



CHAPTER 8

Climate Disclosure, Litigation and Finance

NATIONAL ISSUES REPORT



Government of Canada

Gouvernement du Canada

Canada



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Recommended citation

Kovacs, K., Beal, G., Golnaraghi, M., Koval, P., McBean, G. and Li, B. (2021): Climate Disclosure, Litigation and Finance; Chapter 8 in Canada in a Changing Climate: National Issues Report, (ed.) F.J. Warren and N. Lulham; Government of Canada, Ottawa, Ontario.



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Key messages

Climate change risks and opportunities are business issues (see Section 8.2)

Most industries and sectors in Canada are exposed to climate-related risks and opportunities, which are projected to increase over time. These risks and opportunities are increasingly recognized as a business issue, which present incentives for businesses to contribute to the transition to a climate-resilient and low-carbon economy.

Climate-related disclosure drives climate action (see Section 8.3)

Increased financial disclosure of climate risks and opportunities will inform and enhance action to reduce climate change impacts. Guidance for climate-related disclosure is evolving and is increasingly being adopted.

Transitioning to a climate-resilient and low-carbon economy requires significant investments (see Section 8.4)

There is a large financing gap for transitioning to a climate-resilient and low-carbon economy in Canada. Significant public and private capital are required to address this gap, but obstacles limit the opportunities to attract the appropriate amount of capital.

Investments in climate risk reduction build resilience (see Section 8.5)

Investments in disaster resilience have demonstrated their effectiveness for reducing exposure to physical climate risks. Opportunities exist for governments, businesses and individuals to improve their resilience to physical climate risks to break the trend of increasing loss and damage from climate events.

Climate litigation is increasing against governments in Canada (see Section 8.6)

Climate change litigation is increasing against governments and their agencies in Canada. There is growing litigation seeking to compel or change governmental action, approvals or decisions, as well as lawsuits seeking financial compensation related to failure to adapt infrastructure.



Climate litigation against the private sector is a potential risk (see Section 8.7)

While there has been virtually no climate litigation in Canada against private sector companies, Canadian companies are increasingly assessing potential climate litigation risks.

8.1 Introduction

Climate change is now widely regarded as an environmental and economic issue. Most industries and governments are exposed to climate-related risks. This chapter examines the evolving issues of climate disclosure, litigation and finance for businesses and governments. Due to the nature of these topics, the volume of peer-reviewed literature is limited, particularly as it relates to Canada. Therefore, this chapter draws more upon primary information sources and less upon assessment of the academic literature than do other chapters in this report.

8.1.1 International initiatives

In 2015, the United Nations Member States adopted three international framework agreements related to climate change and climate risk: the Paris Agreement (United Nations Framework Convention on Climate Change, 2015), the Sendai Framework for Disaster Risk Reduction (United Nations, 2015) and the 2030 Agenda for Sustainable Development (Sustainable Development Goals, 2015). These agreements emphasize the importance of considering climate change and disaster risk reduction in shaping sustainable and resilient development pathways.

While the policy discussion about climate change emphasizes the need to reduce greenhouse gas (GHG) emissions and adapt to better cope with the impact of extreme events, the business community is increasingly focused on managing physical and transition risks, as set out by the Financial Stability Board's industry-led Task Force on Climate-related Financial Disclosures (TCFD, 2017). These are defined as follows:

- **Physical risks:** Extreme events or long-term shifts in climate patterns that may damage or otherwise impact property, infrastructure, supply chains, transport needs, trade and employee safety; and
- **Transition risks:** Financial and reputational risks that may result from policy, legal, technology and market changes to address GHG emissions reduction and adaptation needs related to climate change.

In addition to these risks, the TCFD identified opportunities for organizations that arise through their efforts to mitigate and adapt to climate change. Opportunities could result from resource efficiency and cost savings, the adoption of low-emission energy sources, the development of new products and services, access to new markets and building resilience along the supply chain. Risks and opportunities vary depending on the region, market and industry in which an organization operates (TCFD, 2017).

The TCFD's final recommendations released in June 2017 (TCFD, 2017) and its subsequent annual status reports confirm that climate change "affects nearly all economic sectors," although to different extents. The TCFD emphasizes the need to integrate climate risk and opportunity into organizational governance and disclosure of climate change-related information to investors. Managing the risks and opportunities associated with climate change could affect a company's ability to access capital, deliver products and services, hire and retain employees, and achieve positive financial performance. For investors, corporate disclosure provides data to facilitate informed investment decisions.

Several countries, including Canada, have begun to realign their financial sector and develop a “sustainable” financing framework that supports climate resilience and the transition to a low-carbon economy, including a “just transition.” Some examples include initiatives in the United Kingdom (Green Finance Taskforce, 2018) and Australia (Australian Sustainable Finance Initiative, 2019). These and other initiatives are complemented by global activities in financial and capital markets, the establishment of investor coalitions, changing shareholder sentiments and actions by rating agencies to incorporate climate risk in their sovereign, municipal and company credit ratings (Golnaraghi, 2019a, b; “The Geneva Association, 2018a).

8.1.2 Canadian initiatives

The Pan-Canadian Framework on Clean Growth and Climate Change, released in 2016, sets out a national climate change plan for Canada. The Framework provides a strategy to “grow our economy, while reducing emissions and building resilience to adapt to a changing climate” (Government of Canada, 2016, p. i). In 2019, the Expert Panel on Sustainable Finance issued its recommendations to spur market activities, behaviours and structures to support sustainable finance in Canada. These include, among others, recommendations to develop authoritative sources of climate information in Canada, encourage greater TCFD implementation and embed climate-related risk into the monitoring, regulation and supervision of Canada’s financial system (Expert Panel on Sustainable Finance, 2019).

8.2 Climate change risks and opportunities are business issues

Most industries and sectors in Canada are exposed to climate-related risks and opportunities, which are projected to increase over time. These risks and opportunities are increasingly recognized as a business issue, which present incentives for businesses to contribute to the transition to a climate-resilient and low-carbon economy.

More frequent and severe extreme weather events, as well as gradual changes in variables such as sea level and permafrost, present risks of physical damage to private assets and public infrastructure, which translate to material risks with financial implications for businesses. Businesses also need to actively manage the transition to a climate-resilient and low-carbon economy, which includes changes in consumer demand, technology and government policy. In managing these risks and embracing the related opportunities, businesses can help lead the effort to adapt to climate change.

8.2.1 Growing awareness of climate change risks and opportunities

Many businesses are deeply concerned about climate risks (World Economic Forum, 2020), as climate-related risks have become increasingly evident for businesses and governments. Climate action failure is ranked as the number one risk by likelihood and impact in the 2020 Global Risks Report (see Figure 8.1). Other climate-related risks, including extreme weather, natural disasters, biodiversity loss and water crises, are also ranked prominently.

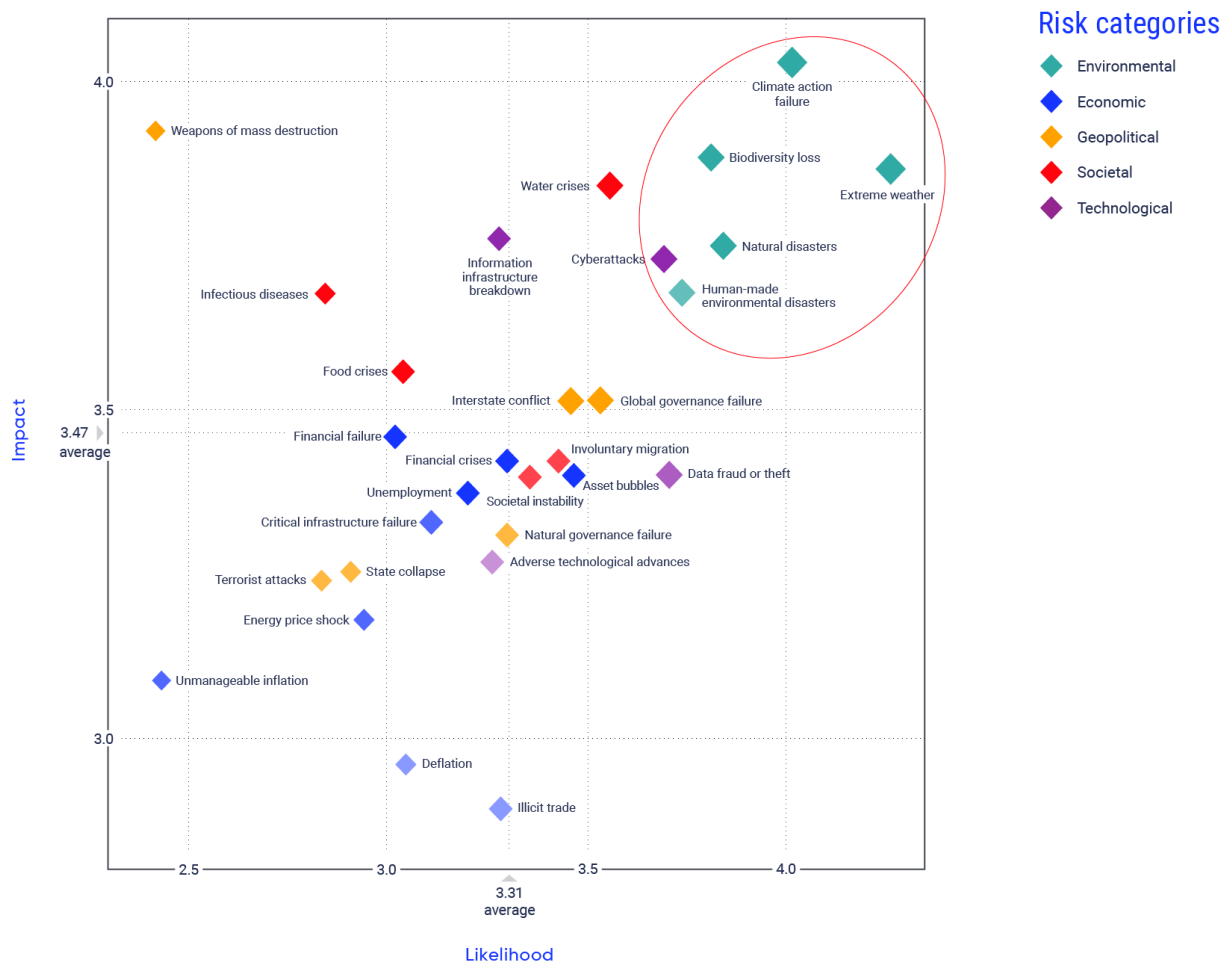


Figure 8.1: Findings from the World Economic Forum Global Risks Perception Survey (2019–2020), where risks were ranked on a scale of 1 to 5 according to perceived likelihood and perceived impact. Environmental risks rank among the highest, both in terms of likelihood and impact. Source: Adapted from World Economic Forum, 2020.

The magnitude of the risks associated with climate change is also reflected in other assessment reports. [Canada's Changing Climate Report](#) concludes that “the effects of widespread warming are evident in many

parts of Canada and are projected to intensify in the future” (Bush and Lemmen, 2019). The Council of Canadian Academies (CCA) notes that, in addition to warming temperatures, there have been “more frequent heatwaves, changing precipitation patterns, reduced snow and ice cover, thawing permafrost, shrinking and thinning Arctic sea ice and changes in streamflow, all of which are leading to widespread impacts on natural and human systems. The effects of warming are projected to intensify over time” (CCA, 2019, p. ix). Considering these changes, the CCA report identified 12 major areas of climate change risk facing Canada that could involve significant losses, damages or disruptions over the next 20 years. The most acute risks were for physical infrastructure, coastal communities, northern communities, human health and wellness, ecosystems and fisheries.

Businesses in Canada and around the world are working to understand how climate change will affect the risk and opportunity landscape for them and their stakeholders (World Economic Forum, 2020; TCFD, 2017). Extreme weather events and slower-onset climatic trends present risks for all companies and their supply chains, particularly for physical assets and for companies that rely on public or private infrastructure for the delivery of raw materials, inputs or finished goods. A changing climate may also present risks to the health and safety of employees. Additionally, there may be indirect impacts to businesses, including changes in global trade routes, changes in agricultural productivity or in the availability of water and other natural resources. The financial impacts of direct and indirect physical impacts on a Canadian business may include reduced revenues (e.g., losses arising from business interruptions, reduced asset productivity or reduced consumer demand), increased operating costs (e.g., for repairs, increased energy costs for heat waves and negative impacts on workforces), increased capital expenditures (e.g., the cost of repairs to damaged infrastructure, or temporarily or permanently moving to and equipping new sites), early retirement of assets, and the higher cost of and more limited access to capital and insurance.

The insurance industry, for example, has adapted its practices in response to the rising value of severe weather damage claims paid, including by making investments in catastrophe risk models for assessing and pricing risk, and in a variety of other technologies to enhance its capacity to expedite assessment and claim payouts after a disaster. The industry has launched centres of excellence on climate change adaptation and is working closely with Canadian universities on adaptation research and actionable guidance for individuals, households, businesses and government. Examples include the Institute for Catastrophic Loss Reduction (ICLR) at Western University and the University of Waterloo-based Intact Centre on Climate Adaptation (ICCA) and Partners for Action. The industry is also working with governments and businesses in sharing risk information, promoting adaptation by businesses, homeowners and governments by putting a price on the risk of physical damage, and in providing financial incentives for investments in resilience. For example, in partnership with the Government of Canada and provincial governments, through the National Working Group on Financial Risk of Flooding, the industry is sharing flood risk maps, providing guidelines for reducing flood risks, developing solutions for managing financial risk of flooding and introducing residential flood coverage in some regions, with incentives when residents invest in flooding retrofits (Insurance Bureau of Canada [IBC], 2019b). However, there are limits to the insurance industry’s ability to respond to climate risks. With unmitigated climate change, climate-related physical risks may become uninsurable (Buberl, 2017).

In addition to physical risks, businesses also face transition risks and opportunities as new technologies are developed, and as markets and the policy environment respond to climate change and the transition to a low-carbon future. Significant investments may be required by businesses to complete the transition. These might

include renewable sources of energy, low-carbon transportation, energy-efficient buildings, resilient new construction and resilience retrofits. As new markets open up, old business models may become less viable. These new markets are key considerations for businesses that are determining their strategy and assessing the viability of their business model. Companies must consider whether their business models are resilient as the world transitions to a lower-carbon economy. Many investors are already advocating for companies to change their business models and adopt climate resilience strategies. Climate Action 100+, which includes Canadian asset managers, is one organization that is currently engaging with over 160 corporations globally to this end (Climate Action 100+, 2019).

8.3 Climate-related disclosure drives climate action

Increased financial disclosure of climate risks and opportunities will inform and enhance action to reduce climate change impacts. Guidance for climate-related disclosure is evolving and is increasingly being adopted.

Climate-related disclosure allows investors to make informed decisions on investing towards a climate-resilient and low-carbon economy. Through climate-related disclosure, companies and public-sector entities like cities, municipalities and Crown corporations are encouraged to analyze, better understand and adopt strategies to adapt to climate risks. While Canadian securities laws require publicly-traded companies to disclose material climate risks, investors and other stakeholders often demand additional climate-related information. To meet this demand, many Canadian companies provide voluntary climate-related disclosure in publicly filed sustainability or climate reports. Historically, many climate-related disclosures failed to meet the needs of investors, as they did not report financial impacts and were often not comparable across companies. Frameworks with the goal of improving climate-related disclosures by publicly-traded companies and public-sector entities now exist and are being further developed. As investor and other stakeholder expectations continue to evolve, these companies and entities may need to enhance their climate-related disclosure to meet these expectations.

8.3.1 Importance of climate-related disclosure

Disclosure is the process used by organizations to provide information that enables stakeholders to assess an organization and make informed decisions. These decisions include whether or not to invest in, work for, buy from or supply to an organization and, in the case of voters, which political leaders to support. Disclosure is a key driver of stakeholder decision making and behaviour.

As climate change has become an increasingly important issue for many stakeholders, companies need to disclose information on how it affects them. Investors, shareholders, lenders, insurers, regulators, employees, consumers and voters increasingly want to know how these entities are managing climate-related risks and

opportunities. Governments also need this information to facilitate the development of coherent and credible public policy.

Climate-related disclosure has the potential to improve the management of climate risks and opportunities, and to encourage informed investments in climate change adaptation and GHG emissions reduction by investors, businesses and governments. To support climate-risk management and investment decisions, transparency and timely access to information through disclosure are necessary.

A research report by Chartered Professional Accountants (CPA) Canada asked ten institutional investors, who hold approximately \$1.9 trillion in assets under management, to identify the climate-related information that they use in decision making, how they use it and the impact that it has on decisions (CPA Canada, 2019a). The investors identified specific disclosures by companies that they considered important to their decision making, which included:

- the exposure of the organization's specific physical locations and infrastructure, including supply chains, to extreme weather events (e.g., floods, wildfires, ice storms, droughts, early thawing), potential impacts and how the organization is managing its exposure;
- water information where critical dependencies exist, including potential impacts of water deficiencies and the company's related risk management processes and plans; and
- trends and measures to reduce GHG emissions, including targets that are both absolute and intensity-based (CPA Canada, 2019a).

Investors also seek information on risks and opportunities associated with the transition to a low-carbon economy, as well as analyses of climate risks and opportunities for a company's medium- and long-term strategies. Climate-related financial disclosures are also important for lenders and insurers. Disclosures allow financial institutions to assess the resilience of the business models of companies that they serve and of their own business models to better manage their exposure to climate risk.

Ultimately, climate-related disclosure allows markets to better assess which entities can manage climate risks and seize related opportunities in a low-carbon economy, and to determine which entities are strategically resilient to the physical and transition risks associated with climate change. This, in turn, may encourage sustainable investment (Expert Panel on Sustainable Finance, 2019).

8.3.2 Mandatory disclosure in Canada

A publicly-traded company is required by provincial securities laws to disclose information regarding all material risks that it faces. Commitments, events, risks or uncertainties that the company reasonably believes will materially affect its future performance should be disclosed, as well as the company's policies and procedures related to risk management and oversight. There are no prescriptive reporting requirements in Canada pertaining specifically to climate change issues. The requirement to disclose is driven by materiality (i.e., the extent to which the risk is deemed material at the time when the disclosure is being made). Materiality (see Box 8.1) is assessed by reference to the "reasonable investor" standard. Information is

likely to be material if a reasonable investor's decision about whether or not to buy, sell or hold the company's securities is likely to be influenced or changed if the information is omitted or misstated (Canadian Securities Administrators, 2019; 2010).

Box 8.1: Materiality

Some examples of climate-related risks that might be material to a company include:

- severe weather events or slow-onset events that might result in damage to assets, personal injury, operational disruptions, employee problems, or supply chain or customer distribution disruptions;
- climate-related regulations;
- reputational issues (including employees' and investors' attitudes); and
- business model or strategy changes relating, for example, to changes in demands for products or services, the availability of renewable energy or the development of energy-efficient products.

Such climate-related risks may result in financial impacts, including asset write-offs, capital expenditures, increased costs and reduced revenues (Canadian Securities Administrators, 2019).

For publicly-traded companies, the Canadian Securities Administrators (2019) have published several guidance materials, of which the most comprehensive is Staff Notice 51-358: Reporting of Climate Change-related Risks. This notice contains principles for issuers seeking to make materiality determinations and urges companies to err on the side of disclosure when in doubt.

The Canada Business Corporations Act and provincial corporations and securities legislation generally require companies to prepare financial statements in accordance with Generally Accepted Accounting Principles (GAAP). For publicly accountable enterprises in Canada, the International Financial Reporting Standards (IFRS) are the accounting standards used that represent GAAP. According to an article by a member of the International Accounting Standards Board, reporters under IFRS should take note that climate risk is addressed by existing requirements, even if not explicitly referenced (Anderson, 2019). As regulators and shareholders increasingly look for such disclosure, reporting entities may need to incorporate these risks into their financial statements.

The quality and quantity of climate-related disclosures have improved over time. A study of Canadian publicly-traded companies using data from annual reports prior to 2018 (before the release of the TCFD recommendations) found significant variation in whether companies made climate-related disclosures, as well as in the nature, amount and quality of the disclosures (Canadian Securities Administrators, 2018). This study found that climate-related disclosures were inconsistent and difficult to compare. In particular, the majority of climate-related disclosures did not include financial metrics or targets. As such, disclosures were not comparable across or within industries, and an inconsistent use of terminology contributed to the lack of comparability. A more recent study by CPA Canada, using 2018 data, found that TCFD-related disclosures

have increased and that the amount and quality of disclosures are increasing, although the quality still varies (CPA Canada, 2020).

8.3.3 Voluntary disclosure

Increasingly, Canadian companies are voluntarily disclosing climate change information that they do not consider to be material for securities law. Some Canadian cities and municipal governments are also now producing voluntary climate-related reports. The practice of disclosing in voluntary reports benefits many stakeholders, including investors, employees, customers, suppliers, lenders, insurers, governments and rating services.

The framework proposed in the recommendations of the TCFD (see Box 8.2) was arguably the most common voluntary reporting framework used in Canada in 2020. It has been endorsed by the Government of Canada for Crown corporations, and is a condition for companies receiving COVID-19 financial support (Canada Enterprise Emergency Funding Corporation, 2020). The Expert Panel on Sustainable Finance recommended that all Canadian companies adopt this reporting framework.

Box 8.2: Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

The TCFD recommended disclosures that are intended for voluntary use by organizations of all types in their mainstream financial filings (i.e., those filed with securities and/or industry regulators) (see Figure 8.2).



Figure 8.2: Core elements of recommended climate-related financial disclosures. Source: Adapted from Task Force on Climate-related Financial Disclosures, 2017.



The TCFD recommends that all organizations should, irrespective of materiality, disclose the governance and risk management elements. In addition, asset owners and asset managers should disclose carbon footprint information in reports to clients and beneficiaries, regardless of any assessment of materiality. If this information is assessed as material under the same criteria used in their regulatory filings, then organizations should also disclose the following elements: strategy, metrics and targets. Scope 1, 2 and 3 greenhouse gas (GHG) emissions and scenario analysis (i.e., the resilience of the organization's strategy under different climate change scenarios) are included as part of the metrics and target elements. Organizations omitting a recommended disclosure should disclose their rationale for doing so. The TCFD provides supplementary disclosure guidance for banks, insurance companies, asset owners and asset managers.

As of September 30, 2020, the TCFD framework was being used by all of the major Canadian banks and publicly-traded insurance companies, as well as by some other large Canadian publicly-traded companies. Many of these companies made disclosures in all categories, including nascent scenario analysis (CPA Canada, 2020). The TCFD framework has been endorsed by major accounting firms, CPA Canada and by Canadian pension plans and asset managers.

In its global status update report published in mid-2019, the TCFD (2019) noted that, in its view, while important progress in global climate-related disclosure is being made, more clarity is needed on the potential financial impacts of climate change. It also noted that disclosure is weak with respect to strategic resilience, which is of great interest to most capital providers. It concluded that adoption of the TCFD framework can be expected to widen and improve as the private sector refines the emerging good practice in efficient and decision-useful climate-related disclosure.

Another vehicle used for voluntary disclosure by companies, cities and regions in Canada and elsewhere is CDP (formerly Carbon Disclosure Project), which circulates and collates annual surveys on climate change and other issues (CDP, 2020). These surveys incorporate the TCFD disclosure elements and are a significant source of information for investors, customers, suppliers and governments. Over 250 Canadian companies reported in these surveys in 2019.

Some Canadian companies have also issued reports using the Sustainability Accounting Standards Board (SASB) framework, which incorporates climate change within a variety of other environmental, social and governance risks (Sustainability Accounting Standards Board, 2018). The SASB creates industry-specific sustainability accounting standards that help companies to identify and disclose material information on climate risks to investors in their mainstream financial filings. The Canadian Securities Administrators (2019) has suggested that Canadian issuers may wish to take note of SASB's metrics in making decisions with respect to climate-related disclosure.

8.3.4 Emerging practices

For federal, provincial and municipal governments, disclosure of climate change-related issues is largely dependent on public-sector accounting standards that do little to specifically address climate-related issues. Additional disclosure is uncommon and has largely been driven by government leaders who voluntarily decide

to provide such information. Fortunately, a number of large Canadian municipalities are demonstrating leadership in climate-related disclosure. The cities of Vancouver, Montréal and Toronto are all enhancing their disclosure on climate-related matters, and have worked with CPA Canada to develop guidance that can be used by municipalities across the country (CPA Canada, 2019d).

In its final report, the Expert Panel endorsed the TCFD framework with respect to both federal and provincial Crown corporations, as well as for private sector issuers of all sizes. The Panel recommended a two-phased approach to implementation over a five- to seven-year timeframe, depending on issuer size. It further recommended the implementation of TCFD, in close partnership with the provinces, under a mandatory “comply or explain” regime, which was one of the options that had been considered, but not adopted, by the Canadian Securities Administrators in its 2018 Report (Expert Panel on Sustainable Finance, 2019).

8.3.5 Opportunity for improvement: Data and methodology gaps

Studies on climate-related financial reporting have called for businesses, financial institutions and asset managers, along with their boards of directors, management and professional advisors, to become better educated with respect to the business risks and opportunities, as well as potential financial impacts of climate change (Canadian Securities Administrators, 2018). Multiple initiatives are under way in this regard, including training programs. In order for organizations to rigorously assess, manage and disclose their risks, there is a need for the development of new tools, models, methodologies and standards for physical and transitional climate risk analysis under different emissions scenarios, along with the expertise to use and interpret them. For policymakers, scenario analysis and stress-testing will be important for assessing whether financing flows are consistent with an orderly transition to a climate-resilient and low-carbon economy, and also for determining whether the financial system will be resilient to climate-related shocks.

For organizations conducting physical risk analyses, there are frequent limitations on the availability of relevant non-proprietary historical data or climate projection data for all locations of an organization’s assets, production, distribution and supply chain. In addition, the cost of employing the expertise to interpret or use that data for TCFD purposes can be prohibitive for many companies. Various initiatives at the federal, provincial and local levels are under way to provide broadly available access to complete, authoritative and decision-useful climate information and advice (Government of Canada, 2020; LAMPS, 2020; Pacific Climate Impacts Consortium, 2020).

The TCFD framework recommends that companies develop and disclose metrics and targets for assessing risks and opportunities, but it does not give specific guidance in this area. Companies and their boards of directors have struggled to obtain and analyze the information necessary to develop such metrics and targets (CPA Canada, 2019b, c). Companies within the same industry have often lacked information about what their peer group members are doing in this regard. To help alleviate this situation, the TCFD has committed to continuing to work with market participants to refine metrics so that they are consistent, comparable and decision-useful (Carney, 2019). Studies have also been published in Canada to provide companies and asset managers with industry- and sector-specific metrics to assess and quantify various risks (Feltmate et al., 2020).

There are significant methodology gaps associated with scenario and stress test analysis. The TCFD recommends using scenario and stress test analysis to, for example, create hypothetical constructs that yield a series of potential outcomes based on specific assumptions, factors and methodologies, such as the assumed global temperature rise, the energy mix, or whether the transition to a low-carbon economy happens smoothly or abruptly. Although some publicly available scenario models exist, there are many bespoke private models. As of September 30, 2020, there was a lack of guidelines, standards, protocols and consistent practices in this area (CPA Canada, 2019b, c). In most cases, organizations needed to seek outside expert assistance for this purpose. In 2019, the TCFD indicated that it was continuing to work with market participants to create “best practice” examples of scenario and stress test analysis. Furthermore, the United Nations Environment Programme Finance Initiative, the Network for Greening the Financial System and various organizations for Canadian pension funds, insurance companies, asset managers and financial institutions (all of which have Canadian participants) have continued to develop standard methodologies, tools and practices in this regard (Network for Greening the Financial System, 2020; UNEP Finance Initiative, 2019). The Expert Panel’s Final Report recommended that the federal government sponsor a research effort to develop two or three base scenarios for climate-related disclosures for issuers and industry groups (Expert Panel on Sustainable Finance, 2019). Overall, it will take time for consistent practices to emerge and be adopted across all sectors of the Canadian economy.

8.4 Transitioning to a climate-resilient and low-carbon economy requires significant investments

There is a large financing gap for transitioning to a climate-resilient and low-carbon economy in Canada. Significant public and private capital are required to address this gap, but obstacles limit the opportunities to attract the appropriate amount of capital.

Canada has a large gap for financing the transition to a climate-resilient and low-carbon economy across economic sectors and assets owned by government, businesses, communities and individuals. The scale of the gap is beyond the capacity of the public sector alone and will require the mobilization of private capital. Financing both GHG emissions reduction and climate change adaptation with a more integrated approach is critical for transitioning to a climate-resilient and low-carbon economy. Reducing emissions is necessary to keep the cost of climate change adaptation under control. Climate risks (physical and transitional) and opportunities are increasingly being considered by investors in their investment strategies, portfolio planning and investments decisions. Financing mechanisms are being developed to address this gap, but they are currently limited in scale due to a number of obstacles.

8.4.1 Co-benefits of financing adaptation and GHG emissions reduction

A climate-resilient and low-carbon framework for policy, planning and implementation can improve the cost-effectiveness of responses to climate change (Laukkonen et al., 2009; Yohe and Strzepek, 2007). The Intergovernmental Panel on Climate Change (IPCC) states with high confidence that, “[a] mix of [climate change] adaptation and mitigation options to limit global warming to 1.5°C, implemented in a participatory and integrated manner, can enable rapid, systemic transitions” (IPCC, 2019). Not considering adaptation and GHG emissions reduction together could be problematic for several reasons (Harford and Raftis, 2019). First, if considered separately, each may negatively affect the goal of the other. For example, developing a dense urban environment may reduce emissions by reducing the need for commuting, but it can increase the risk of urban flooding (Laukkonen et al., 2009). Secondly, there are numerous potential projects that can achieve both adaptation and GHG emissions reduction, and that may be overlooked if the goals are not considered concurrently. For example, infrastructure and buildings can be designed to have reduced energy requirements and be more resilient to weather-related extremes (Harford and Raftis, 2019).

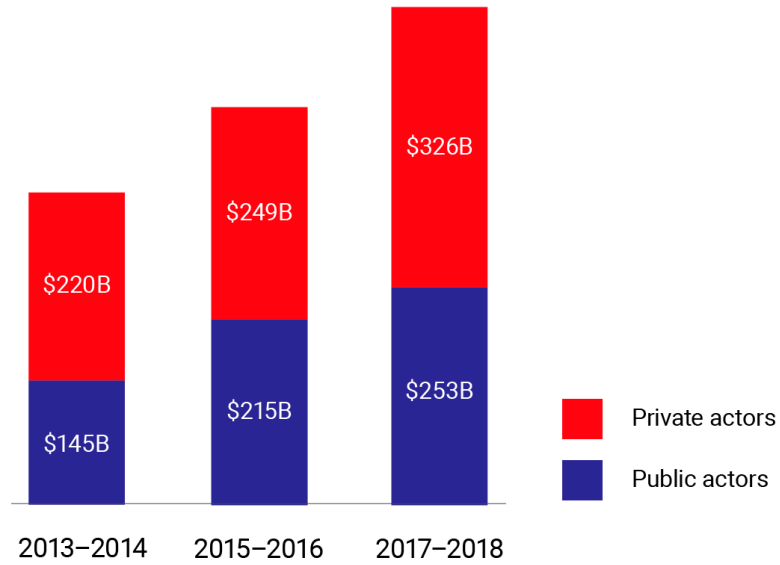
In Canada, adaptation and GHG emissions reduction have traditionally been considered in silos. The Pan-Canadian Framework on Clean Growth and Climate Change provides a national framework for transitioning to a climate-resilient and low-carbon economy (Government of Canada, 2016), but it does not explicitly state the need to consider climate change adaptation and GHG emissions reduction jointly. Efforts are under way in Canada to move past the silo approach (Canadian Institute for Climate Choices, 2020).

8.4.2 Scope of transition

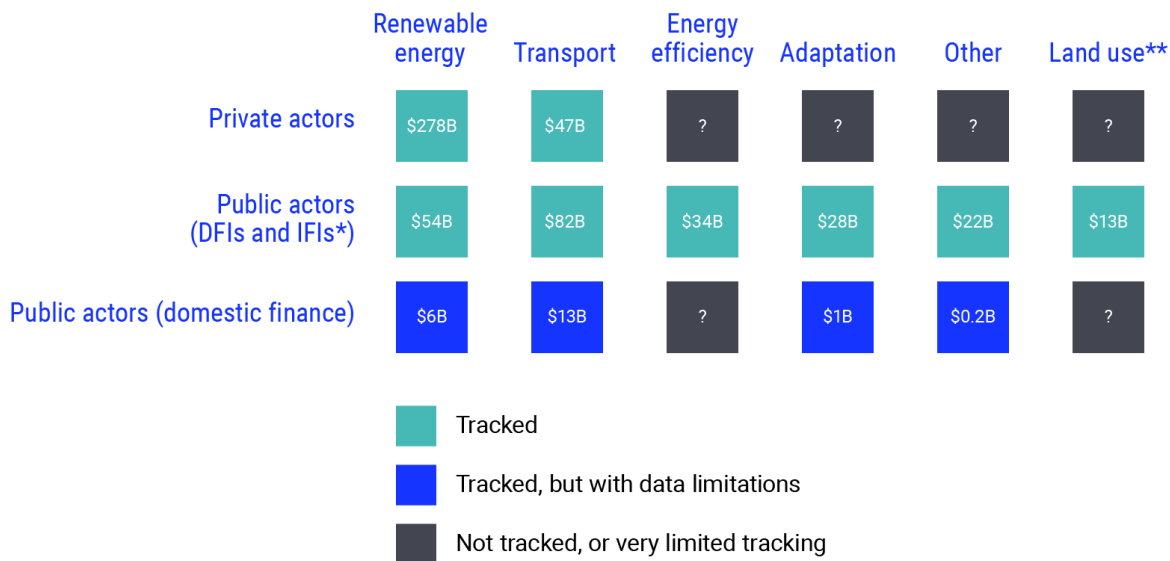
Significant investments are required for Canada to transition to a climate-resilient and low-carbon economy. A capital plan for implementing the Pan-Canadian Framework on Clean Growth and Climate Change, including an explicit analysis of investments needed in major sectors of the economy, would help to identify the size and scope of the market opportunity for financing the transition (Expert Panel on Sustainable Finance, 2019). The Insurance Bureau of Canada (IBC) has also recommended \$5.3 billion of annual investments in adaptation measures to reduce exposure to physical climate-related risks (IBC, 2019a).

Globally, both the public and private sectors have been investing in such measures (see Figure 8.3). On average, total tracked public and private climate investments rose from \$365 billion annually in 2013–2014 to \$579 billion annually in 2017–2018 (Buchner et al., 2019). These investments included financing for renewable energy and transport, public financing for adaptation, public financing through development finance institutions and international finance flows for energy efficiency, land use and other climate change-related projects.

a)



b)



* DFIs = Development Finance Institutions, IFIs = International Finance Institutions
 **Excludes amount allocated toward adaptation projects

Figure 8.3: Global tracked climate finance flows by private and public actors in billions of USD. a) Two-year averages of climate finance contributions by private actors vs. public actors during the period 2013-2018. b) Breakdown of the 2017-2018 two-year average climate finance by private actors vs. public actors, and by sector. Source: Adapted from Buchner et al., 2019.

8.4.3 Financing mechanisms for climate change adaptation and GHG emissions reduction

Beyond general debt and equity instruments, other financing instruments are being developed to raise funds for climate resilience and low-carbon projects. Some examples are highlighted below:

Green bonds: The proceeds of green bonds must be used for climate-related projects that reduce GHG emissions or improve climate resilience (Climate Bonds Initiative, 2020). Green bonds are increasingly used for integrated low-carbon and climate resilience projects. However, less than 5% of pre-2019 global green bond proceeds have funded climate change adaptation projects (Climate Bond Initiative, 2019). As of September 2020, technical criteria for adaptation-related projects, such as water and sewage infrastructure and climate-resilient infrastructure, are being developed for green bond (Climate Bonds Initiative, 2019).

Several provincial and municipal issuers of green bond list climate change adaptation and resilience as an eligible project category in their respective green bond frameworks. Examples include the Province of Ontario (n.d.), the Province of Quebec (Ministère des Finances du Québec, n.d.), the City of Vancouver (see Box 8.3; 2018) and the City of Ottawa (2020).

Box 8.3: Use of a green bond by the City of Vancouver for adaptation

The City of Vancouver issued its first green bond in September 2018, with a principal amount of \$85 million. Proceeds from the bond are being used to fund up to seven types of projects: renewable energy, energy efficiency, green buildings, clean transportation, pollution prevention, sustainable water and wastewater systems, and the restoration, preservation and promotion of natural infrastructure and assets. Approved projects include upgrading sewer systems to eliminate sewage overflows, expanding the energy utility of the city's False Creek neighborhood, constructing more than 200 units of affordable housing and converting community buildings to net-zero buildings (City of Vancouver, 2018).

Sustainability bonds: Proceeds of sustainability bonds are exclusively applied to finance or re-finance a combination of “green” and social projects. In 2019, a number of Canadian financial institutions—including Sun Life Financial, the National Bank of Canada and BMO Financial Group—adopted sustainability bonds frameworks (Sun Life, 2019a; National Bank of Canada, 2018; Bank of Montreal, 2019a, respectively) and issued bonds (Sun Life, 2019b; National Bank of Canada, 2019; Bank of Montreal, 2019b, respectively).

Catastrophe bonds: With the rising impacts of extreme weather events, local, provincial and national governments need to manage their budgets to expedite recovery from disasters by covering damages and paying for the cost of reconstruction of public assets and infrastructure. Catastrophe bonds are designed to transfer these risks to capital markets. Catastrophe bonds serve as an insurance policy for the bond issuer,

where the principal of the bond is forgiven when a disaster reaches a pre-agreed threshold. As of September 2018, the global catastrophe bond market stood at \$30 billion, following a surge of issuance in 2017 and 2018 (Ralph, 2018). In Canada, insurance regulation guidelines issued in 2013 allow insurers to hedge risks using innovative financial instruments, but require prior approval for the instruments to contribute to capital requirements (Office of the Superintendent of Financial Institutions, 2013).

Forestry carbon offset credits: Several Canadian provincial carbon pricing regimes and standard-setters in the voluntary carbon markets have developed carbon offset protocols for Canadian forestry projects, with a number of projects in British Columbia. Although their primary goal is to reduce carbon emissions, these projects have co-benefits for climate resilience and physical climate risk reduction.

Transition bonds: Transition bonds are designed for carbon-intensive sectors, with proceeds used to finance new and/or existing projects for transition towards a reduced environmental impact, such as reduced carbon emissions (Takatsuki and Foll, 2019). These bonds are intended for companies and projects that would not qualify as “green.” They may be particularly useful for Canadian firms in the mining, materials, and oil and gas industries (Riordan, 2020). There is some concern that companies may use these bonds to appear more environmentally friendly than they actually are (i.e., greenwashing). In Canada, Corporate Knights and the Council for Clean Capitalism released their Clean Transition Bonds Guideline, including the Clean Financing for Heavy Industry Taxonomy (Corporate Knights and the Council for Clean Capitalism, 2018).

Financing mechanisms for public assets and infrastructure projects: The Expert Panel on Sustainable Finance (2019) identified the need to develop a national Sustainable Infrastructure Plan, including projects and capital plans for public–private co-investment. The Panel emphasized the need for risk-based sustainability criteria to guide all new federal infrastructure planning, project selection and financing. It stressed that these criteria should include protocols to assess insurability earlier in the development process to ensure that infrastructure is sustainably designed and built, and that the risk could be transferred to insurers either directly or via insurance pools or capital market parametric structures (e.g., those used in catastrophe bonds) to reduce government liability as Canada’s insurer of last resort (The Geneva Association, 2019).

Infrastructure financing mechanisms include:

- **Asset recycling:** Government assets with proven cash flows are sold to private investors to finance new projects. For example, the proceeds from the planned sale of the Trans Mountain Pipeline are committed to fund clean energy projects (Department of Finance Canada, 2019).
- **Resilience bonds:** A type of catastrophe bond that is designed to incentivize cities and other jurisdictions to invest in resilience. These bonds include a resilience rebate that converts avoided “measurable” losses from a risk-reduction plan into a revenue stream (Vaijhalala and Rhodes, 2018). The European Bank for Reconstruction and Development issued the world’s first dedicated climate resilience bond for \$700 million USD (Bennett, 2019).
- **Private–public partnerships (PPPs)** have assumed a prominent role in infrastructure financing, although with continuing controversy over efficiency and costs (IBC, 2015; KPMG, 2015; Kunreuther, 2015). As of February 2020, there were roughly 286 active projects with a market value of \$139 billion in Canada (The Canadian Council for Public-Private Partnerships, 2020).

- **The Canada Infrastructure Bank:** Established in 2017, the Canada Infrastructure Bank was tasked with investing \$35 billion from the federal government in infrastructure projects with provincial, territorial, municipal and Indigenous partners, and with attracting institutional investors to fund new revenue-generating infrastructure projects that provide public benefits (Canada Infrastructure Bank, 2020). On October 1, 2020, Prime Minister Justin Trudeau and the Minister of Infrastructure and Communities announced a \$10 billion growth plan over three years in partnership with Canada's Infrastructure Bank, targeting renewable energy projects, building retrofits, zero-emission busing and charging infrastructure, among other initiatives (Canada Infrastructure Bank, 2020).

8.4.4 Challenges for climate-related investing

Banks, institutional investors, insurers and pension funds are critical sources of investments in both adaptation and GHG emissions reduction projects, globally and in Canada. However, they face several obstacles to investing at the scale needed to transition to a climate-resilient and low-carbon economy (EU High-Level Expert Group on Sustainable Finance, 2018; The Geneva Association, 2018a). Some obstacles include:

- Political and public policy risks associated with the lack of national strategies, clear climate change policies, regulatory and legislative processes, and conflicting government subsidies;
- Need for a taxonomy and establishing “green” as an asset class to enable the development of a robust market and investable-grade, green investment opportunities;
- Need for data, tools, methodologies and expertise to assess risks and the quality of investments; and
- Regulatory issues related to higher capital charges associated with long-term, higher-risk investments.

Governments, policymakers and a variety of regulatory or standard-setting bodies play a key role in addressing some of these obstacles (The Geneva Association, 2018a), and the Expert Panel on Sustainable Finance (2019) addressed many of these issues in its recommendations.

A major challenge is presented by public policy and regulatory uncertainty. Investments in adaptation and GHG emissions reduction have long time horizons of years or decades, and regulatory uncertainty increases the riskiness of these investments (Expert Panel on Sustainable Finance, 2018). As of September 2020, there remained considerable international uncertainty concerning global GHG emission-reduction efforts, including international market mechanisms for trading emission reductions and carbon pricing. In Canada, the federal carbon pricing plan and related legislation endured repeated challenges from many provinces with three constitutional provincial reference cases, culminating in Supreme Court of Canada hearings (Rabson, 2020). Provincial planning to address climate change and reduce GHG emissions has changed significantly with the results of provincial elections.

A green taxonomy would provide common definitions for green, resilient and sustainable activities and investment practices. It could enable private capital to be directed towards such long-term activities, while preventing false claims and greenwashing. However, adopting an international taxonomy, such as the EU Taxonomy on Green Finance (EU Technical Expert Group on Sustainable Finance, 2020), as an authoritative framework can only partially address such obstacles, since international taxonomies may not fully apply to

the Canadian economy (Expert Panel on Sustainable Finance, 2019). In 2019, a task group with the Canadian Standards Association was formed to develop a “transition” taxonomy for resource-heavy industries in Canada (Standards Council of Canada, 2019). This project builds on existing global frameworks and is being conducted in two parts, with part one focusing on the transition framework and definitions, and part two on a sector-specific transition taxonomy for seven priority sectors (Canadian Standards Authority Group, 2020).

Without accessible decision-relevant data on climate risks and opportunities, investors will not be able to assess the viability of their investments in climate change adaptation and GHG emissions reduction (Carney, 2019; Expert Panel on Sustainable Finance, 2018). Efforts to identify data needs and develop standard methodologies and tools for conducting climate change risk assessments are still in their infancy (Golnaraghi, 2019b). Furthermore, in-house expertise for producing, interpreting and utilizing climate-risk information is a challenge for both public and private sectors in Canada.

A significant amount of climate risk-related data is collected by various federal, provincial and municipal agencies, academia, centres of excellence, non-governmental agencies and the private sector. As of September 2020, this data is not compiled or readily available, and it may remain prohibitively costly for an individual company to collect and conduct quality assurance on the necessary data for risk modelling. Furthermore, translating this data into decision-relevant risk information for financing decisions requires sector-specific information and multidisciplinary expertise (Golnaraghi, 2019a).

Targeted initiatives, such as the Canadian Centre for Climate Information and Analytics (C3IA), recommended by the Expert Panel, would help inform data analysis and decision making in this area. Since the 1990s, the insurance industry globally has significantly invested in innovative methods to assess, price and manage physical climate risks. The industry has been using traditional catastrophe models and is working to enhance capacities for modelling the effects of climate change with a forward-looking approach (The Geneva Association, 2018b). Catastrophe models are primarily available through commercial risk modelling firms and insurance/reinsurance brokers, and some international (re)insurance companies have also developed their own internal models. These models could also inform lending and investing decisions for real estate and infrastructure portfolios (Cambridge Institute for Sustainability Leadership, 2019a, b).

A complex landscape of specialized private climate risk data start-ups and environmental fintech companies (i.e., companies that use technologies to provide financial services) are emerging in the U.S., Europe and Canada. These companies provide data and analytics to financial and insurance companies (Golnaraghi, 2019b). As of September 2020, physical and transition climate risk modelling tools provided by these commercial data providers remained fragmented by the type of risk, sector and decision applications. International rating agencies, such as Moody's Financial Services and S&P Global Services, are building internal climate risk modelling capabilities for their sovereign, municipal and company credit ratings (Flavelle, 2019).

8.5 Investments in climate risk reduction build resilience

Investments in disaster resilience have demonstrated their effectiveness for reducing exposure to physical climate risks. Opportunities exist for governments, businesses and individuals to improve their resilience to physical climate risks and break the trend of increasing loss and damage related to climate events.

Socioeconomic impacts of extreme weather events are on the rise in Canada due to the increasing concentration of people and assets in high-risk locations, current approaches to development planning and construction practices, and climate change. There is increasing awareness about significant benefits of investments in pre-disaster prevention and risk reduction. However, such ex-ante investments represent only a small fraction of the costs paid for post-disaster recovery.

8.5.1 Investments in climate resilience are cost-effective

Canada has experienced significant losses due to climate-related disasters. The Insurance Institute of Canada finds that, since the 1980s, climate-related damage claims paid by Canada's insurers have increased 20-fold after adjustment for inflation, doubling every five to 10 years (Insurance Institute of Canada, 2020). Insured losses for climate-related hazards have increased to an average of \$1.9 billion per year from 2010 to 2019 (see Figure 8.4). The largest insured loss events in Canadian history include the 2016 Fort McMurray wildfire, the 2013 Calgary flood and the 1998 Quebec winter storm. Rising insured losses are attributed to increases in the quantity and value of exposed assets, the frequency and intensity of hazards and insurance coverage rates.¹

Between 1970 and 2014, more than 76% of Canada's Disaster Financial Assistance Arrangements (DFAA) spending was flood-related (Moudrak and Feltmate, 2017). These costs increased from around \$100 million annually two decades ago to \$500 million in 2009–2010 and reached \$2 billion in 2013–2014.

¹ Insured loss figures are provided, despite changes in insurance coverage rates over time, as there is no consensus on the methodology for estimating direct economic losses of disasters, which makes these estimates difficult to compare.

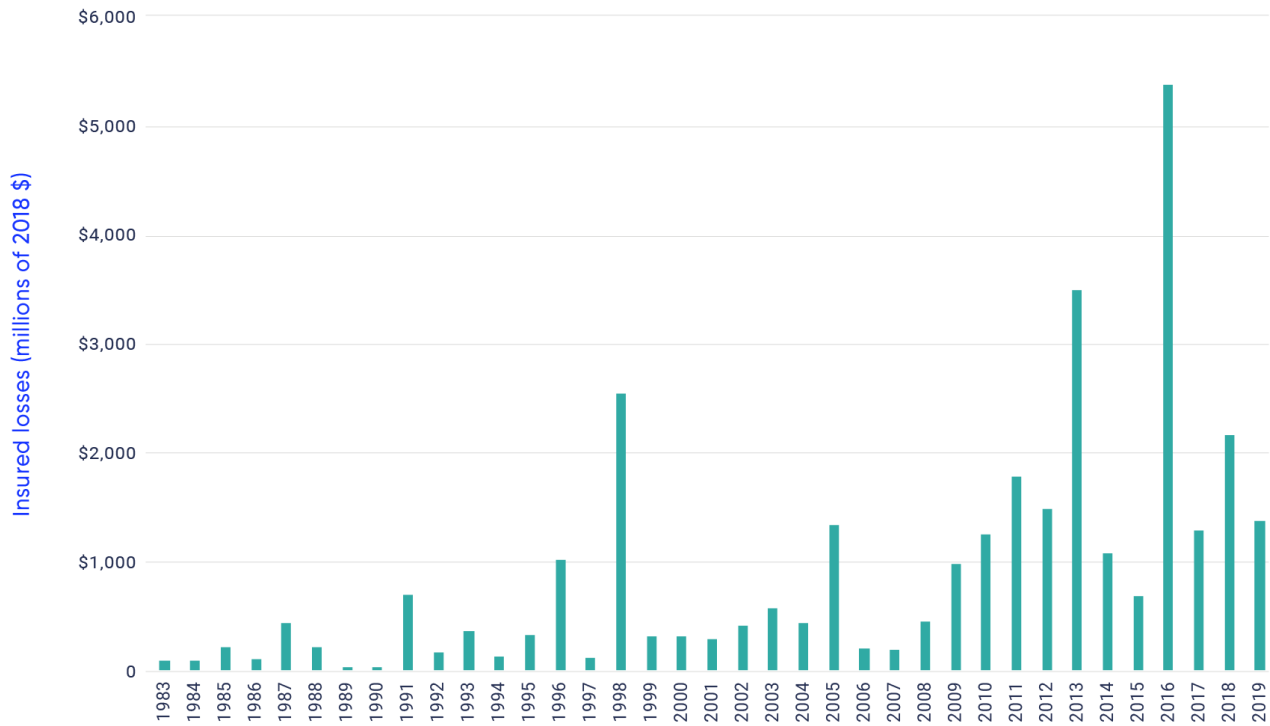


Figure 8.4: Annual insured losses related to natural hazards in Canada, in millions of 2018 \$. Data source: CatIQ, n.d.; Insurance Bureau of Canada, 2020.

The physical effects of climate change are expected to increase losses in many ways. Physical climate risks can cause direct and indirect losses for governments, businesses and individuals (see Box 8.4).

Box 8.4: Physical climate risks for governments, businesses and individuals

Governments:

- Costs of emergency relief and response
- Costs of relocation of affected and at-risk populations
- Reconstruction costs
- Costs of rehabilitation and recovery
- Contingent liabilities for state-owned enterprises and enterprises critical to economic recovery



- Decreased tax revenues from business interruption
- Opportunity cost of diverting funds to reconstruction and recovery efforts
- Increased expenditures for social recovery programs
- Increased borrowing costs and potential negative impacts on the sovereign credit rating
- Migration of populations due to loss of livelihoods

Businesses:

- Disruptions to employees
- Loss of assets and inventory
- Reconstruction of assets
- Disruption to critical infrastructure needed for operations
- Disruption to supply chains
- Spillover effects from business interruptions
- Increased borrowing costs

Individuals:

- Loss or damage to homes, personal property and other assets
- Loss, damage or disruption to essential infrastructure (e.g., schools, hospitals, water and sewage management, transportation)
- Risks to food security and water safety
- Forced relocations and additional living expenses
- Mental health complications
- Loss of traditional knowledge due to loss of life and loss of livelihoods linked to Indigenous peoples' relationship with the land

Source: The Geneva Association, 2020

Overall, studies find that ex-ante investments in climate resilience could be cost-effective. The report of the Global Commission on Adaptation (2019) finds that investing \$1.8 trillion globally from 2020 to 2030 in five areas to improve climate resilience could yield \$7.1 trillion in net benefits. Studies in the U.S. and Canada show that, on average, investments in climate risk reduction can result in about four to twelve dollars saved for each dollar invested (Porter and Scawthorn, 2020; Porter et al., 2018).

8.5.2 Managing risks of climate-related extremes and related activities in Canada

8.5.2.1 Risk information

Investments in climate resilience are more effective if supported by decision-relevant climate risk assessment and risk pricing. Development of such information would require access to reliable hazard, exposure and vulnerability data, along with methodology and tools for combining this data to produce risk information (The Geneva Association, 2018b).

Since the late 1980s, catastrophe risk models have transformed insurance companies' capacities for pricing risks of extreme events such as floods, storms, hail and landslides, and for managing the property insurance business. These models are also increasingly being used by planning professionals, the financial sector and governments to understand the risk of natural hazards, and to conduct cost-benefit assessments for risk-reduction projects (The Geneva Association, 2018b). In Canada, the insurance industry subscribes to tools offered by commercial catastrophe modelling firms and (re)insurance brokers for major Canadian perils. Insurers complement this information by acquiring other data and investing in a variety of technologies (e.g., satellites) to enhance the quality of real-time risk information.

A 2014 IBC survey concluded that flood mapping in Canada was outdated and deeply fragmented. Since 2015, the IBC has been working with a number of commercial catastrophe risk modelling firms to produce flood hazard models and flood risk maps for Canada. These maps have been instrumental in supporting the National Working Group on Financial Risk of Flooding under the National Advisory Council on Flooding (ACF) with developing financial options for managing the flood-related costs of the highest-risk residential properties (IBC, 2019b; Canadian Intergovernmental Conference Secretariat, 2018). In 2015, the Government of Canada launched the National Disaster Mitigation Program, which created flood hazard mapping guidelines and funded mapping activities that adhered to these guidelines. The program also funded small-scale activities to reduce municipal flood risk. Increasingly, efforts are being made by various stakeholders, such as federal and provincial agencies and conservation authorities, to provide flood hazard mapping.

However, overland flood risk information is difficult for homeowners to obtain, and many flood maps remain outdated and fragmented (Adriano, 2019). Furthermore, a study involving five municipalities concluded that high-resolution cross-sectoral data would improve the quality of flood hazard maps, and would be needed to develop finer-resolution flood risk information to support risk management decisions at the municipal level (Canadian Water Network and IBC, 2019).

8.5.2.2 Risk reduction and prevention measures

Various risk-reduction strategies can be undertaken based on risk analysis. Examples include building climate resilient infrastructure, improving nature-based infrastructure as a buffer, adopting updated building codes, land-use planning and managed retreat away from high-risk areas. As of September 2020, no comprehensive

Canadian study of climate resilience measures existed, but smaller-scale studies have found significant benefits. Studies consistently identify significant opportunities to reduce disaster risk in a cost-effective manner. For example, a study of possible flood abatement strategies in the province of Quebec found “at least one adaptation measure is beneficial in comparison with non-intervention (net benefits greater than 0) in 76% of cases” (Circé et al., 2016). The ICLR study of the Climate Resilient Buildings and Core Public Infrastructure Initiative found that the program will provide \$12 in benefits for every dollar invested (Porter and Scawthorn, 2020).

The National Working Group on Financial Risk of Flooding recommended a three-pronged approach to address flood risks (IBC, 2019b). This includes the following: elevating consumer and government awareness to incentivize active flood-risk reduction; producing or improving public-facing risk maps that allow insurers, as well as property owners and governments, to collaborate on identifying, updating and managing risks; and reducing the number of Canadians who live in areas at high risk of flooding by implementing flood risk reduction measures and strategic retreat from high-risk areas.

Natural infrastructure can be a cost-effective way to reduce financial losses that would otherwise result from flooding and to create a buffer for reducing the impacts of storms in coastal regions. For example, naturally occurring wetlands provide storm water storage, flood reduction, water quality improvement, carbon sequestration and other benefits (see [Ecosystem Services](#) chapter; Moudrak et al., 2018).

Updating and proper enforcement of building codes and standards have been highly effective for reducing disaster losses (Porter et al., 2018; Czajkowski et al., 2017). It takes time to develop, adopt and implement building codes for private and public buildings, homes and infrastructure. Canada’s system includes a requirement to demonstrate that new approaches (such as updated codes) would result in savings that exceed costs over time. Many homes, buildings and infrastructure in Canada were designed and built based on codes established decades ago. While new construction must conform to regulatory requirements for new building codes, retrofitting existing structures is voluntary, unless required as part of securing a municipal building permit. Furthermore, the costs of retrofitting are often much higher than the cost of including climate resilience features in a new home.

In this regard, ICLR and its 120 member insurers provide homeowners with guidance for assessing the risk of damage and advice on how to retrofit existing structures to address most climate risks. Furthermore, with the increasing flood risks in Canada, efforts are under way through the ICCA to provide guidelines and standards for resilient communities (Moudrak and Feltmate, 2019a), commercial buildings (Moudrak and Feltmate, 2019b) and residential housing (Evans and Feltmate, 2019). The ICCA has developed formal flood protection training programs for home inspectors and insurance brokers to enable and expedite the adoption of flood protection measures (ICCA, n.d.). The insurance industry has also begun to offer reduced insurance premiums to homeowners who retrofit their homes against floods in some areas (Grzadzowska, 2019). Another example is The Atmospheric Fund, a non-profit created by the City of Toronto Council in 1991, which finances local initiatives to combat climate change and improve air quality in Toronto through a variety of programs, including retrofitting (The Atmospheric Fund, 2020).

Much of Canada’s core public infrastructure is operating beyond its expected lifecycle and needs replacement or retrofitting (Canadian Infrastructure Report Card, 2019). The Government of Canada has launched initiatives to support investments in climate-resilient infrastructure, such as the Disaster Mitigation and Adaptation Fund (2018), a \$2 billion program to support infrastructure projects that improve resilience against

natural hazards (Infrastructure Canada, 2018). In 2019, the Government of Canada implemented the Climate Lens for infrastructure projects in certain programs, which requires project proponents to undertake a GHG emissions reduction and/or climate resilience assessment (Infrastructure Canada, 2019). Engineers Canada, with support from the Government of Canada, developed the Public Infrastructure Engineering Vulnerability Committee (PIEVC) protocol, a popular tool that is now managed by the ICLR, the Climate Risk Institute and GIZ GmbH. There is a need, however, for more to be done in this area (Expert Panel on Sustainable Finance, 2019), and significant opportunities exist for improving the climate resilience of Canada's infrastructure.

Local governments are important leaders in the promotion of climate resilience. ICLR has published 60 case studies of local action in Canada consistent with best practices in climate resilience. The Institute's "Cities Adapt: Celebrating Local Leadership" case studies focused on extreme rainfall, extreme heat and extreme weather (Kovacs et al., 2018; Guilbault et al., 2016; Kovacs et al., 2014).

8.5.2.3 Reconstruction

Risk-informed land-use planning by local governments is another important tool for reducing risks related to climate change. This planning can take the form of re-zoning, banning new construction, home buyouts in high-risk zones, incentives to relocate existing assets to lower-risk zones and restoring natural infrastructure.

Reconstruction decisions after extreme events provide an opportunity to rebuild in more resilient ways. This includes rebuilding according to updated building codes and other climate resilience standards, and may even involve rebuilding in a lower-risk location. For example, following the spring 2019 floods, the Government of Canada and the Government of Quebec supported the relocation of homes from high-risk zones in the province of Quebec. The government offered building buybacks for residential homes, placed a limit on the DFAA payouts and encouraged private insurance markets to play a larger role (Blewett, 2019; Lau, 2019). However, some buyback programs have been subject to controversies (CBC News, 2019). Re-zoning could also be politically difficult after a disaster.

8.5.2.4 Early warning and emergency preparedness

Early warnings linked to emergency preparedness enable action to minimize injuries and loss of life through evacuations, proper sheltering and avoidance of the area at risk. They can also reduce damage to property by, for example, moving valuable assets to safer locations. Early warnings can also expedite response to, and recovery from, disaster events, activate business continuity plans and speed up insurance claim payments (Golnaraghi, 2012).

In Canada, various federal, provincial and territorial agencies are responsible for warnings for different hazards. Although the responsibility for early warning may rest with one organization, it is frequently supported by information provided by multiple organizations working across jurisdictional domains. This model works well only if there is a strong inter-agency coordination mechanism, particularly in relation to appropriate data sharing and data analytics platforms (Bednar et al., 2019, 2018).

Municipal and provincial authorities, in coordination with Public Safety Canada, are responsible for implementing emergency preparedness measures on the ground. A number of other stakeholders, such as the private sector, the media and community-based non-profit organizations, play a critical role in the dissemination of alerts and warning, raising awareness and promoting actions at the community level. Overall, there is significant room to enhance preparedness by using scientific advancements that would allow for a longer lead-time to anticipate and prepare for events and foster cooperation between agencies (Henstra and Thistlethwaite, 2017; Shrubsole et al., 2003).

8.5.2.5 Risk financing and risk transfer (insurance and alternative risk transfer)

A number of financial incentives, including insurance premium discounts and grants for climate resilience activities, can also encourage cost-effective investments in risk reduction (Porter et al., 2018; Multihazard Mitigation Council and Council on Finance, Insurance and Real Estate, 2015). Beyond incentivizing investments in climate resilience, disaster insurance coverage plays an important role in expediting recovery efforts to return communities to normalcy. Studies find that countries with lower insurance penetration experience larger declines in economic output and greater fiscal strain after a disaster than countries with higher insurance penetration (Wolfram and Yokoi-Arai, 2016; von Peter et al., 2013). On average, disasters have no lasting impact on a fully insured economy, but generate a 2.5% cumulated loss in output over 10 years in uninsured economies (von Peter et al., 2013).

The insurance industry provides specialized risk transfer solutions to build financial resilience to impacts of extreme events such as floods, forest fires, severe wind and winter storms, to incentivize reduction of GHG emissions and to encourage entrepreneurship for green and clean technologies. In some regions of the world outside of Canada, the insurance industry is also providing innovative products to protect government budgets following disasters, including regional pools and disaster insurance (The Geneva Association, 2018a).

In Canada, insurance companies are active in a number of areas, including:

- Developing and offering a wide range of traditional and specialized products for protecting against extreme events such as storms, wildfires and floods; Green Building Restoration Insurance; and Green Construction coverage;
- Developing methods to improve insurance coverage;
- Offering insurance products with incentives for risk reduction and carbon footprint reduction;
- Launching centres of excellence on adaptation and investing in bilateral and multilateral research on climate change resilience and adaptation (such as the ICLR, the ICCA and Partners for Action);
- Sharing actionable guidelines on risk reduction and prevention for government, businesses, communities and householders based on their research;
- Investing in the latest technologies to enhance their capacities to expedite assessments and claim payouts after an event; and
- On the asset management side, Canadian life insurers are investing in bonds, which finance GHG emissions reduction and adaptation projects.

In Canada, the insurance industry is also actively engaging with the government at the federal, provincial and municipal levels to improve societal resilience to floods and wildfires, as well as exploring opportunities for public-private partnerships to enhance insurability and raise long-term capital for climate-resilient and low-carbon infrastructure. For example, through the National Working Group on Financial Risk of Flooding, the industry is sharing flood risk maps, providing guidelines for reducing flood risks, and developing solutions for managing the financial risk of flooding for high-risk residential homes (IBC, 2019b).

8.6 Climate litigation is increasing against governments in Canada

Climate change litigation is increasing against governments and their agencies in Canada. There is growing litigation seeking to compel or change governmental action, approvals or decisions, as well as lawsuits seeking financial compensation related to failure to adapt infrastructure.

Major court decisions in Canada and elsewhere have accepted the scientific evidence of anthropogenic climate change and associated physical risks. Some foreign courts have ruled in favour of climate plaintiffs to direct governments to take action on climate change mitigation or adaptation, and governments in Canada are facing similar strategic litigation. At the same time, interest groups (and some governments) have challenged the validity of climate-related laws, and are increasingly seeking judicial review or appeals of regulatory or administrative approvals granted for new projects or proposals that may increase downstream and upstream GHG emissions. Canadian plaintiffs have also increasingly sued for damages related to severe weather events and infrastructure failure. Governments and their agencies that own and operate infrastructure must manage potential liability related to failure to adapt infrastructure to climate change.

8.6.1 Introduction

Climate litigation is litigation in which climate change and its impacts are a key or major contributing consideration. It has proliferated globally, as is evident in the databases maintained by the Sabin Center for Climate Change Law at Columbia Law School and by the Grantham Research Institute on Climate Change and the Environment at the London School of Economics (these “Climate Databases” were last accessed on September 30, 2020). The majority of global climate litigation involves governments and their agencies as defendants, and litigation in Canada is no exception (see Figure 8.5).

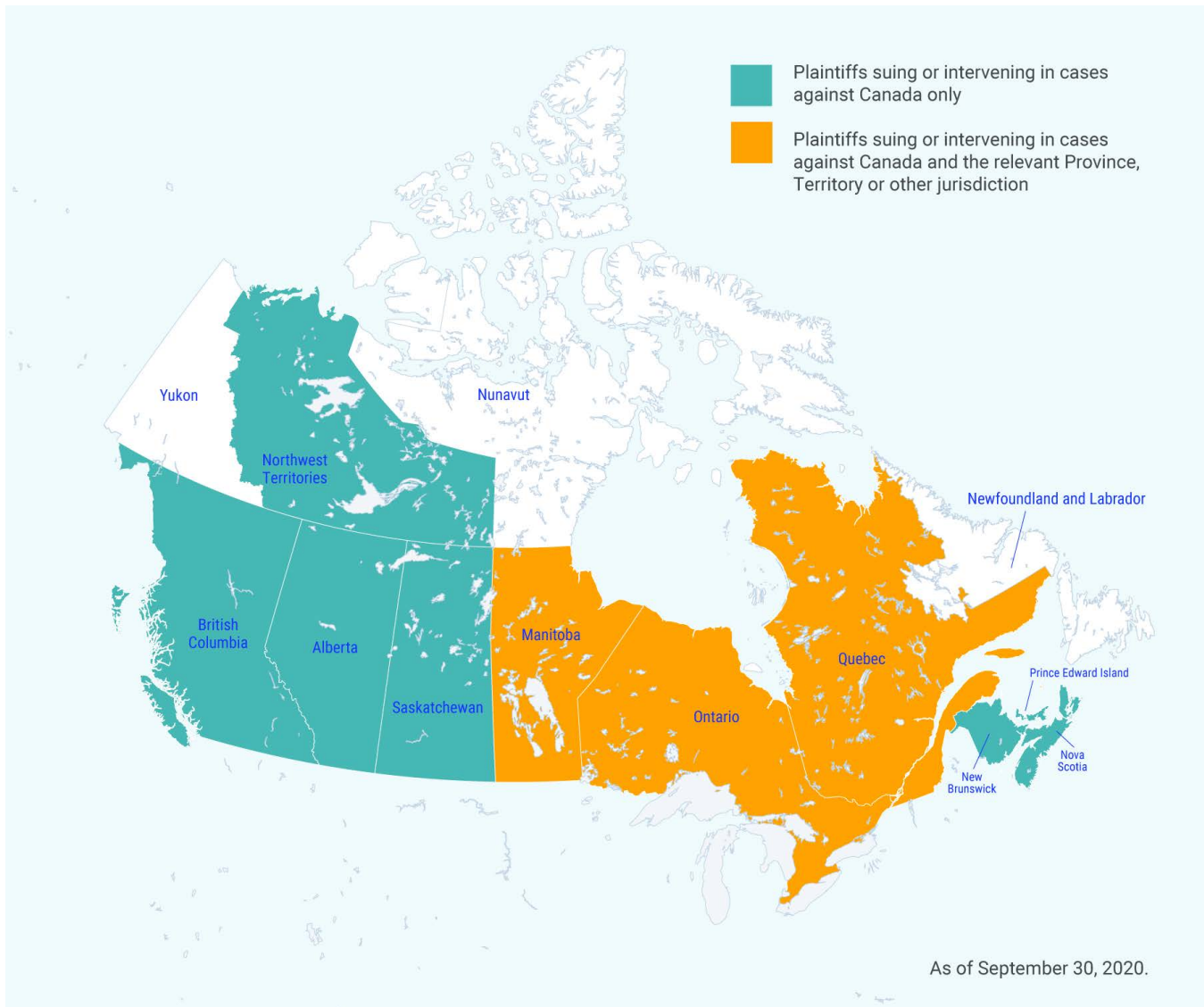


Figure 8.5: Canadian jurisdictions with ongoing climate litigation plaintiffs, as of September 30, 2020. Data source: Grantham Research Institute on Climate Change and the Environment, 2020; Sabin Center for Climate Change Law, 2020.

8.6.2 Litigation to compel government action

Strategic litigation intended to compel certain government actions has increased worldwide since a Dutch interest group won a decision in 2015 ordering the Dutch Government to increase its national emissions reduction target to be consistent with the IPCC's recommendations (*Urgenda Foundation v. The State of Netherlands*). The Dutch Court found that the state had a duty of care to its citizens to take climate change mitigation measures based on, among other things, the Dutch Constitution and the European Convention

on Human Rights (to which the Netherlands is a signatory). This rights-based reasoning was echoed three months later in Pakistan when the Lahore High Court ordered Pakistan to implement the climate change adaptation plan that it had developed, ruling that a delay offended basic rights to life, human dignity, property and information under its Constitution (*Leghari v. Federation of Pakistan*).

Urgenda was upheld on appeal in 2018, and ultimately upheld by the Dutch Supreme Court in December 2019 (*Urgenda Foundation v. The State of Netherlands*). The Courts found that the Dutch Government owed a duty of care to its citizens under the right to life and the right to private and family life provisions of the European Convention on Human Rights. They concluded that the Dutch Government had a duty to take reasonable concrete actions in the face of the “real threat of dangerous climate change.”

Spurred by these decisions, Canadian plaintiffs had launched four separate rights-based lawsuits as of September 30, 2020. Prior to 2018, there were only two Canadian cases in which courts were asked to review alleged climate change inaction on the part of the federal government. The first case (*Friends of the Earth v. Governor General in Council of Canada*) was in connection with alleged breaches of the Kyoto Protocol Implementation Act, and the second (*Turp v. Minister of Justice and Attorney General of Canada*) was related to the Government’s decision to withdraw from the Kyoto Protocol. In the first case, the Court decided that the Kyoto legislation did not allow for substantive judicial review and did not create a mandatory duty to regulate. In *Turp*, the Court deemed that, in the absence of a challenge under the Canadian Charter of Rights and Freedoms, a decision made in the exercise of prerogative powers relating to international treaties was legislative in nature. Both cases reflected Canadian constitutional law principles whereby the making of laws, the exercise of a government’s policy discretion embedded in laws and the repeal of laws are inherently political decisions (Hogg, 2007). Such decisions are generally protected from judicial review or from negligence claims by the principle of legislative immunity.

In November 2018, an interest group purporting to represent Quebec citizens aged 35 and under filed a class action lawsuit in Quebec against the Government of Canada (*Environnement Jeunesse c. Procureur général du Canada*). The claim sought a declaration that the Government’s inaction on climate change had infringed their basic rights to “life, liberty and security of person” and to “equality” (“Charter rights”) under both the Canadian Charter of Rights and Freedoms and the Quebec Charter of Human Rights and Freedoms, and infringed their “right to live in a healthful environment in which biodiversity is preserved” under the Quebec Charter. The claim also sought punitive damages. In July 2019, the Quebec Supreme Court ruled that the case was not properly framed as a class action; at the same time, however, it stated that the alleged violations of the Canadian and Quebec Charters were justiciable issues (i.e., not legislative or political).

Subsequently, a claim was brought by 15 youths in October 2019 in Federal Court alleging that the Government of Canada has caused, contributed to and allowed an unacceptably high level of GHG emissions; adopted, and then failed to meet, unacceptably low GHG emissions reductions targets; and actively facilitated industries and activities involving fossil fuels that emit a high level of GHG emissions incompatible with a stable climate system (*La Rose et. al. v. Her Majesty the Queen*). The plaintiffs claim that these alleged actions and inactions infringed their Charter rights and that the Government of Canada has a constitutional and common law obligation to protect the integrity of common natural resources that are fundamental to human life and liberty. The latter alleged obligation, known as the public trust doctrine, has not previously been formally applied by Canadian Courts (*Burns Bog Conservation Society v. Canada*). The plaintiffs are seeking that the Government acknowledge its obligations and “implement an enforceable climate recovery

plan.” In February 2020, the federal government filed its statement of defence in response to this claim which, among other things, cited and accepted the findings of [Canada’s Changing Climate Report](#). The federal government argued that the plaintiffs do not have sufficient connection to the issue to bring the claim, that the claims are not justiciable and that they do not give rise to valid causes of action under the Constitution or Charter rights or pursuant to common law.

An additional claim was brought in November 2019 by seven youths in the Ontario Superior Court. These plaintiffs allege that the Government of Ontario violated their Charter rights by abdicating its responsibility to address climate change. The plaintiffs are seeking, among other things, declarations that Ontario’s current target violates the Charter rights of youth and future generations, and that the Canadian Charter of Rights includes the right to a stable climate system and an order requiring Ontario to adopt more aggressive emissions reduction targets (Mathur et al v. Her Majesty the Queen in Right of Ontario). In April 2020, the Government of Ontario responded by filing a notice of application to dismiss. The Government of Ontario argued that the plaintiffs do not have standing, that the issues raised and relief sought are not justiciable, that the Charter does not include the right to a stable climate system and that the allegations of harm are incapable of being proven.

In February 2020, two hereditary chiefs of the British Columbia Wet’suwet’en First Nation brought a representative action in Federal Court alleging that the Government of Canada’s inaction on climate change, including its approval of GHG-emitting infrastructure projects, infringes their constituents’ Charter rights and is in breach of the Government’s duty under the Constitution Act to make laws for “peace, order, and good government” (Lho’imggin et al. v. Her Majesty the Queen). The plaintiffs are seeking an order requiring the Government to amend each of its environmental assessment statutes that apply to extant high GHG-emitting projects to allow project approval to be cancelled if Canada is unable to meet its Paris Agreement commitments or considers climate change to be a national emergency, as well as an order requiring the Government to complete an independent annual account of its cumulative GHG emissions in a format that allows assessment against its GHG reduction commitments.

8.6.3 Litigation seeking to change government actions, approvals or decisions

Canadian governments and their agencies have faced increasing litigation since 2015 related to approvals or permits granted for new infrastructure projects or proposals that may increase upstream or downstream GHG emissions. In 2015, an interest group challenged two permitting decisions regarding the proposed expansion of a coal handling and storage operation in British Columbia (Voters Taking Action on Climate Change v. Energy and Mines of British Columbia). The Court held that the group lacked standing. In another high-profile situation, some municipalities and interest groups sought judicial review of the 2016 approval of the Trans Mountain pipeline expansion, including, in one unsuccessful case, by asking that the National Energy Board consider the impacts of climate change in its assessment (Tsleil-Waututh Nation v. Attorney General of Canada). After the 2016 approval was quashed on other grounds in 2018 and the pipeline assets were sold to the federal government, a new approval was granted in June 2019. A number of groups sought judicial review of this decision, making climate change-related arguments, among others, but none of the climate-related

claims were permitted to proceed to the Supreme Court of Canada. Climate-related arguments also surfaced in the approval process for the Coastal GasLink Project, and, in part, prompted *Lho'imggin* (Lho'imggin et al. v. Her Majesty the Queen). Similar concerns led to an application launched in May 2020 for judicial review of a regional assessment on the impacts of exploratory drilling off the coast of Newfoundland and Labrador, which was relied on by the Impact Assessment Agency of Canada (*Sierra Club Canada Foundation v. Canada (Environment and Climate Change Canada)*).

In another case seeking to change a government decision, an interest group filed an application alleging that the Government of Ontario failed to consult the public under Ontario's Environmental Bill of Rights when it revoked the regulations under Ontario's cap and trade program in 2018. The Superior Court of Ontario held in 2019 that the failure to consult was illegal (*Greenpeace Canada v. Minister of the Environment, Conservation and Parks*), but did not mandate remedial action.

Parties that are unhappy with the consequences of new climate-related laws and regulations have also brought litigation to challenge them. Syncrude Canada unsuccessfully challenged the validity of the Renewable Fuels Regulations under the Canadian Environmental Protection Act (*Syncrude Canada Ltd. v. Attorney General of Canada*). The purpose of the regulations, which prescribed that a certain percentage of diesel fuels must be renewable fuel, was to reduce GHG emissions. More recently, certain provinces challenged federal climate legislation through constitutional references in relation to the federal carbon pricing scheme, including the carbon tax and backstop GHG emissions pricing legislation. There were three provincial Court of Appeal decisions. The majority of the Court in both Saskatchewan and Ontario, for slightly different reasons, favoured the constitutionality of the legislation. The majority of the Court of Appeal in Alberta found to the contrary. Ultimately, the decisions were appealed to the Supreme Court of Canada. All of the Appeal Court decisions expressly accepted the serious issue of anthropogenic climate change in Canada, physical risk and the need for immediate action to control climate change risk (*Reference re Greenhouse Gas Pollution Pricing Act, 2019 SKCA 40*; *Reference re Greenhouse Gas Pollution Pricing Act, 2019 ONCA 544*; *Reference re Greenhouse Gas Pollution Pricing Act, 2019 ABCA 283*).

8.6.4 Litigation relating to failure to adapt infrastructure

Litigation is increasingly seen in Canada and elsewhere (Adler, 2018; Gundlach and Klein, 2018; Moran and Mihaly, 2018; Mahony, 2020) relating to failure to adapt infrastructure to increasingly foreseeable physical risks and impacts of climate change. Flood-related lawsuits against Canadian provinces, municipalities, watershed managers (e.g., conservation authorities) and others are on the rise (Moudrak and Feltmate, 2019a). These include class actions brought against the cities of Thunder Bay and Stratford, ON, alleging negligence in connection with the design, construction, inspection, maintenance and repair of storm water and sewage facilities, and against the Governments of Manitoba and Ontario, alleging negligence and nuisance in connection with water control structure management (Moudrak and Feltmate, 2019a). Class action and individual lawsuits were also brought in Quebec against several municipalities and the Government of Quebec, alleging negligence in connection with the 2017 and 2019 spring floods in the province (*Richard Lauzon c. Municipalité Régionale du Comté (MRC) de Deux-Montagnes, Ville de Sainte-Marthe-sur-le-lac, Procureur Général du Québec*).

Lawsuits of these types in Canada and elsewhere are drawing increasingly on advancements in climate change attribution science (Burger et al., 2020; Setzer and Vanhala, 2019; Marjanac and Patton, 2018). With the changing climate, more frequent and severe weather events in Canada (Zhang, et al. 2019) could foreseeably stress or damage infrastructure and shorten its anticipated useful life. An Ontario Court, for example, found that the risks of potholes and road washouts were heightened by freeze/thaw cycles and heavy rainfall (Bishop v. Regional Municipality of Durham). Impacts from incremental, slow-onset or chronic climate-related events may do the same. There may also be cascading and cumulative effects. This creates the potential for personal injury, health and property damage. Injured parties who do not have insurance coverage or access to disaster relief or special compensatory funds may bring lawsuits seeking financial compensation (i.e., damages) under common law principles of negligence or nuisance.

In a negligence claim, the plaintiff must establish, among other things, that the defendant owed the injured party a duty of care and committed an act or an omission that breached a reasonable standard of care (i.e., that it should have foreseen the effects of climate change with respect to infrastructure and made appropriate decisions, but did not do so). A duty of care by a government may be established by a statute, and the statute might also create a right to damages for anyone injured. For example, municipal legislation in some provinces establishes a duty of care and a statutory right to damages in connection with the maintenance of roads. If the statute does not create an express duty of care, the context will be examined to see if a prima facie duty of care can be established. If it can, this duty will generally be upheld if the government's decision(s) relating to the infrastructure are operational decisions and not policy decisions, which are protected by the legislative immunity principle (Cooper v. Hobart). The line between policy decisions and operational decisions is not always clear; in common law, however, obligations to maintain infrastructure in a specific manner, to effect repairs or to perform regular inspections may be considered to be operational. In contrast, decisions to build new infrastructure as part of adaptation planning—where social, economic and political factors are at play—will likely be considered as policy decisions. The line between these types of decisions may also be modified by statute (e.g., Crown Liability and Proceedings Act, 2019, SO 2019, c 7, Sch 17). A nuisance claim against a government requires the plaintiff to show that owned or operated infrastructure (e.g., dams and other water-control structures) caused actual physical damage to another party's land, or substantially and unreasonably interfered with the use of that land (Anderson v. Manitoba). If the nuisance affects the public, such as blocking a public highway, it may be termed a public nuisance (Linden and Feldthusen, 2007). In a nuisance claim, it is not relevant whether actions or decisions with respect to the infrastructure are policy or operational.

A government may have a defence against a negligence or nuisance claim if a relevant statute clearly limits or excludes government liability in the circumstances. Some provincial and municipal laws provide such defences. For example, legislation in some provinces provides that a municipality cannot be found liable for nuisance, generally or for specific types of events that could be classified as nuisance (i.e., flooding) (e.g., The Municipal Act, S.O. 2001.c.25, s. 449(1) and the Local Government Act, RSBC 2015, c.1, s. 744). There may also be a "statutory authority" defence if the damage causing the claim is the inevitable consequence of carrying out an undertaking under statutory authority. Ultimately, where a government wishes to limit its liability (and, in the case of a province, that of its municipalities) with respect to common law claims (e.g., overland flooding), it can enact or amend legislation to this effect. For example, the Government of Ontario amended the Municipal Act (Ontario) to exclude liability for nuisance related to the escape of water or sewage from sewage or water works.

The concept of building climate resilience through infrastructure is nevertheless an important pillar of adaptation. Ultimately, litigation risk in this context should be seen as a driver of climate change adaptation.

8.7 Climate litigation against the private sector is a potential risk

While there has been virtually no climate litigation in Canada against private sector companies, Canadian companies are increasingly assessing potential climate litigation risks.

Potential litigation risks for the private sector stem from failing to properly disclose climate change-related risks, failing to adapt infrastructure in light of physical risks and, in some cases, for allegedly contributing to climate change and related damage. Litigation risks of this nature have become well known as a result of litigation in the United States and elsewhere. Litigation, even if unsuccessful against a company, may be extremely costly to the company and its insurers, may have significant reputational implications and could potentially impact the company's access to capital. Boards and senior management responsible for risk management are increasingly considering climate-related litigation as a component of that risk.

8.7.1 Potential for disclosure liability

Publicly traded companies may incur liability under applicable securities laws in relation to the disclosure or non-disclosure of material risks, including climate change-related risks (Canadian Securities Administrators, 2018). These (non-)disclosures may include physical and transition risks, their financial impacts and steps taken to mitigate or adapt to them (Canadian Securities Administrators, 2019).

Canadian securities regulators have a wide variety of powers to prosecute companies, their directors and responsible officers for disclosure offences. Such offences may include breaches of the rules requiring disclosure of material information in continuous disclosure documents (such as management's discussion and analysis, or annual information forms). More broadly, these also include cases where offering documents, financial statements or continuous disclosure documents contain statements that are misleading or untrue, or do not state a fact that is required to be stated or that is necessary to ensure that the statements are not misleading (e.g., Securities Act, R.S.O. 1990, c. S5, as amended, ["OSA"] Part XXII). These statements are judged according to the standard of materiality at the time and in light of the circumstances in which the statements were made. Securities regulators and Canadian courts usually apply the "reasonable investor standard"—information would likely be considered material if a reasonable investor's decision about whether or not to buy, hold or sell securities is likely to be influenced or changed if the information is omitted or misstated (e.g., OSA, Form 51-102 F2 at Part (1) e.).

Issuers and their directors and responsible officers may also be sued by investors for damages under the civil liability provisions of provincial securities laws (e.g., OSA, Part XXIII). This may occur if investors purchase securities in an offering in which the offering document contains a “misrepresentation.” It may also occur where investors buy or sell already issued securities in the secondary market (i.e., through a stock exchange) if, at the time of their purchase or sale, either 1) the company has failed to disclose a “material change” in its business, operations or capital in compliance with securities laws; or 2) its continuous disclosure documents, other documents made generally available to investors (including website disclosures, corporate responsibility, climate resilience or sustainability reports) or public oral statements made on behalf of the company (i.e., by management or directors) contain a “misrepresentation”. A “misrepresentation” is an untrue statement of a “material fact” or an omission to state a “material fact” that is required to be stated or that is necessary to ensure that a statement is not misleading in light of the circumstances in which it was made. Whether a change or a fact is “material” is measured by a “market impact” test: would that change or fact reasonably be expected to have a significant effect on the market price or value of the relevant securities? The answer to the legal question regarding what climate change-related information may be material for a “reasonable investor” or constitute a “material fact” is likely evolving, and will continue to do so as climate change impacts evolve.

As of September 30, 2020, no climate-related disclosure lawsuits had emerged against issuers in Canada, but the possibility of such claims was the subject of academic comment (Sarraf and Williams, 2018; Williams and Routliff, 2017). In their analyses, the authors identified potential types of disclosure claims that might surface in Canada: failure to discuss financially material risks of the transition to low-carbon strategies (included as required by regulatory and societal factors); material misstatements of the value of a company’s assets in light of “stranded assets” (i.e., those too costly to develop or operate) and unburnable carbon; or material misstatements relating to the risks of continued extraction and use of a high-carbon product, such as oil, gas or coal.

Outside of Canada, lawsuits alleging failure to disclose and misstatements have been brought in Australia and the United States. In several lawsuits against Exxon Mobil Corporation in the U.S., for example, it has been alleged that Exxon made material misrepresentations in its continuous disclosure documents about how it managed the risks of climate change in its investments and operations. The first such high-profile case (People of the State of New York v. Exxon Mobil Corporation), which focused on the period 2013–2016, was decided in Exxon’s favour in December 2019. The New York Supreme Court determined, on the specific facts before it, that there was no proof of material misrepresentations (determined with respect to the “reasonable investor” standard under U.S. securities laws, which is similar to that in Canada) and there was no evidence that the impugned disclosure had any market impact. The decision was not appealed. Some actions have been brought in connection with disclosure of physical risk: for example, against electrical utility companies in California and their underwriters. There, investors alleged misrepresentation of the companies’ exposure to wildfires, including the steps taken to improve and maintain infrastructure in light of known climate change conditions and related wildfire risks (York County v. Rambo; Barnes v. Edison International).

8.7.2 Potential for litigation related to failure to adapt infrastructure

For companies, professional firms and individuals that develop, design, build, own, operate, maintain or repair infrastructure, there are climate change-related litigation risks to adapt infrastructure, similar to the risks described earlier in this chapter for government infrastructure owners and operators. The risk of negligence or nuisance litigation against private sector actors is higher, however, than it is for governments, as there is no corresponding immunity principle and there are rarely statutory limitations of liability for the private sector. Infrastructure owners and design professionals are increasingly limiting legal and physical risks to their facilities by planning for impacts of climate change over the lifetime of their facilities, including by conducting climate vulnerability assessments and selecting design features, alternatives, site location and risk reduction measures accordingly (Goldstein et al., 2019; Adler, 2018; Gundlach and Klein, 2018).

8.7.3 Litigation alleging corporate responsibility for climate change

For companies operating in energy or resource sectors, an important trend is the increasing number of lawsuits worldwide against major carbon producers seeking to hold them liable for their alleged responsibility for climate change. This trend began following a study by Richard Heede (2014) that mapped and quantified the cumulative emissions of the 90 largest carbon producers from 1854 to 2010—dubbed the “Carbon Majors”. The study was developed for lawyers seeking to legally establish a causal link between corporate activity and climate change (Setzer and Vanhala, 2019). It was used to launch a seminal case against a major German electricity producer in 2015 (*Lliuya v. RWE AG*), which is ongoing. The cumulative emissions results are updated annually (see Figure 8.6; Climate Accountability Institute, 2019), and researchers are collaborating with Heede to combine this work with extreme weather event attribution science (Ekwurzel, et al. 2017).

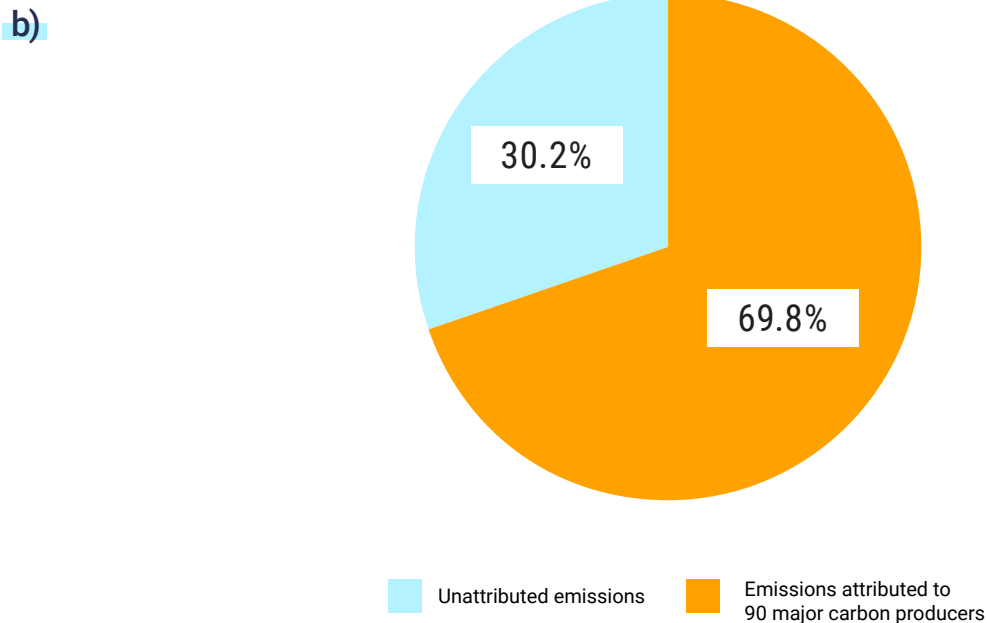
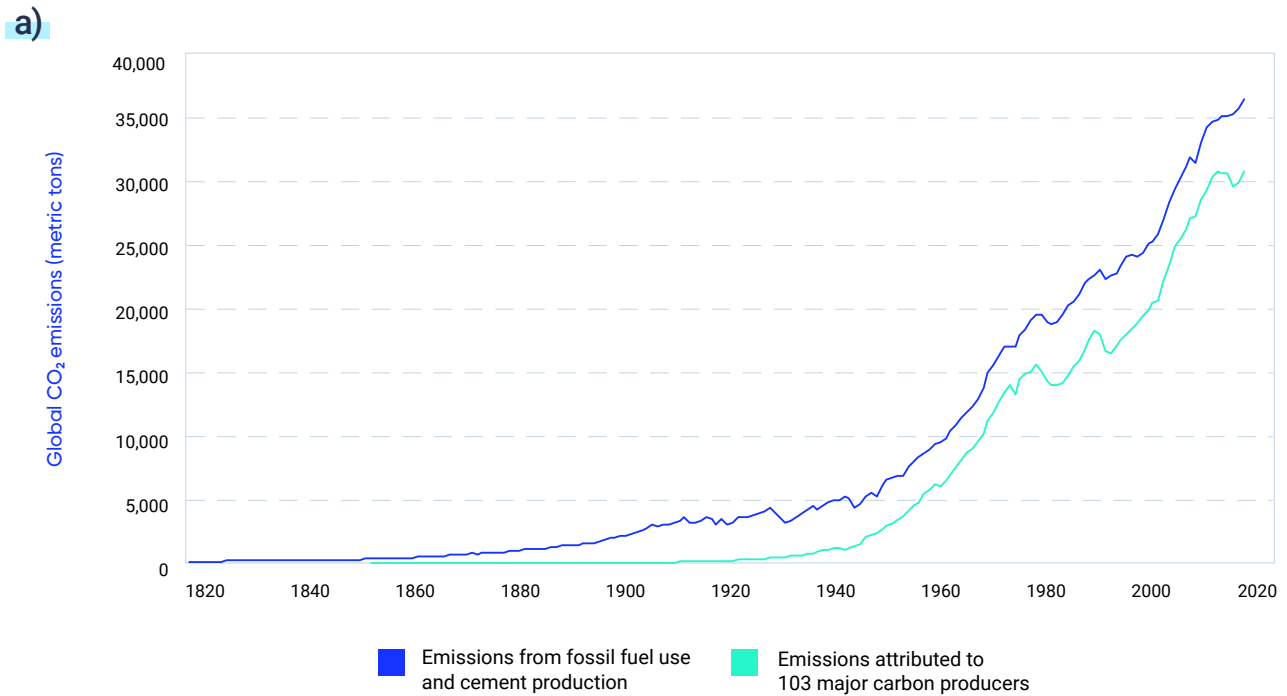


Figure 8.6: a) Annual global CO₂ emissions related to fossil fuel use and cement production for the period 1810–2017 (dark blue) and attributed to 103 major carbon producers (light blue). b) Percentage of global CO₂ emissions for the period 1751–2017 produced by major carbon producers (orange) vs. unattributed emissions (light blue). Source: Adapted from Climate Accountability Institute, 2019.

In the United States, in particular, a significant number of cases were filed in 2017 and 2018 by major cities, counties, one state (Rhode Island) and the largest association of fishermen on the West Coast against a long list of oil, natural gas and coal companies (including Canada's Suncor, Inc.). In 2020, during the period up to September 30, the states of Minnesota, Delaware and Connecticut, the county of Maui, and the cities of Honolulu, Washington, D.C., Hoboken, NJ, and Charleston, SC, all brought similar complaints. In these lawsuits, the plaintiffs are seeking damages to fund adaptation and repairs (i.e., massive infrastructure investments) for dealing with present and future damages from climate change. The plaintiffs have brought various types of claims under U.S. laws, including nuisance (public and private) and negligence claims, which are similar to Canadian laws. In the nuisance claims, climate change is alleged to be the nuisance and GHG emissions are alleged contributions to the nuisance. These U.S. lawsuits are being vigorously defended. Most raise complicated federal and state jurisdictional and procedural issues. The plaintiffs face significant legal issues, including the following: the American political question doctrine (which essentially says that political issues are non-justiciable), proof of causation (i.e., the link between the defendants' behaviour and the alleged harm suffered by the plaintiffs) and standing.

In December 2019, the Philippines Human Rights Commission announced the completion of its well-publicized three-year investigation into whether 47 of the world's largest fossil fuel firms—all Carbon Majors—could be held accountable for violating the rights of its citizens because of the damage caused by climate change. The Commission concluded that these companies played a clear role in anthropogenic climate change and could be held legally liable for its impacts in certain circumstances under Philippines civil law (In Re Greenpeace Southeast Asia and Others).

As of September 30, 2020, there were no Canadian lawsuits alleging corporate responsibility for climate change. Several municipalities in British Columbia had announced in 2019 that they were considering class action litigation against fossil fuel companies (Poggio, 2019), but had not proceeded. The City of Toronto indicated in 2019 that it was exploring litigation strategies. If a corporate responsibility case is brought in Canada, the analysis of the Philippines Human Rights Commission could be of interest to the court. Similarly, if a U.S. case is successful on the basis of legal principles similar to those in Canada, courts in Canada could be influenced by that reasoning and analysis.

8.8 Moving forward

8.8.1 Knowledge gaps

Climate-related disclosures, litigation and finance are important issues in the Canadian discussion about climate change. As of September 2020, a large number of Canadian companies and some municipalities are making climate-related disclosures, but the amount and quality may not meet the needs of stakeholders. A critical knowledge gap for investors in public companies is the lack of disclosure on the financial impact of



climate change on companies and whether their strategies are resilient to climate-related risks. Currently, disclosure of material risks is mandatory for these companies, but there are no mandatory prescriptive requirements for the disclosure of climate-related risks and opportunities. Research could focus on assessing whether investor pressure alone may be insufficient to encourage greater disclosure of these risks and opportunities.

There are a number of gaps related to the financing of climate resilience and the transition to a low-carbon economy. The report of the Expert Panel on Sustainable Finance (2019) outlines a number of these gaps. There is preliminary evidence that some types of “green” finance are effective at encouraging investment in “green” projects, and taxonomies and information services are being developed to support such investments. However, it is still uncertain what combination of financial instruments and institutional supports will be required to significantly increase investments in climate resilience and low-carbon projects. With regard to investments in climate resilience specifically, evidence shows that such projects are often cost-effective, but it is unclear what measures are needed to encourage homeowners, business owners and owners of critical infrastructure to undertake them.

Climate-related litigation is increasingly occurring in Canada. Many important issues have yet to be finally decided. It is important that Canadian decision makers remain aware of the possibility of further climate litigation on climate-related matters, as virtually any legal issue related to climate change is a possible subject for litigation.

8.9 Conclusion

Climate change and the impact of extreme events are important issues for many decision makers in the public and private sector. The public policy conversation is framed around the need to reduce GHG emissions and the need to adapt to minimize the adverse impacts of climate change. The conversation in the private sector is generally framed around managing physical and transitional climate-related risks. This framing of the issue presents climate change as a relevant and urgent concern for a wide range of stakeholders, and may encourage both private and public entities to take additional measures to adapt to climate change.

The recommendations of the TFCFD have emerged as the key framework for disclosure of climate risks. Their adoption by Canadian companies in financial and non-financial sectors, and by governments is growing and the recommendations are widely endorsed by stakeholders. Over time, investors and regulators are expected to apply increasing pressure on companies and governments in Canada to disclose climate-related physical and transition risks, as well as implement other elements of TCFD, a process that will increase information for markets and society about specific adaptation actions that they may take.

There has been a significant increase in the Canadian and international conversation about climate finance. Insurance companies and governments finance most of the recovery and repair costs of physical damage following extreme events. These costs have risen and are projected to continue to rise. Significant funds are also required from public and private investors to support the transition to a climate-resilient and low-carbon

economy. As such, climate-related risks and opportunities are especially relevant for financial institutions. Pension funds, banks, governments and other investors are developing their understanding and management of the risks and opportunities involved in investing in initiatives related to, and affected by, climate change. Furthermore, several obstacles to investing at scale towards a climate-resilient and low-carbon economy need to be addressed, including political, policy and regulatory risks, the lack of a green taxonomy and the lack of accessible decision-relevant data.

Private investors are developing models and other tools to assess and manage climate-related risks and opportunities. This includes physical and transitional risks. The objective is to better manage climate risks as a business issue. These tools can be applied to any industry, but the focus of several current efforts is on supporting decision makers in financial institutions and regulators. Also, industry-specific tools and practices are being developed for major emitters and energy users. Access to relevant data and better organization-specific information about physical risks is expected to encourage greater action to increase resilience to climate extremes.

Investing in climate resilience could be cost-effective, and opportunities exist for governments, businesses and individuals to improve their resilience to physical climate risks. This involves scaling up investments and fostering stronger cooperation to enhance risk information and awareness, risk reduction and prevention, climate-resilient reconstruction, early warning and preparedness, and risk financing and risk transfer (including insurance) measures.

Climate-related legal action in Canada has significantly increased, directed primarily at governments. There are several legal initiatives seeking to force the federal and provincial governments to act on climate change based on alleged constitutional and common law rights. Interest groups and governments themselves are increasingly litigating against governments at various levels regarding policies and decisions in the planning context related to the transition to a climate-resilient and low-carbon economy. Litigation will remain an important tool to effect changes in policies and decisions. Legal action is also increasing against governments in connection with infrastructure failure resulting from severe weather events. In the absence of insurance coverage or disaster recovery funds for those harmed, and where there are no relevant statutory immunity provisions, the number of such claims may increase as severe weather increases.

Legal action is increasingly also being brought against private actors in connection with severe weather events and infrastructure damage. Outside of Canada, many lawsuits have been directed at private organizations alleging a causal connection between their GHG emissions and climate-related harm. Many such cases are ongoing in the United States, and one international proceeding recently found 47 Carbon Majors responsible for the consequences of their emissions. It is possible that similar Canadian lawsuits could emerge. If international trends are any guide, it is also possible that civil liability actions may arise in Canada based on climate-related disclosure issues under provincial securities laws.

Disclosure, the development of sustainable finance and climate litigation have the potential to encourage adaptation to climate change. Disclosure helps businesses and governments to better understand their climate-related risks and opportunities, and to make business decisions that will ultimately support the transition to a climate-resilient and low-carbon economy. Investors can use this information to reward companies and regions that act to reduce their risks and take advantage of opportunities. Adaptation measures can be highly cost-effective in preventing future losses. Both private and public sources of funding



will be required to finance these cost-saving measures. The potential for legal liability for failing to assess and disclose climate change-related risks, for failing to adapt or for mismanaging adaptation are concerns for governments at all levels and for businesses.

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