in the MUSH sector.

CIB's existing mandate to co-invest specifically in new infrastructure in priority sectors may need to be reviewed to enable participation in this project pipeline; however, they would still have a role to play in developing the supporting framework.

Recommendation 13.4. Develop a regional green bank network to facilitate an 'on the ground' retrofit market.

Lead: NRCan, Finance Canada, Infrastructure Canada, and the CIB.

Strategic objectives and targets should be set at the national level to ensure that, as a whole, efforts move in a common direction. However, on-the-ground market development and project activity are best led locally, where regional knowledge and expertise are concentrated.

We encourage the federal government to look to the green bank model employed in other jurisdictions as a potential precedent for the scope and scale of the Low Carbon Cities Canada (LC3) network announced in Budget 2019. Addressing local market barriers will require a proactive and robust local approach, which extends beyond the provision of financing. Under this model, LC3 entities would provide end-to-end retrofit project facilitation and market development, to boost project activity and crowd in private investment.

Specifically, these entities should:

- Build regional retrofit business plans and investable project pipelines aligning with national emissions reduction and climate resiliency targets.

- Oversee deal structuring, due diligence, contract negotiations, project funding and execution, as well as project monitoring and performance measurement. Each of these aspects should maintain a focus on standardized, replicable processes for broader market adoption.
- Establish commercially-oriented partnerships with large private financiers to design innovative blended financing vehicles (such as loan guarantees, credit enhancements, and non-recourse mezzanine financing) to attract and de-risk large scale private investment.
- Serve as centres of expertise for local developers and regional authorities by raising awareness of opportunities, sharing best practices and advising on how to source, structure, and deliver private investment-oriented projects.
- Serve as, or appoint, accreditation bodies for contractors and local energy service companies. Training and accreditation helps offset risk and encourages competition and uptake.
- Provide financing structures for lending through energy service companies.
- Aggregate and commercialize small- and medium-sized projects into themed portfolios to increase the universe of investable opportunities for institutional investors.

Canada's Regional Development Agencies could provide support to these banks in the form of grants or other types of credit enhancements, while the CIB could participate in program design and scoping to ensure that its features will effectively attract major investors. The CIB can also provide guidance on structuring projects for private investment, and facilitate aggregation and securitization. This insight from the CIB is important, as green banks can also be used to bring private investment to local infrastructure development.

The ultimate goal over time would be to phase out government support and privatize these entities.

¹⁰³ In this demonstration, efforts should be made to pursue performance-based contracts with external providers (such as energy service companies, whose remuneration is tied to project success) to mitigate performance risk borne by project facilitators and investors. International guidance

(e.g. Eurostat) has made it easier to account for off-balance sheet energy efficiency investments, with costs spread over the duration of a contract. Modeling appropriate structures along these lines to limit balance sheet impact may help unlock decisions at other levels of government.

Recommendation 13.5. Develop financing structures to alleviate the up-front capital cost of home retrofits.

Lead: NRCan, in partnership with CMHC.

In the residential market, payback periods are typically longer, and uptake is slower than in the commercial, industrial or MUSH sectors. One impediment for residential owners is the difficulty in sourcing cash flow-based financing.

In *Budget 2019*, the federal government allocated \$300 million to helping municipalities establish and fund innovative programs to provide homeowners with up-front capital for retrofits, and allow for repayment over time through their property tax bills. One of the main challenges with such programs is the limited appetite of traditional mortgage providers to agree to new senior covenants for retrofit loans tied to property tax.

- a) **In the case of municipality-sponsored PACE¹⁰⁴ programs, CMHC could provide guarantees for Local Improvement Charge (LIC) financing programming.¹⁰⁵**
- b) **In the case of utilities acting as the service provider, CMHC could work with local utilities to create an underwriting framework for on-utility bill financing for targeted retrofit upgrades.** Structured facilities would be used to apportion energy savings, which would be paid back through utility payments over time.¹⁰⁶

These measures would alleviate the initial cost of capital for residential retrofits while also addressing the perceived risk to mortgage holders. In either case, a CMHC backstop would offer the necessary economic certainty and standardization to drive activity at scale.

The solution will require a blend of expertise and ingenuity, which the CMHC is well equipped to provide. Similar to the case with CIB, the added functionality may require revised underwriting provisions¹⁰⁷ and increased resourcing.

¹⁰⁴ Property Assessed Clean Energy (PACE) financing is a specialized lending program for energy efficiency and renewable energy improvements on private property, available in areas where the local government has allocated funds.

¹⁰⁵ Alternatives such as Halifax's Solar City or Toronto's residential pilot program both leverage Local Improvement Charges (LIC) loan programs, where loans are in effect tied to the property tax roll.

¹⁰⁶ Examples of on-utility bill financing exist in Manitoba (Pay-As-You-Save) and Nova Scotia, as well as internationally.

¹⁰⁷ This might include an extended insurance mandate for CMHC, amendment to the Insurable Housing Loan regulation to enable project activity at the municipal level,

If sufficiently standardized and scaled, the receivable streams from either of these programs could be aggregated and resold as securities.

Recommendation 14. Align Canada's infrastructure strategy with its long-term sustainable growth objectives and leverage private capital in its delivery.

Moving forward, our essential built and natural infrastructure must be able to both withstand the unpredictable and extreme nature of climate change and contribute to national GHG reduction priorities.

The need for governments to act on this with urgency is highlighted by recent indications from leading rating agencies that climate risk exposure is top of mind, and that mitigation planning will be analyzed in determining their credit ratings. This will have important implications for future cost of funds.

A thoughtful national strategy for 'sustainable infrastructure'¹⁰⁸ is becoming a critical lever in countries' efforts to adapt to climate change, reduce emissions, and deploy clean innovation. In addition to measures to enhance the resiliency of existing infrastructure, the scope of sustainable infrastructure opportunity is massive and wide-ranging - from electric vehicle charging infrastructure to telecommunications structures for smart technology.

As we have said, the scale of necessary investment to meet Canada's transition and climate objectives is unprecedented and well beyond the limits of the public balance sheet. This is particularly relevant to infrastructure development, due to its capital intensity. It is, therefore, critical that Canada have the conditions in place to facilitate large-scale private capital flows to this area.

or - as an alternative - a federal or provincial loss reserve (i.e. a back-stop) to help overcome the lender consent hurdle.

¹⁰⁸ Per the Panel's Interim Report, sustainable infrastructure can be understood as "projects that are planned, designed, constructed, operated, and decommissioned in a manner to ensure economic and financial, social, environmental (including climate resilient and climate-smart), and institutional sustainability over the entire life cycle of the project". (Inter-American Investment Bank, "What Is Sustainable Infrastructure? A Framework to Guide Sustainability Across the Project Cycle," Technical Note No. IDB-TN-1388, 2018)

As an operating asset, infrastructure offers stable, attractive returns for long-term investors. Canada's major public pension funds are among the top infrastructure investors in the world, and express a clear interest in investing at home under the right conditions. Enabling investment by long-term and institutional investors (domestic and foreign) alleviates the historical public funding and risk burden while adding key knowledge and expertise. It also creates well-paying jobs and sets the stage for long-term economic growth. However, as discussed in the Interim Report, a host of barriers has impeded private sector infrastructure investment in Canada. These barriers include:

- A limited existing pipeline of investment-ready and bankable projects that suit the needs of private sector investors¹⁰⁹ or project developers;
- Restrictive investment regulations that create an insufficient risk-return balance or impede private infrastructure;
- A general lack of visibility to project priorities in the context of national policy; and
- Inconsistent or non-existent templates and guidelines for promoting private sector investment.

The Investing in Canada plan is the federal government's roadmap for building the cities of the 21st century and providing communities across the country the tools they need to prosper and innovate. Under this plan, the federal government committed \$186 billion (over 12 years) to building and upgrading infrastructure in communities across the country at an average spend of over \$15 billion per year. As part of this plan, the Government also established the Canada Infrastructure Bank (CIB) to mobilize private sector financing. This plan is expected to create or maintain approximately 42,000 jobs by 2020–21.

CIB's mission is to work with provincial, territorial, municipal, federal, Indigenous and private sector investor partners to transform the way infrastructure is planned, funded and delivered in Canada by:

- Engaging private sector partners early in the planning and design process;
- Advancing revenue-based business models, where appropriate; and
- Exploring new and innovative approaches to project finance and delivery.

Its mandate is to invest, and seek to attract investment from private sector investors and institutional investors, in infrastructure projects in Canada or partly in Canada that will generate revenue and that will be in the public interest by, for example, supporting conditions that foster economic growth or by contributing to the sustainability of infrastructure in Canada.

While the Investing in Canada plan is necessary and robust, not all of it is oriented toward national transition or climate objectives. Meeting Canada's Paris commitments and proposed Mid-Century Transition Path will require that all infrastructure development from this point forward aligns with our transition to a low-emission, climate-resilient future, and that adaptation to climate change remains front of mind.¹¹⁰

Against this backdrop, we see significant opportunity - and urgency - for the CIB and the Government to lead a paradigm shift in how Canada plans, finances, delivers and manages its infrastructure. Aside from enhancing the climate change resilience and resource efficiency of our infrastructure stock, this ambition provides the opportunity to showcase specialized expertise, materials and techniques that could have growing export value. It also strengthens our infrastructure research and innovation capacity, with a chance to become a world reference and attract global market attention and talent.

¹⁰⁹ Institutional investors, such as Canada's large public pension plans, are typically equity investors who pay particular attention to the governance (e.g., board

structure, composition and mandate) and regulatory framework surrounding an asset.

¹¹⁰ Including the materials, technologies and techniques used in the construction process.

As context for the ensuing recommendations, the Panel agrees with following principles set forth by the Expert Panel on Climate Change Adaptation and Resilience Results:

- Integrating climate resilience into policies, bylaws, plans and other planning mechanisms that direct development, affect safety, determine placement of infrastructure and consider interdependencies;
- Integrating climate resilience into infrastructure investments;
- Protecting and enhancing natural and cultural assets and better integrating them into design, planning and investment decisions to enhance community and ecosystem resilience; and
- Maintaining or improving levels of infrastructure services considering a changing climate.

Recommendation 14.1. Develop and articulate Canada's long-term sustainable infrastructure strategy and capital plan.

Lead: Infrastructure Canada, with Environment and Climate Change Canada (ECCC), NRCan, Indigenous Services Canada, and the CIB.

The identified federal leads should partner with industry and the financial sector to develop a national Sustainable Infrastructure Plan, underpinned by time-based, priority sequenced project pipelines and capital plans for public-private co-investment. Plan development should begin with a re-examination of the Investing In Canada plan and CIB's current mandate and capital allocations, with an enhanced sustainability lens.

This plan will serve as a key input to the proposed PCF 2.0 (Recommendation 1). The clarity it would provide on what and where project investment is needed; how it should be built, financed and structured;¹¹¹ and how it aligns with long-term national objectives, will be necessary in attracting private capital at scale.

The Panel sees several key imperatives for Canada's Sustainable Infrastructure Plan:

- a) A long-term, investment-grade pipeline of low-emissions, energy efficient and climate resilient infrastructure projects for public-private co-investment.** The OECD's *Developing Robust Pipelines*

for Low-Carbon Infrastructure report provides relevant insights on emerging 'good' practice and pipeline characteristics.

Similar to the approach for deep retrofit activity (Recommendation 13), large national-scale projects should be facilitated by the CIB, while regional green banks facilitate local infrastructure markets and mobilize private investment. Use of blended finance to stimulate private co-investment should come with the condition that projects: link relevant local authority improvement plans to Canada's Sustainable Infrastructure Plan; bring private investment of a threshold scale; and follow federal sustainability criteria (per Item b below).

- b) Risk-based sustainability criteria to guide all new federal infrastructure planning, project selection and financing, as well as infrastructure-based funding transfers to provinces, territories and municipalities.** Criteria should align with existing standards and peer benchmarking where possible, such as the Global Real Estate Sustainability Benchmark (GRESB).¹¹²

(i) Criteria should include protocols to assess insurability earlier in the development process, to ensure that infrastructure is sustainably designed and built and that the potential for risk transfer is analyzed. Risk transfer to insurers directly, or via pooled insurance vehicles or capital market parametric structures (such as those used in catastrophe bonds) helps manage government liability as Canada's insurer of last resort.

(ii) Given the critical role of municipalities and local governments in deploying infrastructure investment in Canada,¹¹³ centralized efforts must be made to assist, enable and ensure consistent application of sustainability criteria across the country.

- (iii) If functioning well, the criteria can be used by provincial and municipal procurement agencies to develop ratings-based certifications that provide transparency on climate impacts and long-term resilience characteristics of infrastructure assets. This program could complement (or be integrated into) existing certification systems in

¹¹¹ See Global Infrastructure Investor Association, "Closing the Gap, How Private Capital Can Help Deliver our Future infrastructure needs" for additional perspectives from private investors.

¹¹² GRESB develops ESG benchmarks for real assets. Its board and advisory committees have broad investor and industry representation.

¹¹³ Provinces and municipalities collectively own nearly 98% of public infrastructure assets in Canada, and carry out nearly 91% of public investment and 70% of public procurement in Canada. *Unleashing Productivity through Infrastructure*, Advisory Council on Economic Growth, 2016.

other sectors, such as LEED in the buildings sector.

- c) **An infrastructure data strategy.** The identified government leads should partner with the C3IA to develop a centrally accessible digital mapping and data portal of vulnerable sites and sensitive ecosystems, such as flood maps; best practice resilience standards for different types of infrastructure; and information regarding available materials for sustainable design and construction that would aid in decarbonization.

Data collection will rely on a standard reporting framework to track the project performance and outcomes, which should be considered in designing sustainability criteria.

Recommendation 14.2. Create regulatory conditions for clean innovation in public infrastructure.

Lead: Infrastructure Canada, with NRCan, ISED, and ECCC.

The capacity to innovate in infrastructure planning and investment should be a key focus in the planned regulatory agility measures discussed in Recommendation 11 on cleantech. Specifically, the Panel suggests the following considerations:

- a) **Assess appropriate means to 'fast track' federal permitting and funding for infrastructure projects of high value or priority in the proposed Mid-Century Path.** Work with provinces and municipalities to do the same.
- b) **Work with Canada's financial services community and G20 countries to establish sustainable infrastructure as a formal asset class, distinguishing between operating and development characteristics.** As discussed in Recommendation 8, a review of the risk treatment for certain categories of long-term, stable operating assets may help stimulate institutional investment in projects of high value to Canada's transition agenda.
- c) **Ensure that procurement standards for infrastructure development promote innovative and low carbon footprint techniques, materials and technology.**

The development and implementation of large infrastructure projects often requires global collaboration, and Canada's major public pension funds are among the top infrastructure investors in the world. Canada has a lot to offer - and a lot at stake - in the international arena. The Government should continue its support for Canadian leadership in collaborative international platforms working to build knowledge, competency, funding and best practices in sustainable infrastructure. Examples include the G20 plan to establish infrastructure as an asset class, the forthcoming GI Hub in Toronto, and the Investor Leadership Network.

Recommendation 15. Engage institutional investors in the financing of Canada's electricity grid of the future.

To make significant headway on decarbonization and clean growth, we need to power more of our activities and industries with clean electricity. Today, electricity accounts for only 20% of Canada's overall energy use. If this share grows as projected by the PCF and mid-century strategy scenarios, domestic electricity demand will more than double by 2050.¹¹⁴ Most, if not all, of this demand will need to be met through clean, low-emission sources. Financing the necessary growth and innovation in our grids will require considerable amounts of private capital.

Canada is already one of the largest and cleanest electricity generators in the world, and is due to phase out conventional coal generation completely by 2030. Our electricity sector is well positioned to help meet the various emission reduction targets in place across Canadian jurisdictions, and to supply global markets with novel solutions and expertise.

There are, however, important challenges to address. For one, the energy mix varies considerably from province to province, and interprovincial electricity trade is limited.¹¹⁵ Secondly, at a time of rapidly growing demand and technological innovation, Canada faces aging electricity infrastructure, budget limitations and regulatory constraints.

The PCF outlines two key work streams for Canada's clean electricity strategy:

¹¹⁴ Projections also consider population growth.

¹¹⁵ Canada has 34 active major international transmission lines connecting to the US and exports 10% of its generated

electricity south of the border. While some provinces trade electricity, little power is consumed in a province where it was not generated.

- (i) *Connecting clean power across Canada through stronger transmission-line interconnections, to help reduce emissions and support the move away from coal. Many provinces already trade electricity across their borders, and there is potential to increase these flows, consistent with market rules and fair competition among electricity producers.*
- (ii) *Modernizing electricity systems by expanding energy storage, updating infrastructure, and deploying smart-grid technologies to improve the reliability and stability of electric grids and to allow more renewable power. As a leader in the development and deployment of innovative energy-storage solutions and smart-grid technology, Canadian clean technology producers stand to benefit from increased investments in our electricity systems.*

In line with these streams, First Ministers have agreed to develop a framework for a reliable and affordable clean electric future in Canada, including stronger interprovincial operability. This framework will be capital intensive, with an estimated investment requirement of close to \$1.7 trillion on electricity generation alone between now and 2050.¹¹⁶

In a well-functioning electricity market with sufficient certainty around future pricing and policy, the necessary investment in infrastructure and cleantech innovation presents significant, scaled investment opportunities for private markets. These large projects also bring employment opportunities and the potential for exportable expertise in service, software, technology and infrastructure. What is missing today is a compelling incentive for Canada's incumbent electric utilities to invest in measures that disrupt traditional operating models, and a sufficient view of the long-term vision and opportunity to pique private investor interest.

Recommendation 15.1. Support the First Ministers in developing Canada's clean electric future, with an associated capital plan.

Lead: Natural Resources Canada (NRCan), Infrastructure Canada, and the CIB.

Budget 2019 acknowledged the opportunity for the federal government and CIB to work with jurisdictions¹¹⁷ to plan and finance clean electricity infrastructure, including interties. In the Panel's view, Canada would benefit from a holistic, integrated national electricity

strategy covering production, transmission and distribution through to end use application.

Policy formulation, strategy development and capital planning should involve federal, provincial and Indigenous leaders, electric utilities and private sector stakeholders – with coordinated focus on:

- Alignment to both the proposed Mid-Century Transition Path/PCF 2.0 and the First Ministers' preliminary framework;
- Commercial and export opportunities, including the potential to spur demand for domestic cleantech innovation;
- Resiliency scenario analysis, to assess physical risk and potential supply or demand patterns that might emerge as a result of extreme weather events or chronic climate change conditions;¹¹⁸ and
- Financeability and the opportunity for risk transfer in private markets.

The shift to a low-emitting economy offers new opportunities to build stronger partnerships with Indigenous and rural communities, by investing directly in their energy future. Given the complex logistics often associated with projects in these regions, solutions may be difficult to finance privately, without intervention. Blended finance techniques, distributed energy solutions and appropriate ownership dynamics should be key areas of focus in the clean electricity plan for Indigenous regions.

Consistent with the work streams set out in the current PCF, the Panel sees two areas of strategic priority:

a) Developing a national transmission infrastructure strategy, to efficiently move higher volumes of clean energy across Canada.

The federal government should bolster efforts to negotiate greater interprovincial electricity trade and operability in priority areas.

A credit system for interprovincial clean electricity trade, such as carbon offsets, may help build an incentive for utilities to put more focus on exporting to other provinces, which would help increase Canada's clean electricity capacity and displace higher carbon sources.

¹¹⁶ 2018 Sustainable Electricity Annual Report, The Canadian Electricity Association, 2018.

¹¹⁷ Electricity generation, transmission, distribution and sale fall under the jurisdiction of provinces and territories.

¹¹⁸ Such as the impact to water resources, given Canada's reliance on hydroelectricity.

Various environmental regulations, including the federal carbon pricing system's Output-Based Pricing System, have credits that can be purchased or traded between stakeholders. Generally speaking, one stakeholder/facility can over-comply and sell their over-compliance to other stakeholders in the form of credits. Often, facilities under the same owner trade compliance credits between each other to minimize compliance costs for the company.

b) Piloting grid expansion and optimization strategies and new electrification applications in priority industries and regions.

In addition to grid interties, meeting Canada's long-term clean energy targets will require substantially more net electricity generation, including a better mix of supply and optimization sources.

NRCan should partner with provincial utilities, industry leaders and long-term capital providers to prioritize and finance pilot projects to further transform our grid structure into a smart, integrated and reciprocal system that will reliably accommodate diverse inputs such as renewables, behind-the-meter generation, and energy storage. Meanwhile, we need to figure out ways to broaden the proportion of our total energy needs that can be met with electricity, particularly in fossil fuel-dependent industries or regions.

Potential areas of exploration include:

- Smart grid technology and distributed generation, including from locally and regionally controlled micro-grids;
- Batteries, storage solutions and other behind-the-meter management technology;
- Cybersecurity for key electrical systems in deploying large-scale intelligent technologies and control system architectures;
- Replicable models for R&D, project planning, regulatory approvals and blended financing;
- The possible use of distributed ledger technology (such as blockchain) to enhance data transparency, control and interoperability;
- Charging infrastructure for electric vehicles;
- Strategies to increase electrification in industrial processes driven by fossil fuels; and
- Strategies to support remote off-grid communities or operations in transitioning toward cleaner energy sources and renewables.

These projects could be ideal candidates for refinancing in the green and transition debt market, if structured appropriately.

Recommendation 15.2. Consult Canada’s major asset managers on the necessary regulatory, legal and governance conditions to draw in institutional investment.

Lead: The CIB.

Under the right terms, assets such as transmission lines can offer stable returns and duration for long-term institutional investors. These institutions already invest in similar assets abroad and bring a clear market test and considerable experience in structuring private infrastructure deals. Bringing in large scale private financing frees up public funds to be used in areas that are less market viable. Consultations suggest, however, that institutional investors will not participate without certainty around long-term interprovincial operability and cash flows, and sufficient governance oversight.

A regional green bank network, as introduced in Recommendation 13, can serve an axis for public/private co-investment in smaller, geographically targeted projects and pilots either directly, or by aggregating projects into themed financing vehicles.

Canada’s electricity sector has built a strong foundation for competitive advantage in clean power. Putting these recommendations together in an effective manner could yield significant benefit domestically, as well as new opportunity abroad.



NEXT STEPS

With its financial expertise, resource wealth and technological capacity, Canada has the ingredients to emerge as a global leader in climate-smart economic growth. With our country's industry makeup and accelerated warming, this pursuit is more than an opportunity; it is an imperative.

Companies around the world are in a race to develop the technologies and skills to supply the world with lower-cost, cleaner energy and natural resources. Staking Canada's claim in these markets will require a commitment by our high-emitting sectors to reduce their ecological footprints and accelerate innovative growth strategies that will secure their competitive standing in rapidly evolving markets. At the same time, we need to embrace our technical strengths to advance clean innovation across all sectors of the economy, and find innovative ways to solve the world's environmental challenges while creating well-paying jobs and export opportunities along the way.

While the Government has put forward a plan and key policies to underpin Canada's transition to a low-carbon economy, the role of financial markets in driving this change has yet to be fully leveraged. Our financial sector houses essential expertise, ingenuity and influence that can be brought to bear in meeting the challenges posed by climate change. From this point forward, sustainable finance and investment must become business as usual. For that to happen, markets need a clear long-term view of the opportunity; the ability to earn competitive risk adjusted returns; and aligned structures, such as a regulatory and policy environment that supports innovation, decision-useful disclosures and a knowledgeable professional services ecosystem.

This Final Report attempts to connect the dots between the abundant opportunity that exists and the essential financial activities, behaviours and structures needed to effect meaningful change and put Canada and its key industries at the forefront of the transition to a climate-smart economy.

In the Panel's view, planning and preparation for every recommendation in this report can begin immediately. All but a few can be implemented, or moved forward substantially, within the next year. Coordinated leadership between governments, finance and industry will be key to progress. Convening the proposed Sustainable Finance Action Council (SFAC) to advise and assist in technical implementation and oversight will be an important early step.

The recommendations across all three pillars of this report are highly interconnected and the success of each will, to varying extents, rely on the implementation of others. A few key recommendations will have broader influence or significant economic implications for Canada. These are of immediate priority, and must be approached thoughtfully and with due stakeholder consultation. The SFAC will serve as a critical resource in navigating these consequential recommendations, which are:

- Developing of the Mid-Century Pathway and PCF 2.0, including underlying competitiveness strategies and capital plans for key industries such as cleantech, oil and natural gas, buildings, infrastructure and clean electricity;
- Providing Canadians the opportunity and incentive to invest their savings in accredited sustainable finance products;
- Establishing the C3IA hub-and-spoke data platform;
- Integrating climate risk into financial disclosures, financial stability monitoring and supervisory guidance;
- Developing Canadian green and transition-oriented taxonomies and building market activity through benchmark transactions; and
- Adapting to climate-smart investment benchmarks and index strategies.

The principles set out in this report's introduction were instrumental in guiding the Panel through its deliberations. These principles, which reflect the cross-cutting imperatives that came forward in consultations, can be equally useful in guiding the many decisions to come; ensuring the right things are done and that those things are done right.

In its extensive consultations over the last year, the Panel saw remarkable examples of innovative leadership and commitment to change in Canada, and marked improvement in awareness and action on sustainable finance issues from businesses, regulators, investors and others. But there is much to be done, and several of our international peers have a head start on us. It is time to collectively reset our growth trajectory and finance the actions needed to accelerate the transition that is already underway, securing a thriving and resilient economy as we go.

Glossary of Terms and Abbreviations

APLMA	Asia Pacific Loan Market Association The APLMA is a professional (not-for-profit) trade association which represents the interests of institutions active in the syndicated loan markets around the Asia-Pacific region.
AUM	Assets Under Management AUM is the total market value of the investments that a person (portfolio manager) or entity (investment company, financial institution) handles on behalf of investors.
BDC	Business Development Bank of Canada BDC is a Crown corporation that helps create and develop Canadian businesses through financing, venture capital, and advisory services. It focuses on small and medium-sized enterprises.
BoC	Bank of Canada The BoC is the central bank of Canada. Its principal role is to promote the economic and financial welfare of Canada, as defined in the <i>Bank of Canada Act</i> .
CaGBC	Canada Green Building Council The CaGBC is a not-for-profit national organization that works to advance green building and sustainable community development practices in Canada.
CAPP	Canadian Association of Petroleum Producers CAPP is an advocacy group that represents the upstream Canadian oil and natural gas industry and advocates for economic competitiveness and safe, environmentally and socially responsible performance.
CAPSA	Canadian Association of Pension Supervisory Authorities A national association of pension regulators that facilitates an efficient and effective pension regulatory system in Canada. It develops practical solutions to further the coordination and harmonization of pension regulators.
CBCA	Canadian Business Corporations Act The CBCA is an act of Parliament regulating Canadian business corporations. It provides the basic corporate governance framework for corporations and enterprises operating in Canada.
CCCS	Canadian Centre for Climate Services The CCCS delivers climate services driven by user needs and provides access to climate data and information. It also offers training and support to help Canadians understand climate information and how to adapt to climate change.
CCGG	Canadian Coalition for Good Governance The CCGG promotes good governance practices in the companies owned by its members. Membership includes a wide range of institutional investors.
CCIR	Canadian Council of Insurance Regulators An association of insurance regulators that facilitates and promotes an efficient and effective insurance regulatory system in Canada.
CDP	Carbon Disclosure Project (formerly known as) A not-for-profit charity founded in 2000 that runs a global disclosure system that enables companies, cities, states and regions to measure and manage their environmental impacts.

CDSB	Carbon Disclosure Standards Board The CDSB is an international consortium of business and environmental NGOs, committed to advancing and aligning the global mainstream corporate reporting model to equate natural capital with financial capital.
CIB	Canada Infrastructure Bank The CIB is a Crown corporation that invests in revenue-generating infrastructure projects alongside investors and provides advisory services to potential project sponsors.
CMHC	Canada Mortgage and Housing Corporation The CMHC is a Crown corporation that helps address Canadian housing needs and provides research and advice to the Government and housing industry.
COSIA	Canadian Oil Sands Innovation Alliance COSIA is an alliance of Canada's oil sands producers focused on improving the environmental performance in the sector through collaboration and innovation.
CPA Canada	Chartered Professional Accountants Canada The national organization representing the Canadian accounting profession. CPA Canada conducts research and develops guidance and educational programs.
CREBs	Clean Renewable Energy Bonds CREBs are a type of tax credit bond that may be used by investors and entities to finance renewable energy projects in the United States.
CRIN	Clean Resource Innovation Network CRIN is a group of oil and gas industry professionals, innovators, financiers, policy makers, and academics committed to the success of the hydrocarbon energy sector.
CSA	Canadian Securities Administrators The CSA is an umbrella organization of the 13 provincial and territorial securities regulators. The group aims to improve, coordinate and harmonize regulation of the Canadian capital markets.
CSA Group	Canadian Standards Association The CSA Group provides product certification and product testing services to Canada, the U.S., Europe, and worldwide. It is comprised of representatives from industry, government, and consumer groups.
CTEST	Clean Technology Economic Strategy Tables Six Economic Strategy Tables were released in 2018 by Innovation, Science and Economic Development Canada, including the CTEST. The tables are a model for industry-government collaboration. They set ambitious growth targets, identify sector-specific challenges, and lay out an actionable roadmap to achieve their goals.
DC	Defined Contribution A defined contribution is a type of pension plan in which the employer, employee or both make contributions on a regular basis.
ECCC	Environment and Climate Change Canada ECCC is the lead federal department for a wide range of environmental issues. The department's programs focus on minimizing threats to Canadians and their environment from pollution; equipping Canadians to make informed decisions on weather, water and climate conditions; and conserving and restoring Canada's natural environment.

EDC	Export Development Canada EDC is Canada's export credit agency owned by the Government of Canada. It supports and develops trade between Canada and other countries and maintains Canada's competitiveness in international markets.
ENERGY STAR	ENERGY STAR A certification for products that meet strict technical specifications for energy performance. The label can be found on more than 75 different product categories, new homes, commercial buildings and industrial plants.
ESG	Environment, Social and Governance ESG criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. Environmental criteria consider how a company performs as a steward of nature. Social criteria examine how a company manages relationships with employees, suppliers, customers, and the communities where it operates. Governance deals with a company's leadership, executive pay, audits, internal controls, and shareholder rights.
ETF	Exchange-Traded Fund An exchange-traded fund is a basket of securities that tracks an underlying index. ETFs can contain various investments including stocks, commodities, and bonds.
Evok Innovations	Evok Innovations A partnership with Cenovus, Suncor and the BC Cleantech CEO Alliance that funds innovations to address the economic and environmental challenges of the oil and gas industry.
EWRB	Energy and Water Reporting and Benchmarking Ontario's EWRB regulation is designed to help building owners and managers improve their building's energy and water efficiency. It requires some privately owned buildings to report annual energy and water consumption and performance data.
Finance Canada	Finance Canada The Department of Finance Canada helps the Government of Canada develop and implement strong and sustainable economic, fiscal, tax, social, security, international and financial sector policies and programs. It plays an important central agency role, working with other departments to ensure that the Government's agenda is carried out and that ministers are supported with high-quality analysis and advice.
FPT Working Group	Federal-Provincial-Territorial Working Group on Clean Technology, Innovation and Jobs This working group was one of four groups that were established to support the development of the Pan-Canadian Framework. The Group considered policy tools to stimulate economic growth, bring new and emerging technologies to market, reduce greenhouse gas emissions, and increase exports of clean technologies.
FSB	Financial Stability Board An international body that monitors and makes recommendations about the global financial system.
FSDS	Federal Sustainable Development Strategy The FSDS is a primary vehicle for sustainable development planning and reporting for the Government of Canada. It sets out the government's sustainable development priorities, establishes goals and targets, and identifies actions to achieve them.
G7	The Group of Seven The group consists of: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

G20	The Group of Twenty The G20 is an international forum for economic cooperation among its members. It includes 19 countries and the European Union, representing 85% of global economic output and two-thirds of the world's population.
GAC	Global Affairs Canada GAC manages Canada's diplomatic relations with foreign governments and international organizations to engage and influence international players to advance Canada's international objectives. The department also delivers consular services and provides travel information to Canadians.
GBP	Green Bond Principles The Green Bond Principles are voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the green bond market.
GHG	Greenhouse Gas A gas whose absorption of solar radiation is responsible for the greenhouse effect (e.g. carbon dioxide, methane, ozone, and the fluorocarbons).
GI Hub	Global Infrastructure Hub The GI Hub is a G20 initiative dedicated to infrastructure in both developed and emerging markets. The organization works with public and private sectors globally to increase the flow and quality of infrastructure projects around the world.
GRESB	GRESB GRESB assesses and benchmarks the ESG performance of real estate and infrastructure portfolios globally. They offer ESG data, scorecards, benchmark reports, and portfolio analysis tools.
GRI	Global Reporting Initiative An independent international standards organization that helps businesses and governments understand and disclose their impact on sustainability issues. The GRI was founded in 1997.
GRI	Global Risk Institute An organization that defines thought leadership in risk management for the financial industry. The GRI was founded in 2011 and brings together leaders from industry, academia, and government to draw actionable insights on emerging risks.
ICCA	Intact Centre on Climate Adaptation The ICCA is a research institute based out of the University of Waterloo. It helps homeowners, communities, governments and businesses identify and reduce risks associated with climate change.
ICGN	The International Corporate Governance Network The ICGN is an investor-led organisation that promotes effective standards of corporate governance and investor stewardship, in order to advance efficient markets and sustainable economies world-wide.
IEA	International Energy Agency The IEA is an autonomous organisation that works to ensure reliable, affordable and clean energy for its 30 member countries and beyond.
IIROC	Investment Industry Regulatory Organization of Canada IIROC is a national self-regulatory organization that oversees all investment dealers and trading activity on debt and equity marketplaces in Canada. It sets high-quality regulatory and investment industry standards, protects investors, and strengthens market integrity.

Investor Leadership Network	<p>Investor Leadership Network</p> <p>The Investor Leadership Network is an open and collaborative platform for leading investors interested in addressing sustainability and long-term growth. A direct outcome of Canada's 2018 presidency of the G7, the ILN focuses on concrete actions and global partnerships.</p>
IOSCO	<p>International Organization of Securities Commissions</p> <p>IOSCO is an international body that brings together the world's securities regulators to develop, implement and promote adherence to internationally recognized standards for securities regulation.</p>
IPCC	<p>The Intergovernmental Panel on Climate Change</p> <p>The IPCC is the United Nations body for assessing the science related to climate change, its impacts and potential future risks, and possible response options.</p>
ISC	<p>Indigenous Services Canada</p> <p>ISC works collaboratively with partners to improve access to high quality services for First Nations, Inuit and Métis. Their vision is to support and empower Indigenous peoples to independently deliver services and address the socio-economic conditions in their communities.</p>
ISED	<p>Industry Science and Economic Development Canada</p> <p>ISED helps Canadian businesses grow, innovate and expand so they can create good-quality jobs and wealth for Canadians. It also supports science research and the integration of scientific considerations into investment and policy choices.</p>
ISO	<p>International Organization for Standardization</p> <p>ISO is an independent, non-governmental international organization that develops voluntary, consensus-based, market relevant international standards to support innovation and provide solutions to global challenges.</p>
LC3	<p>Low Carbon Cities Canada network</p> <p>LC3 is a proposed Pan-Canadian network of major urban climate centres that will help seven city regions to reach their full emissions reduction potential while at the same time unlocking co-benefits for local communities.</p>
LEED	<p>Leadership in Energy and Environmental Design</p> <p>The LEED certification provides verification that a building, home or community was designed and built to be healthy and environmentally responsible.</p>
LIC	<p>Local Improvement Charge</p> <p>LIC financing is enabled by the Ontario Ministry of Municipal Affairs and Housing, and allows municipalities to recover the costs of capital improvements made on public or privately owned land.</p>
LMA	<p>Loan Market Association</p> <p>The LMA is a market-led body which acts as the voice of the syndicated loan markets in Europe, the Middle East and Africa (EMEA). Their key objective is improving liquidity, efficiency and transparency in the primary and secondary syndicated loan markets.</p>
LNG Canada	<p>LNG Canada</p> <p>A joint venture comprised of five global energy companies with experience in liquefied natural gas (LNG) projects.</p>
LP	<p>Limited Partner</p> <p>A partner in a venture who has no management authority and whose liability is restricted to the amount of his or her investment.</p>

LSTA	Loan Syndications and Trading Association The LSTA is not-for-profit organization formed to develop standard settlement and operational procedures, market practices, and other mechanisms to improve the liquidity of the secondary trading market for corporate loans originated by commercial banks and other similar private debt.
MCS	Mid-Century Strategy Canada's MCS describes various pathways consistent with the goal of holding the global average temperature rise to below 2°C. The strategy focuses on meeting climate-change objectives and enabling growth.
NGFS	Network of Central Banks and Supervisors for Greening the Financial System An international forum that brings together central banks and supervisors to contribute to the development of environment and climate risk management in the financial sector and to support the transition toward a sustainable economy.
NGO	Non-Governmental Organization Organizations independent of governments and international government organizations.
NRCan	Natural Resources Canada NRCan seeks to enhance the responsible development and use of Canada's natural resources and the competitiveness of Canada's natural resources products. The Department also works in areas of shared responsibilities with provinces, which includes the environment, public safety, economic development, science and technology, and consultations with Indigenous peoples.
OECD	Organization for Economic Cooperation and Development The OECD is an international forum in which governments can work together to share experiences and seek solutions to common problems.
OGCI	Oil and Gas Climate Initiative An international CEO-led initiative aimed at taking collaborative action on climate change.
OSFI	Office of the Superintendent of Financial Institutions OSFI is an independent federal government agency that regulates and supervises federally regulated financial institutions and pension plans.
PACE	Property Assessed Clean Energy PACE is a means of financing energy efficiency upgrades or renewable energy installations for residential, commercial and industrial property owners.
PCF	Pan-Canadian Framework on Clean Growth and Climate Change The PCF is a joint federal, provincial, and territorial plan for achieving Canada's 2030 targets. It aims to meet emissions reduction targets, grow the economy, and build resilience to a changing climate. The PCF was published in 2017.
PRI	Principles for Responsible Investment The United Nations-supported Principles for Responsible Investment (PRI) is an international network of investors working together to put the six principles into practice. The principles offer a menu of possible actions for incorporating ESG issues into investment practice.
PTAC	Petroleum Technology Alliance Canada PTAC is a non-profit hydrocarbon industry association that facilitates R&D and technology development.

QECBs	Qualified Energy Conservation Bonds QECBs are a type of tax credit bond that may be issued by state, local and tribal governments in the United States to finance qualified energy conservation projects.
REALPAC	REALPAC REALPAC is a national industry association dedicated to advancing the long-term vitality of Canada's real property sector.
RISE	Regulatory Indicators for Sustainable Energy RISE is a comprehensive policy scorecard assessing the investment climate for sustainable energy and focusing on three key areas: energy access, energy efficiency and renewable energy. RISE covers 111 countries, which together represent over 90% of global population.
RRSP	Registered Retirement Savings Plan An RRSP is a retirement savings and investing vehicle for employees and the self-employed in Canada.
SASB	Sustainability Accounting Standards Board The SASB was founded in 2011 and is the independent standards-setting organization for sustainability accounting standards. It develops standards for 79 industries in 11 sectors to help corporations disclose financially material information.
SDGs	Sustainable Development Goals A set of 17 global goals set by the United Nations General Assembly in 2015 for the year 2030. The goals include actions to address social, economic, and environmental development issues.
SDTC	Sustainable Development Technology Canada SDTC is a foundation created by the Government of Canada to support Canadian companies to develop and demonstrate new environmental technologies that address climate change, clear air, clean water, and clean soil.
SIPP	Statement of Investment Policies and Procedures A SIPP describes a pension plan's operating procedures, objectives and policies for the management and investment of plan assets.
Smart Cities Challenge	Smart Cities Challenge A national competition hosted by Infrastructure Canada that encourages communities to adopt a smart cities approach through innovation, data and connected technology.
Smart Prosperity Leaders' Initiative	Smart Prosperity Leaders' Initiative The Initiative includes leaders from business, think tanks, labour, Indigenous Peoples, youth, and NGOs. It was launched to accelerate Canada's transition to a cleaner economy by establishing a 10-year roadmap supported by specific goals, metrics, and policies.
SR&ED	Scientific Research and Experimental Development program The SR&ED program is a federal tax incentive program to encourage Canadian businesses to conduct research and development (R&D) in Canada that will lead to new, improved, or technologically advanced products or processes.
SSE	Sustainable Stock Exchanges The SSE initiative is a voluntary platform for collaboration between exchanges, investors, regulators, and companies to enhance transparency and performance on ESG issues. The initiative was launched in 2009 by the United Nations Secretary-General Ban Ki-Moon.

TBS	Treasury Board of Canada Secretariat As the administrative arm of the Treasury Board, the Secretariat has a dual mandate: to support the Treasury Board as a committee of ministers and to fulfil the statutory responsibilities of a central government agency.
TCFD	Task Force on Climate-related Financial Disclosures The TCFD was created by the FSB to develop voluntary and consistent climate-related financial risk disclosures. The group released their recommendations in June 2017.
TSX/ TMX Group	Toronto Stock Exchange The TSX is a stock exchange in Toronto and includes conventional securities, exchange-traded funds, and investment funds.
VC	Venture Capital Venture capital is financing that investors provide to start-up companies and small businesses that are believed to have long-term growth potential.
VCCI	Venture Capital Catalyst Initiative Funding offered to innovative companies by Innovation, Science, and Economic Development Canada.
The World Bank	The World Bank An international organization dedicated to providing financing, advice, and research to developing nations to aid their economic advancement.
WEF	The World Economic Forum A not-for-profit, independent, international organization for public-private cooperation. The Forum engages the foremost political, business and other leaders of society to shape global, regional and industry agendas.