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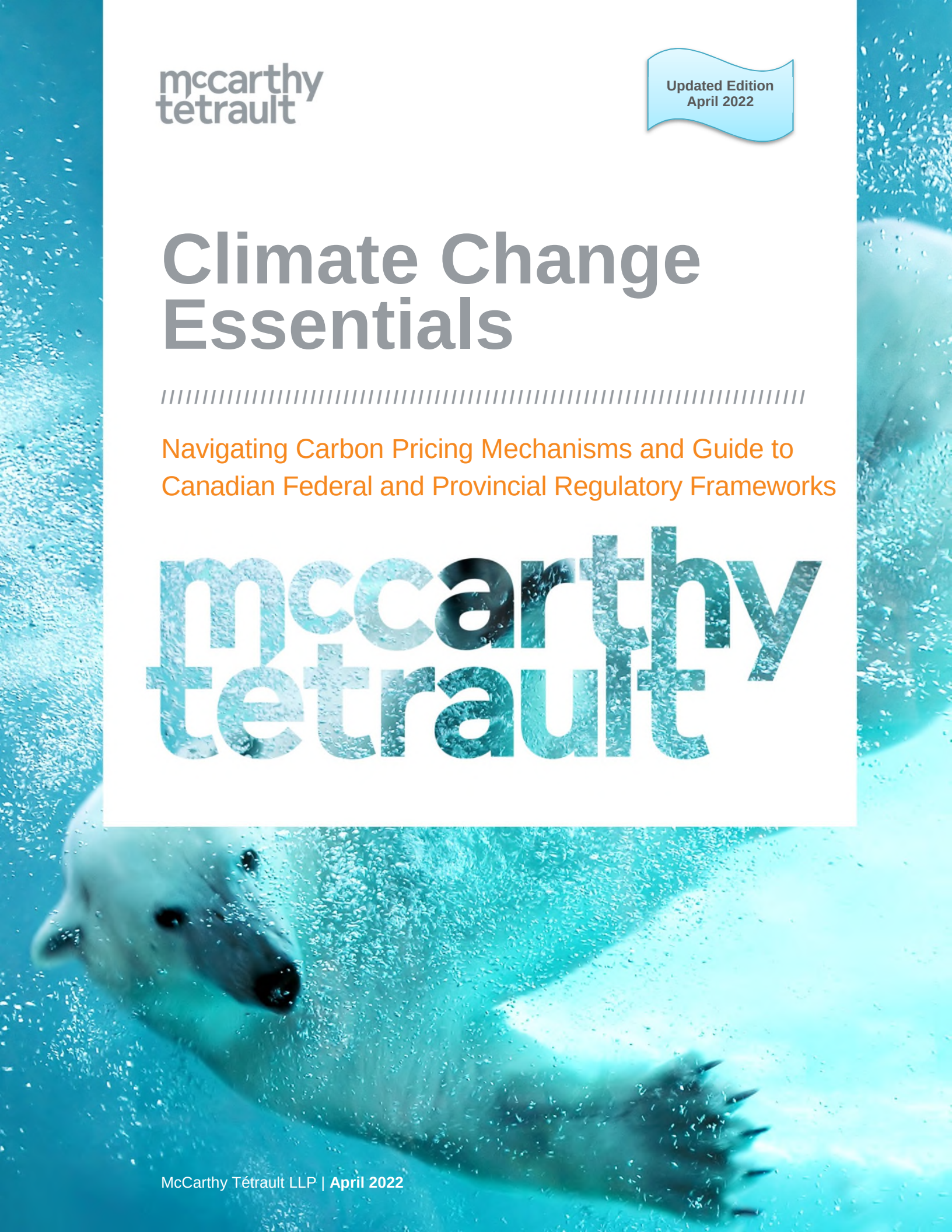
Climate Change Essentials

Navigating Carbon Pricing Mechanisms and Guide to Canadian Federal and Provincial Regulatory Frameworks



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The Climate Imperative

In the February 2022 report from the Intergovernmental Panel on Climate Change (IPCC), the world's scientists advise that in order to avoid mounting loss of life, biodiversity and infrastructure, ambitious and accelerated action to adapt to climate change is needed, along with rapid, deep cuts in greenhouse gas (GHG) emissions. The report also finds that progress on adaptation is uneven and there are increasing gaps between action taken and what is needed to deal with increasing climate risks. Perhaps not surprisingly, these gaps are largest among lower-income populations. The COVID-19 pandemic has exposed vulnerabilities in the economy as governments and industry manage the impacts of lockdowns and changes in consumer behaviour. It has also put a spotlight on issues such as social equity, poverty, and climate change. The pandemic has also highlighted the need for more responsive risk management approaches, and the importance of quantifying climate change-related risks. As the global economy recovers from the pandemic, governments at all levels are looking to "build back better" by investing in green infrastructure and emission reduction initiatives, as well as implementing regulations that incentivize activities that support the transition to a lower-carbon future.

The Global Climate Policy Landscape

Over the years, climate change policy has experienced its ebbs and flows. Climate change arrived on the international stage at the Rio Earth Summit in 1992, where 154 countries signed the United Nations Framework Convention on Climate Change (UNFCCC) to stabilize atmospheric concentrations of GHG emissions at a level to prevent "dangerous anthropogenic interference with the climate system". The UNFCCC entered into force on March 21, 1994 and 197 countries have ratified the UNFCCC to date. Subsequent international negotiations led to the Kyoto Protocol, an international treaty which extends the UNFCCC and commits its signatories to reduce GHG emissions. The Kyoto Protocol was adopted in December 1997 and came into force on February 16, 2005. There are currently 192 parties to the Kyoto Protocol. While Canada withdrew from the Kyoto Protocol effective December 2012, a federal election in October 2015 brought into power a Liberal government that took steps not only to re-engage in international efforts to implement a new global climate change treaty for the post-Kyoto era, but also sought to take meaningful steps to reduce GHG emissions at the domestic level. Following the most recent federal election in September 2021, a minority government led by the Liberals continues to focus on efforts to reduce GHG emissions across the Canadian economy.

Following the anti-climactic outcome of the 15th session of the Conference of the Parties to the UNFCCC (COP 15) which produced the non-legally binding Copenhagen Accord in 2009, there was cautious expectation of a legally binding successor agreement – or at least certain legally binding components of an agreement – to the Kyoto Protocol as countries convened in Paris for the latest round of international climate change talks held from November 30 to December 11, 2015 (COP 21). After marathon negotiations and compromises on all sides, COP 21 reached a successful conclusion on December 12, 2015 with the adoption of the Paris Agreement by 195 member nations of the UNFCCC. The Paris Agreement was opened for signature on April 22, 2016 at the United Nations (UN) Headquarters in New York and achieved the threshold for entry

into force on October 5, 2016; the Paris Agreement came into force on November 4, 2016. As of February 7, 2020, 195 countries had signed the Paris Agreement, 191 of which had also deposited instruments of ratification (accounting for 97.18% of the world's total GHG emissions). Canada ratified the Paris Agreement on October 5, 2016 and has committed to reducing its GHG emissions by 40-45% below 2005 levels by 2030.

Paris Agreement – A Quick Overview

The Paris Agreement articulates a series of global goals to enhance climate adaptation efforts and capacity-building, as well as strengthen resilience and reduce vulnerability to climate change. The Paris Agreement also establishes a long-term emissions goal of peaking global GHG emissions as soon as possible, with a view to achieving net zero emissions – i.e. a balance between anthropogenic emissions by sources and removals of GHG emissions by sinks – in the second half of this century. Under the Paris Agreement, countries have also committed to an ambitious goal of **holding** the increase in global average temperature to **well below 2°C** above pre-industrial levels, while they **pursue efforts** to limit the temperature increase to **1.5°C** above pre-industrial levels. Prior to the Paris Agreement, limiting the rise in global temperatures to no more than **two degrees Celsius** (2°C) was the *de facto* target for global climate change policy. 2°C is the level scientists of the Intergovernmental Panel on Climate Change (IPCC) say is needed to avoid the potentially adverse consequences of climate change. The two degree limit was formally enshrined into international climate policy in the 2010 Cancun Agreements, which commits governments to "hold the increase in global average temperature below 2°C above pre-industrial levels". With the British Met Office reporting that global temperatures for 2022 are forecast to be between 0.97°C and 1.21°C above the pre-industrial 1850-1900 average – the eighth year in succession when temperatures have exceeded or been close to 1.0°C above pre-industrial levels – there is increasing recognition that the window is quickly closing for collective action on climate change.

Since national pledges to reduce emissions are voluntary, the success of the pact in achieving meaningful GHG emission reductions will likely turn on the willingness of future governments to take action as well as global peer pressure. Ahead of COP 26 in Glasgow, countries were invited to submit new or updated Nationally Determined Contributions (NDCs), which set out what climate actions they intend to take to meet the goals of the Paris Agreement. Every country is expected to update its NDC every five years. As part of the 2015 process, 165 NDCs were submitted to the UNFCCC, representing 192 countries and covering approximately 96.4% of their emissions. As of April 2022, 157 countries (representing 83.2% of global emissions) had submitted a new or updated NDC. There is wide variation among national plans in terms of scope and ambition. Member nations are required to put forward a plan, but as noted above, the pledges by countries to reduce emissions are voluntary and there are no legal requirements around how – or how much – countries should reduce emissions. That said, negotiators have built certain legally binding commitments into the Paris Agreement, including the requirement for countries to update their NDCs every five years (starting in 2020) and to undertake a global stocktake in 2023 (and every five years thereafter) to assess their collective progress toward achieving the goals of the Paris Agreement. Further, they will be required to monitor and report on their national GHG inventories based on standardized requirements. Developed countries have been called on to mobilize financial resources to assist developing countries with respect to both mitigation and adaptation,

and other parties are encouraged to provide or continue to provide such support voluntarily. In addition to NDCs, 65 countries have pledged to reach net-zero emissions by mid-century. Taking into account both net-zero targets and the NDCs (as well as additional 2030 pledges from China and South Korea), the World Resources Institute has found that warming could be limited to 2.1°C.

The adoption of the Paris Agreement marked the start of a renaissance period for climate change policy, one that represents a global paradigm shift towards a lower-carbon economy. The onset of the COVID-19 pandemic revealed vulnerabilities in the economy as well as gaps in our social fabric. As the global economy emerges from its pandemic slumber, the need to address climate change has taken on greater urgency because there is growing recognition that many of the sectors and populations vulnerable to the pandemic will also likely be disproportionately impacted by climate change. In its 2022 Global Risks Report, respondents to the World Economic Forum's (WEF) Global Risks Perception Survey identified "climate action failure" as the number one long-term threat to the world, and the risk with potentially the most severe impacts over the next decade. That said, the lessons learned during the pandemic offer an opportunity to not only strengthen our resilience, but to better prepare for and mitigate the impacts of the global challenges we face. In its report, the WEF notes that any critical risks demand a whole-of-society response. This involves not only the engagement of different sectors leading to multiple individual actions, but also more effective interaction between different sectors in ways that are accretive to wellbeing and prosperity. The WEF concludes that the collaborative exploration of risk and resilience issues – before, during and after a crisis – would benefit from stronger, more flexible communication channels and higher levels of trust.

At COP 24, which was held in Katowice, Poland in November 2018, UNFCCC parties produced the Katowice Rulebook, which sets out the details for implementing the Paris Agreement. As the host of COP 24, Poland sought to highlight the issue of a "just transition" for workers away from fossil fuel jobs to high quality jobs that support low GHG emission and climate resilient development. To that end, more than 50 countries – including Canada – signed the Solidarity and Just Transition Silesia Declaration.

COP 25 was held in Madrid in December 2019 against a backdrop of growing civil unrest with the rise of movements such as Extinction Rebellion and the Fridays for Future school strike for climate (*Skolstrejk för klimatet* in its original Swedish), which began in earnest in August 2018 when then 15-year old Greta Thunberg staged a single person protest outside the Swedish parliament. The "Greta effect" has resulted in a series of significant climate strikes around the world, as well as changes to consumer behaviour, including efforts to fly less and to take less carbon intensive forms of transportation. While COP 25 had an important role as the stepping stone for more ambitious emission reduction comments to be presented by governments at COP 26, negotiations at COP 25 were fractious and ultimately disappointing in terms of the lack of progress made.

Many urgent decisions were deferred to COP 26, which was held in Glasgow, Scotland in November 2021. At the close of COP 26, nations adopted the Glasgow Climate Pact, which calls on countries to "revisit and strengthen" their 2030 targets by the end of 2022 to align them with the Paris Agreement's temperature goals. In addition, the pact asks countries to consider taking further action to curb potent GHGs (such as methane) and includes language emphasizing the

need to "phase down unabated coal" and "phase-out fossil fuel subsidies." While many of the rules underpinning the implementation of the Paris Agreement were adopted in 2018 with the Katowice Rulebook, decisions on several outstanding issues had remained on the table until they were resolved at COP 26. These issues included:

- **Global Carbon Market Rules**. After five years of negotiations, countries agreed on the rules for the global carbon market under the Paris Agreement's Article 6. Negotiators came to an agreement on avoiding double-counting and agreed that 5% of proceeds must go toward funding adaptation under traditional market mechanisms (Article 6.4).

- **Use of Common Timeframes**. At COP 26, countries were encouraged to use common timeframes for their national climate commitments. This means that new NDCs put forward in 2025 should have an end-date of 2035; in 2030 commitments should have a 2040 end-date, etc. It is hoped that the alignment of NDC targets dates around five-year cycles will help spur near-term action and ensure that countries take action over the same time period, while keeping pace with the Paris Agreement's five-year cycle to strengthen NDCs.

- **Increasing Accountability**. At COP 26, countries agreed to submit information about their emissions and financial, technological and capacity-building support using a common and standardized set of formats and tables. This will ensure that reporting is more transparent, consistent and comparable.

A group of 46 countries, including the Canada, UK and New Zealand made commitments to phase out domestic coal, while 29 countries including the Canada, UK, Germany and Italy committed to end new direct international public support for unabated fossil fuels by the end of 2022 and redirect this investment to clean energy. COP 27 will be convened in Sharm el-Sheikh, Egypt in November 2022.

In Canada, federal and provincial efforts are well underway to implement climate change policy initiatives under the Pan-Canadian Framework on Clean Growth and Climate Change (2016), A Healthy Environment and a Healthy Economy (December 2020), and most recently, Canada's 2030 Emissions Reduction Plan (March 2022). Canada has expressed its support for more ambitious climate action by endorsing the global goal of keeping rising average temperatures to within 1.5°C above pre-industrial levels; how this ambition is translating into federal, provincial and municipal climate action continues to evolve. As Canada works towards its 2030 target, we will continue to see the implementation of a broad range of climate change policy initiatives by all levels of government, as well as climate-related initiatives by businesses and investors.

What's New

The climate change and energy policy landscape both domestically and globally continues to evolve. Recent developments in Canada include:

- **Canada's Latest GHG Emissions Profile**: According to Canada's most recent National Inventory Report, total national greenhouse emissions were 730 megatonnes of carbon

dioxide equivalent (Mt CO_2 eq) in 2019. The oil and gas and transportation sectors continue to be Canada's largest sectoral emissions sources, with buildings, heavy industry, and agriculture following closely behind. Canada's 2019 emissions were approximately 9 Mt lower than in 2005. Since 2005, emissions in the oil and gas and transportation sectors have increased by 20% and 16%, respectively. While decreases in electricity (48%), heavy industry (12%) and waste and others (10%) have offset these increases, Canada's overall emissions have increased by more than 20% since 1990.

- **Federal Government Releases Climate Change Plan to Achieve 2030 Target**: In March 2022, the federal government introduced Canada's 2030 Emissions Reduction Plan (2030 Plan), which provides a roadmap to achieve Canada's 2030 emissions reduction target of 40-45% emissions reductions below 2005 levels. Canada's updated target for 2030 equates to approximately 406 to 443 Mt (as noted above, Canada's total GHG emissions in 2019 were 730 Mt). The 2030 Plan builds upon the actions outlined in the federal government's climate change plans: A Healthy Environment and a Healthy Economy (December 2020) and the Pan-Canadian Framework on Clean Growth and Climate Change (2016). As part of the plan, Canada's first National Adaptation Strategy will also be developed. The 2030 Plan includes $9.1 billion in new investments, and reflects economy-wide measures such as carbon pricing and clean fuels, while also targeting sector-specific actions in a range of industries, from buildings and vehicles, to energy and agriculture. The 2030 Plan is the first Emissions Reduction Plan issued under the *Canadian Net-Zero Emissions Accountability Act*. Progress under the plan will be reviewed in reports produced in 2023, 2025, and 2027. The federal government has indicated that additional targets and plans will be developed for 2035 through to 2050.

- **Continuing Increase to Carbon Price from 2023 to 2030**: As part of its Healthy Environment and a Healthy Economy Plan released in December 2020, the federal government has announced that the carbon price will be increased annually at a rate of $15 per tonne starting in 2023 until it reaches $170 per tonne of CO_2e in 2030. The federal government's approach to carbon pricing received a boost following the March 25, 2021 decision of the Supreme Court of Canada (SCC), which upheld the constitutionality of the federal *Greenhouse Gas Pollution Pricing Act* (GGPPA). The SCC's review arose from the appeals of three provincial court decisions (Saskatchewan, Ontario and Alberta), which all considered whether the federal government has the authority to impose the regime established under the GGPPA. A 6-3 majority of the SCC held that the GGPPA is constitutional and that Parliament has jurisdiction to enact it as a matter of national concern under its constitutional Peace, Order and Good Government power. The SCC decision brings certainty to the carbon pricing regime in Canada, and allows the federal government to continue implementing its climate change strategy.

- **Canada Announces Enhanced Emissions Reduction Target for 2030**: In July 2021, the federal Minister of Environment and Climate Change formally submitted Canada's enhanced NDC to the United Nations under the Paris Agreement, committing Canada to cut its GHG emissions by 40-45% below 2005 levels by 2030. Canada's NDC submission, Canada's Climate Actions for a Healthy Environment and a Healthy Economy, outlines a

series of investments, regulations and measures that the federal government is taking in pursuit of its 2030 target.

- **Canada Formalizes its Goal of Net-Zero Emissions by 2050**: In June 2021, the federal government formalized its commitment to achieve net-zero emissions by 2050 when it passed the *Canadian Net-Zero Emissions Accountability Act*. The Act legally binds the federal government to a process to achieve net-zero emissions by 2050. In addition, the legislation:

    - sets rolling five-year emission reduction targets (starting in 2030), and requires plans to reach each target and report on progress;

    - enshrines greater accountability and public transparency into Canada's plan for meeting net-zero emissions by 2050 by providing for independent third-party review by the Commissioner of the Environment and Sustainable Development;

    - requires the federal government to publish an annual report describing how departments and federal Crown corporations are considering the financial risks and opportunities of climate change in their decision-making; and

    - establishes the Net-Zero Advisory Body to provide independent advice to the federal government on the best pathway to reach its targets.

- **Canada to Require Climate Disclosure from Banks and Insurers from 2024**: In its 2022 budget released in April 2022, the federal government confirmed plans to phase-in mandatory Task Force on Climate-related Financial Disclosures (TCFD) reporting for federally regulated banks and insurers from 2024. The Office of the Superintendent of Financial Institutions (OSFI) will consult federally regulated financial institutions on climate disclosure guidelines in 2022 and financial institutions will be expected to collect and assess information on climate risks and emissions from their clients. For federally regulated pension plans, the federal government also indicated that it will move forward with requirements for disclosure of ESG considerations, including climate-related risks.

- **CSA Proposes Rules for Mandatory Disclosure of Climate-related Matters**: In October 2021, the Canadian Securities Administrators (CSA) published proposed National Instrument 51-107 Disclosure of Climate-related Matters (NI 51-107) for public consultation. The consultation period ended on February 16, 2022 and the CSA is looking to implement NI 51-107 by December 31, 2022. The primary objectives of the proposed regulation are to provide clarity to issuers regarding climate-related disclosure, to promote consistency, and to allow issuers to compare themselves. The proposed disclosure requirements are based on the four key pillars drawn from the TCFD recommendations (i.e. governance, strategy, risk management, and metrics and targets). In March 2022, the Canada Climate Law Initiative (CCLI) released a report summarizing the 131 submissions made to the CSA on proposed NI 51-107. CCLI found that the submissions indicate strong support for strengthening Canadian securities law to require more effective governance of climate-related financial risks.

- **Federal Government Introduces Draft Regulations for Clean Fuel Standard**: In December 2020, Environment & Climate Change Canada published the proposed *Clean Fuel Regulations* (CFR), which seek to achieve 30 million tonnes of annual reductions in GHG emissions by 2030. The proposed CFR will require liquid fossil fuel primary suppliers (i.e. producers and importers) to reduce the carbon intensity (CI) of the liquid fossil fuels they produce in, and import into, Canada from 2016 CI levels by 2.4 gCO_2e/MJ in 2022, increasing to 12 gCO_2e/MJ in 2030 at a rate of 1.2 gCO_2e/MJ per year. Reduction requirements for the years after 2030 would be held constant at 12 gCO_2e/MJ, subject to a review of the regulations and future amendments. The proposed CFR would also establish a credit market whereby the annual CI reduction requirement could be met via three main categories of credit-creating actions: (1) actions that reduce the CI of the fossil fuel throughout its lifecycle, (2) supplying low-carbon fuels, and (3) specified end-use fuel switching in transportation. Parties that are not fossil fuel primary suppliers (e.g. low-carbon fuel producers and importers) will be able to participate in the credit market as voluntary credit creators by completing certain actions. In addition, the proposed CFR would retain the minimum volumetric requirements (at least 5% low CI fuel content in gasoline and 2% low CI fuel content in diesel fuel and light fuel oil) currently set out in the federal *Renewable Fuels Regulations* (RFR) and the RFR would be repealed. Final regulations are expected to be released in 2022, with the coming into force of regulatory requirements on January 1, 2023.

- **BC Releases CleanBC Roadmap to 2030**: The BC government released its updated climate change plan in October 2021. The CleanBC Roadmap to 2030 builds on the CleanBC plan released in 2018, and sets out policy plans to help BC achieve the province's emission reduction target for 2030 and to reach net-zero by 2050. The CleanBC Roadmap to 2030 includes a series of actions across a number of pathways, including increases to carbon pricing, requirements for new industry projects to have plans to achieve BC's sectoral targets and net zero by 2050, measures to reduce industrial methane emissions, a review of the oil and gas royalty system to ensure it aligns with BC's climate goals, requirements to make all new buildings zero-carbon by 2030, targets for adopting zero-emission vehicles, increased clean fuel and energy efficiency requirements; and support for innovation in areas like clean hydrogen, the forest-based bio-economy and negative emissions technology.

- **BC Releases Hydrogen Strategy**: In July 2021, BC became the first province in Canada to release a comprehensive hydrogen strategy. Part of the CleanBC plan, the BC Hydrogen Strategy includes 63 actions for government, industry and innovators to undertake during the short term (2020-25), medium term (2025-30) and long term (2030 and beyond). Under the BC Hydrogen Strategy, immediate priorities include scaling up production of renewable hydrogen, establishing regional hydrogen hubs, and deploying medium- and heavy-duty fuel-cell vehicles. The Province is supporting the BC Hydrogen Strategy with further investments announced as part of Budget 2021, including $10 million over three years to develop policy on reducing the carbon intensity of fuel and advancing the hydrogen economy. In addition, BC Hydro recently introduced a discounted electricity rate for renewable hydrogen production to attract new investment in clean industry.

- **BC Sets Sectoral Greenhouse Gas Emission Reduction Targets for Industry**: In March 2021, BC set sectoral GHG targets as part of its CleanBC plan. Sectoral targets for 2030 have been established for the following sectors (expressed as a percentage reduction from 2007 sector emissions): (i) transportation – 27 to 32%; (ii) industry – 38 to 43%; (iii) oil and gas – 33 to 38%; and (iv) buildings and communities – 59 to 64%.
- **Ontario Transitions to Emissions Performance Standards:** The Ontario government created the Ontario Emission Performance Standards (EPS) in 2019 as an alternative to the federal government's output based pricing system (OBPS) for industrial emitters. Both the EPS and OBPS programs regulate emissions from industrial facilities by setting industry-specific emission standards for regulated facilities. If a regulated facility exceeds its baseline emissions limit, it will have to pay a carbon price for the emissions output that is in excess. In September 2021, the federal and Ontario governments finalized their agreement to have the EPS apply in Ontario effective January 1, 2022 and to remove the application of the federal OBPS on the same date. The emissions performance standards, and thus the emissions limits for regulated facilities, are expected to become more stringent over time.

Recent global developments include:

- **SEC Proposes Climate Change Disclosure Rules**: On March 21, 2022, the U.S. Securities and Exchange Commission (SEC) proposed climate change disclosure rules for both U.S. public companies and foreign private issuers. The SEC posted a Proposing Release for public consultation and a Fact Sheet summarizing the key provisions. The disclosure requirements are primarily prescriptive in nature and, in many respects, are derived from the TCFD recommendations and the Greenhouse Gas Protocol.
- **China Launches World's Largest Carbon Market**: In July 2021, China officially launched its emissions trading system (ETS), which is now the largest carbon market in the world by volume, covering more than four billion tonnes of CO_2e with 2,225 power plants participating (which accounts for about 40% of China's national carbon emissions). China's ETS, which operates on the trading platform run by the Shanghai Environment and Energy Exchange, aims to support the country's key targets of peaking carbon emissions before 2030 and achieving carbon neutrality by 2060. The allocation of carbon emission allowances under the ETS is based on carbon intensity (i.e. the amount of emissions per unit of power generation) rather than absolute limits. The ETS debuted with a reported opening price of CNY 48 (USD $7.41) per tonne for its carbon emission allowances (CEAs). The first trading day concluded with the closing price of CNY 51.23 (USD $7.89) per tonne, and the total trading volume reached 4.1 million tonnes at CNY 210 million (USD $22.12 million). Currently, China's ETS only covers the power sector. China intends to expand the ETS to cover eight high-emission industries, including petrochemicals, chemicals, building materials, non-ferrous metals, papermaking, steel, power generation and aviation. However, the timeline for expansion has not yet been announced. Financial institutions or individual investors are not currently permitted to participate in the ETS, but it is expected that institutional investors will be included once the trading mechanism matures.

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Purpose of this Guide

This guide provides an overview of key climate change issues, focusing on the market mechanisms for addressing climate change as well as the context for climate change concepts such as the global carbon budget and the social cost of carbon. In addition, an overview of Canadian federal, provincial and territorial climate policies, and regional climate change initiatives is provided. While a discussion of municipal climate change initiatives, climate change mitigation and adaptation plans, air quality regulations, and provincial renewable energy policies and incentives is outside the scope of this guide, such initiatives and policies play a key role in the fight against climate change.

Climate Change – Demystifying the Terminology

While there are varying definitions in use, the term "climate change" generally refers to the large-scale, long-term shift in the planet's weather patterns or average temperatures. Environment and Climate Change Canada describes climate change in the following terms: "*Climate change is a long-term shift in weather conditions identified by changes in temperature, precipitation, winds, and other indicators. Climate change can involve both changes in average conditions and changes in variability, including, for example, extreme events.*" The National Aeronautics and Space Administration (NASA) distinguishes between climate change and "global warming", which refers to the upward temperature trend across the entire earth since the early 20th century, most notably since the late 1970s, due to the increase in fossil fuel emissions since the industrial revolution. While global warming is causing climate patterns to change, it represents only one aspect of climate change.

Greenhouse gases (GHG) are naturally occurring gases in the earth's atmosphere that trap some of the sun's heat and prevent it from escaping into space, thus insulating the earth. GHG include water vapour, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Each of these gases can remain in the atmosphere for different amounts of time, from a few years to thousands of years.

Canada's diverse geography means that climate impacts will vary from region to region. In its 2014 report, Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation, Natural Resources Canada notes that the impacts of a changing climate are already noticeable throughout Canada, especially in the North. Ice is breaking up on most rivers and lakes earlier in the spring and glaciers and polar sea ice are shrinking. Other changes in climate are expected, including the amount and distribution of rain, snow, and ice and the risk of extreme weather events such as heat waves, heavy rainfalls and related flooding, dry spells and/or droughts, and forest fires. Since Canada is a maritime nation with eight of its ten provinces and all three territories bordering on ocean waters, many regions of Canada will also

A phrase by any other name…

In scientific circles such as the IPCC, **climate change** refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in UNFCC circles, where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

Understanding Global Warming Potential

Since different GHG have different effects on global warming, the concept of a **Global Warming Potential** (GWP) was developed to allow comparisons of the impacts of different gases. GWP is a measure of how much energy the emissions of one tonne of a gas will absorb over a given period of time (usually 100 years), relative to the emissions of one tonne of carbon dioxide – hence the term carbon dioxide equivalent, or CO_2e. The larger the GWP, the more that a given gas warms the earth compared to carbon dioxide over that time period. GWP provides a common unit of measure, which allows policymakers to estimate emissions and to compare emission reduction opportunities across sectors.

be affected by changing ocean environments, including changes in average and extreme sea level, wave regimes, and ice conditions.

Climate Mitigation vs. Climate Adaptation

There are two main approaches to managing climate change: **mitigation** and **adaptation**. Climate change mitigation involves designing and implementing methods to reduce GHG emissions, such as energy conservation. Climate change adaptation involves taking action to minimize the adverse impacts and maximize potential benefits from a changing climate. Adaptation measures acknowledge that changes are inevitable and that planning and decision making process must adapt accordingly.

The Global Carbon Budget

One of the recent contributions of the IPCC to the climate lexicon is the concept of a global "carbon budget". The concept of a carbon budget was first articulated in the IPCC's 2013 Fifth Assessment Report, which addressed the physical basis of climate change. Essentially, the carbon budget represents the amount of carbon dioxide emissions the world can emit while still having a likely chance of limiting global temperature rise to 1.5°C above pre-industrial levels. The global carbon budget is an important number that is used by policy makers, but it should be acknowledged that there are different approaches to calculating it. Based on the 2021 IPCC AR6 Report, the residual carbon budget to remain within 1.5°C of global warming (with 66% probability) is 400 billion tonnes CO_2 from the start of 2020. This means that for an average country, its share of the global carbon budget will run out in 9 years. For a high polluting county (such as the UK), its share of the carbon budget will run out in 3 years.

The concept of the **two degree** threshold first emerged in the 1970s, when Professor William Nordhaus suggested that warming of more than two degrees would push the climate beyond the limits that humans were familiar with.

While global CO2 emissions declined by 5.8% in 2020 (almost 2 gigatonnes of carbon (Gt CO_2)) as a result of the COVID-19 pandemic, the International Energy Agency found that global energy-related carbon emissions rose by 6% in 2021 to 36.3 billion tonnes – their highest ever level – as the world economy rebounded from the pandemic and relied heavily on coal to power that growth. The global economic recovery from the COVID-19 crisis has not been the sustainable recovery that the IEA called for at the onset of the pandemic in 2020. However, the IEA's Sustainable Recovery Tracker has shown that as of October 2021, US $470 billion had been earmarked for sustainable measures within recovery packages through 2030. While measures taken so far could mobilize approximately US $400 billion a year in clean energy and sustainable investments, this would only represent 40% of the investment needed in the IEA's Sustainable Recovery Plan, which is aligned with a pathway towards reaching net zero emissions by 2050 globally.

Overview of Carbon Pricing Market Mechanisms

Carbon pricing is increasingly seen as the key mechanism by which meaningful GHG emission reductions can be achieved. As a result, there has been growing pressure on governments to account for the societal costs of climate change and put a price on carbon. A price on carbon looks to capture what are referred to as the external costs of carbon emissions, i.e. costs that the public pays for indirectly, such as damage to crops and damage to property as a result of flooding. By placing a monetary value on carbon, governments, businesses and individuals will have an incentive to change their behaviour to less carbon intensive alternatives.

While governments have traditionally relied on command-and-control regulations or voluntary actions to tackle environmental issues, there has been growing acknowledgement that these traditional policy approaches are no longer adequate to deal with complex environmental issues, such as climate change, where multiple sources of pollution and multi-sector industrial processes that are integral to economic activity are involved. With so many competing economic and environmental interests, policy makers are looking outside the traditional policy tool box to take on the climate change challenge. Since market instruments are perceived as providing more cost efficient and flexible compliance mechanisms, governments are now looking to the market for solutions. In addition to giving an economic signal to emitters, a carbon price can also stimulate investments in clean technology.

There are two main types of carbon pricing mechanisms available to policymakers: emissions trading systems (ETS) and carbon taxes. Each of these is discussed in further detail below. The key differences between the mechanisms are that with an ETS, the quantity of emission reductions is known, but the price is uncertain. With a carbon tax, the price is known, however the quantity of emissions reductions is uncertain. A tax requires decisions on the scope and rate of the tax, while within a trading system, a firm can acquire or bank emission allowances over multiple years depending on the program – emissions trading offers a broader range of compliance options, thus increasing flexibility for participants and potentially lowering compliance costs. Both carbon pricing mechanisms can generate revenue that can be used to lower other taxes or invest in “green” initiatives. Both mechanisms also have related monitoring, reporting, verification and compliance obligations, and both need special provisions to minimize the effects on certain energy intensive, trade exposed industries. The choice of the instrument will depend on each jurisdiction’s national and economic circumstances. There are also more indirect carbon pricing tools, such as fuel taxes, the elimination of fossil fuel subsidies, and regulations that incorporate a “social cost of carbon” (discussed in further detail below).

Emissions Trading Systems

Emissions trading is a market-based approach used to manage GHG emissions by providing economic incentives for participants to reduce emissions. While emissions trading systems tend to be complex, the economic concept behind it is straightforward – since climate change is a shared global burden and the environmental impacts of reducing emissions is the same wherever the reductions take place, it makes economic sense to reduce emissions where the cost is lowest. As a result, an emissions trading system provides regulated entities with greater flexibility in

how they can comply with their emission reduction obligations, thereby reducing the overall costs of compliance.

Under an ETS, the government or another central authority sets an annual limit or cap on the amount of GHG emissions that can be emitted by certain industries. Regulated entities are then required to hold a number of emissions allowances equivalent to their emissions. Regulated entities that reduce their GHG emissions below their target will require fewer allowances and can sell any surplus allowances to generate revenue. Regulated entities that are unable to reduce their emissions can purchase allowances to comply with their target. By creating demand and supply for emissions allowances, an ETS establishes a market price for GHG emissions. In order to achieve absolute reductions in GHG emissions, the limit or cap is gradually lowered over time.

An **emissions allowance** is issued by a governmental or other central authority and represents the right to emit a specific volume of carbon, typically one tonne of CO_2e. Emission allowances are also commonly known as emission credits or permits.

For added compliance flexibility, some emissions trading systems may allow for the use of emission offset credits. Emission offset credits (discussed in further detail below) are generated by GHG-reducing projects in sectors that are not subject to the emissions trading system.

Carbon Tax

A carbon tax puts a price on each tonne of GHG emissions generated from the combustion of fossil fuels. The idea is that over time, the carbon price will elicit a market response from all sectors of the economy, i.e. consumers and businesses will choose less carbon intensive alternatives, thus resulting in reduced emissions. The design and implementation of carbon taxes varies widely across jurisdictions. Design aspects such as the scope of coverage, point of application, and tax rate will depend on the jurisdiction's energy mix, composition of its economy, existing tax burdens, existence of complementary environmental policies, and political considerations. With respect to scope, some jurisdictions have focused on a narrow category of energy users and large emitters, while others such as British Columbia (BC) have adopted a broader scope where the carbon tax covers GHG emissions from the combustion of all fossil fuels. According to the Institute for European Environmental Policy, there are currently no schemes that cover all GHG emissions in a given jurisdiction.

Emission Offsets 101

An emission offset, also known as a carbon offset, is a market-based tool used by individuals, businesses, governmental and non-governmental organizations to compensate their "carbon footprint", which represents the amount of GHG emissions emitted as a result of their activities. Emission offsets are usually employed after efforts have been made to reduce emissions and further tools are needed to bring one's emissions to a net zero position, which is referred to as becoming "carbon neutral". The basic

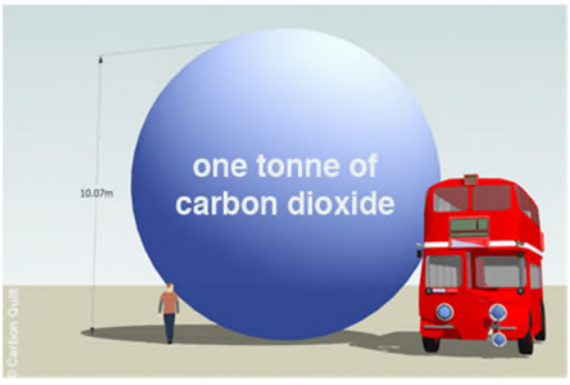
FUN FACT: The phrase **carbon footprint** was derived from the term **ecological footprint**, which was first coined by Professor William Rees and Mathis Wackernagel at the University of British Columbia in 1992. In his work, Rees described the balance that exists between what people take and use from the environment versus the availability of nature's resources to continue to provide them.

concept of an emission offset is that it represents the reduction, removal or avoidance of GHG emissions from a specific activity or project in one location that is used to compensate for GHG emissions occurring at another location – simply put, they are credits for GHG reductions made elsewhere. Emission offsets are quantified and sold in tonnes of CO_2e and can be bought or sold through brokers, online retailers or trading platforms.

The essential promise of an offset is the achievement of a real and verifiable reduction in GHG emission levels beyond what would have otherwise occurred. A number of activities can generate carbon offsets, ranging from renewable energy projects (which create carbon offsets by displacing fossil fuels) and energy efficiency projects, to methane capture from landfills and carbon sequestration projects (such as reforestation or agricultural activities that absorb CO_2 from the atmosphere). Emission offsets must meet certain criteria in order to be recognized as quality offsets. In particular, quality emission offsets must:

- be real,
- be additional,
- be based on a realistic baseline,
- be unambiguously owned,
- be quantified and monitored,
- be independently verified,
- address leakage,
- address permanence, and
- do no net harm.

Anyone can purchase emission offsets to balance their GHG emissions. As a result, demand for emission offsets around the world has led to a large and growing carbon market, which is divided into two segments: (1) compliance market, which includes government-regulated programs (such as the European Union ETS) that require regulated entities to reduce their emissions; and (2) voluntary market, which covers activities that are not required by government regulation as part of mandatory GHG reduction programs (or activities that are above and beyond what is required by regulation).



So what does a tonne of CO_2 look like anyway?

State of the Voluntary Markets

As individuals, businesses, governmental and non-governmental organizations look to reduce their carbon footprints, many are turning to offsets as a way to achieve carbon neutrality. According to Ecosystem Marketplace, the number of companies making climate-neutral or net-zero pledges has doubled during the COVID-19 pandemic. At least one fifth (21%) of the world's 2,000 largest public companies have committed to meet net zero targets, according to a new report called Taking Stock: A global assessment of net zero targets. Together, the companies represent sales of nearly US $14 trillion. As companies undertake efforts to abate their emissions, many will also need to offset emissions as they work towards their decarbonization goals. According to the Forest Trends' Ecosystem Marketplace report, Markets in Motion – State of the Voluntary Carbon Markets 2021 (Installment 1), the value of voluntary carbon markets hit a record US $1 billion in 2021 (up from US $473 million in 2020). In addition, the volume of traded voluntary carbon offsets hit a record volume of 188.2 million tonnes of carbon dioxide equivalent ($MtCO_2e$) in 2020. As of November 2021, the weighted average price of offsets was US $3.37. This demand has enabled offset project developers to find innovative ways to reduce emissions and verify their results in unregulated sectors. Private companies are the most common type of offset buyer and governments draw on voluntary offset project methodologies and market frameworks to help develop their own carbon pricing regimes. Renewable energy, forestry and land-use projects accounted for most of the offset transactions in 2019.

How does our carbon footprint compare?

According to data from the World Bank, the average carbon dioxide emissions per capita in 2018 (based on 37 OECD countries) was 7.4 tonnes. Canada had the highest value at 15.5 tonnes, followed by Australia at 15.48 tonnes. The lowest value was in Colombia at 1.6 tonnes.

Although not required by law, the majority of voluntary carbon projects use third-party verified standards to guide project development and to ensure that emissions reductions meet the requisite quality criteria. Today, most standards require projects to undertake a feasibility and risk assessment, which is followed by an outline of project activities and the establishment of a baseline level of emissions. A third-party auditor will then validate these assumptions. Once project implementation is complete and monitoring is underway, a verification process is used to assess the delivery of GHG reductions. To register and track these reductions, an offset project registry will issue each tonne of emissions reduction (now an eligible offset) a unique serial number that can then be transacted multiple times before it is retired on a registry, at which point it can no longer be sold. Over the years, numerous standards for offset project development and third-party certification have emerged. However, only a handful have emerged as the preferred standards, including the Verified Carbon Standard (VCS), Gold Standard, Climate Action Reserve (CAR) and American Carbon Registry (ACR). European corporate buyers dominate the demand side – according to Ecosystem Marketplace, in 2019, European buyers accounted for 63% of voluntary offsets purchased (23.5 million offsets); North America buyers purchased 32.6% of voluntary offsets (12.2 million offsets).

Quick Look: Carbon Pricing Around the World

In its State and Trends of Carbon Pricing 2021 Report, the World Bank estimates that approximately 45 countries and more than 34 cities, states and provinces currently use carbon pricing mechanisms or are planning to implement them. Carbon pricing initiatives cover about half of the emissions in these jurisdictions, which translates into approximately 21.5% of global CO_2 emissions. While climate policy in jurisdictions around the world tended to lag early on, recent developments have signaled a general move towards cap-and-trade as the preferred market tool for addressing climate change. In North America, both Québec and California launched cap-and-trade systems in January 2013 and linked their programs one year later, creating North America's largest carbon market. In January 2009, the Regional Greenhouse Gas Initiative (RGGI, comprising nine states in the US Northeast) began operating the first market-based regulatory program in the United States to cap and reduce CO_2 emissions from the power sector.

At the international level, the European Union Emissions Trading System (EU ETS) has been in operation since 2005 and represents the first, and still the largest, global system for trading emission permits. According to analysts at Refinitiv, the value of traded global markets for CO_2 permits grew by 164% to a record 760 billion euros (US $851 billion) in 2021. Most of the increase came from the EU ETS, which accounted for 90% of the global value at 683 billion euros.

The Value of Shadow Carbon Pricing

According to the CDP, internal carbon pricing has become standard operating practice in business planning. The prices used range from US $6 to 89 per tonne of CO_2e and companies use varying terminology such as "internal carbon price", "shadow price", "internal carbon fee", "carbon adder" or "carbon cost". Since most companies reporting to the CDP expect that some form of regulatory regime will be eventually implemented to address climate change, they have been preparing by using a carbon price as a planning tool to help identify revenue opportunities, risks, and as an incentive to drive maximum energy efficiencies to reduce costs and guide capital investment decisions.

A Word on Corporate Carbon Pricing

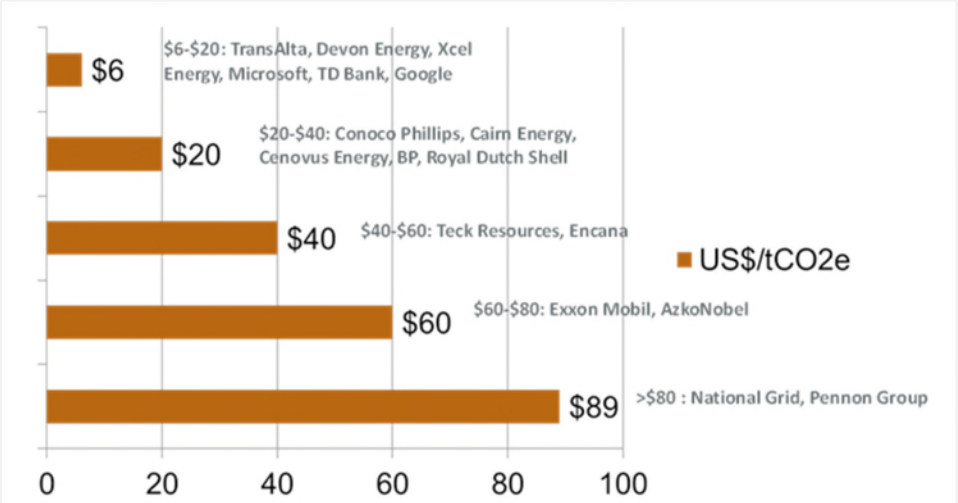
In recent years, companies have been working hard to reduce their carbon footprints and signal corporate support for the transition to a lower carbon economy. In particular, an increasing number of companies are setting emission reduction targets and taking action to address climate change impacts in both their own operations and their supply chain. Since many companies operate in jurisdictions where GHG emissions are subject to mandatory emission reduction program or carbon taxes, they are well attuned to carbon pricing issues as a response to the regulatory environments in which they operate. However, given the diversity in scope and timing of climate policies, companies have been faced with having to consider multiple carbon compliance costs in their business decisions. As a result, the private sector has been looking to governments to establish clear pricing and regulatory certainty to support climate-related investments and climate risk assessment efforts. In the meantime, companies have been managing their emissions, assessing risk and developing business plans based on a real or internal carbon price that is incorporated into their planning and investment decisions. This means that companies worldwide are already advanced in their use of carbon pricing and in planning for climate change risks, costs and opportunities.

According to the World Bank, in 2021, nearly half of the largest 500 companies in the world by market cap report the use of an internal carbon price or the intention to use one within the next two years. Companies have adopted internal carbon pricing that ranges from US $6/tCO$_2$e to US $918/tCO$_2$e. While companies have traditionally used internal carbon pricing to evaluate risks from mandatory carbon pricing initiatives, they are now exploring new ways of using internal carbon pricing to manage long-term climate risks (e.g. driving low-carbon investment, energy efficiency and changing internal behaviour). Internal carbon pricing is also being driven by corporate climate governance initiatives such as TCFD.

On April 22, 2016, the United Nations Global Compact (UNGC) called for a minimum internal carbon price level of US$100 per tonne of CO$_2$e by 2020, which UNGC believes is the minimum price needed to spur innovation, unlock investment and shift market signals in line with the 1.5 – 2°C pathway. Internal carbon pricing is currently used by a range of companies across a number of sectors, as illustrated in the table below:

Overview of Internal Carbon Pricing

Source of data: **CDP**



Understanding the Social Cost of Carbon

For policymakers, the "social cost of carbon" (SCC) is emerging as an important new instrument for pricing carbon. The SCC, which has its origins in US policy processes where new regulations are required to undergo a cost-benefit analysis, represents an estimate of the economic damages associated with a small increase in CO_2 emissions (usually one tonne) in a given year. In particular, it provides a measure of the marginal damage from CO_2 emissions, and thus the marginal benefit of abatement – i.e. the SCC is the monetized value of future worldwide economic damages associated with a one tonne increase in CO_2 emissions in a particular year discounted to the present. It is intended to be a comprehensive measure of climate change damages, which could take various forms including decreased agricultural yields, property damages from increased flood risk, harm to human health and lower worker productivity – all related to climate change. The purpose of the SCC is to allow government agencies to incorporate the social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions that impact cumulative emissions. While the SCC is meant to be a comprehensive estimate of climate change damages, current modeling and data limitations mean that the SCC does not include all important damages.

There are three main models for calculating the SCC, referred to as Integrated Assessment Models: (i) Dynamic Integrated Climate Economy model (DICE), developed by William Nordhaus at Yale University; (ii) Framework for Uncertainty, Negotiation and Distribution model (FUND), originally developed by Richard Tol at the Unversity of Sussex and now co-developed by Tol and David Anthoff at the University of California; and (iii) Policy Analysis of the Greenhouse Effect model (PAGE), developed by Chris Hope at the University of Cambridge. While all three models contain the same four basic "modules" – socioeconomic, climate, damages and discounting – there are significant differences in the way each model translates emissions into warming. As a result, estimates of the SCC vary because of different assumptions around future emission trends, how the climate will respond, potential impacts, and the way in which future damages are valued. Notwithstanding these limitations, the SCC is a useful measure to assess the benefits of CO_2 reductions. In 2021, the US government made policy based on the assumption that each tonne of CO_2 costs US $51 (this value is currently under review by the Interagency Working Group on the Social Cost of Greenhouse Gases). However, researchers at Stanford University have estimated that at US $220 per tonne, the SCC should actually be almost five times higher than the value that the US now uses to guide current policy decisions.

Current Climate Change Policy in Canada

Federal

In July 2021, Canada submitted an updated Nationally Determined Contribution (NDC) to the UNFCCC Secretariat, pledging a 40-45% reduction from 2005 levels – to approximately 406 to 443 million tonnes of carbon dioxide equivalent (Mt CO_2 eq) – by 2030. According to Canada's most recent National Inventory Report, total national greenhouse emissions were 730 Mt CO_2 eq in 2019. The oil and gas and transportation sectors continue to be Canada's largest sectoral emissions sources, with buildings, heavy industry, and agriculture following closely behind. Canada's 2019 emissions were approximately 9 Mt CO_2 eq lower than in 2005. Since 2005, emissions in the oil and gas and transportation sectors have increased by 20% and 16%, respectively. While decreases in electricity (48%), heavy industry (12%) and waste and others (10%) have offset these increases, Canada's overall emissions have increased by more than 20% since 1990.

What is an NDC?

Countries participating in the United Nations Framework Convention on Climate Change (UNFCCC) process were asked to publicly outline what post-2020 climate actions they intend to take under the Paris Agreement. These actions are known as their **Nationally Determined Contributions** or NDCs. NDCs will determine whether the world achieves the goals of the Paris Agreement, all while reaching global peaking of GHG emissions as soon as possible and carbon neutrality by mid-century.

In March 2022, the federal government introduced Canada's 2030 Emissions Reduction Plan (2030 Plan), which provides a roadmap to achieve Canada's 2030 emissions reduction target of 40-45% emissions reductions below 2005 levels. The 2030 Plan builds upon the actions outlined in the federal government's climate change plans: A Healthy Environment and a Healthy Economy (December 2020) and the Pan-Canadian Framework on Clean Growth and Climate Change (2016). As part of the Healthy Environment and a Healthy Economy Plan, the federal government has announced that the carbon price will be increased annually at a rate of $15 per tonne starting in 2023 until it reaches $170 per tonne of CO_2e in 2030.

The 2030 Plan includes $9.1 billion in new investments, and reflects economy-wide measures such as carbon pricing and clean fuels, while also targeting sector-specific actions in a range of industries, from buildings and vehicles, to energy and agriculture. The 2030 Plan is the first Emissions Reduction Plan issued under the *Canadian Net-Zero Emissions Accountability Act*. Progress under the plan will be reviewed in reports produced in 2023, 2025, and 2027. The federal government has indicated that additional targets and plans will be developed for 2035 through to 2050. Canada's first National Adaptation Strategy will also be developed under the 2030 Plan.

Carbon Pricing

Every province and territory in Canada has had a price on carbon since 2019. Under the federal government's approach to carbon pricing, provinces and territories can design their own carbon pricing system based on local needs, or they can choose the federal pricing system. The federal government has set minimum national stringency standards (referred to as the federal

benchmark) that all systems must meet to ensure they are comparable and effective in reducing GHG emissions. If a province or territory decides not to implement carbon pricing, or proposes a system that does not meet these standards, the federal system will be implemented. Under the Greenhouse Gas Pollution Pricing Act, the federal pricing system consists of two parts: (i) a regulatory charge on fossil fuels like gasoline and natural gas, known as the fuel charge, and (ii) a performance-based system for industries, known as the Output-Based Pricing System (OBPS).

As of April 2022, the federal fuel charge applies in Ontario, Manitoba, Yukon, Alberta, Saskatchewan and Nunavut. The federal OBPS applies in Manitoba, Prince Edward Island, Yukon, Nunavut, and partially in Saskatchewan. In Prince Edward Island, the federal OBPS applies alongside the provincial fuel charge. In Alberta, Saskatchewan and Ontario, as of January 1, 2022, provincial output-based performance standards systems apply alongside the federal fuel charge.

The carbon pricing systems in Quebec, Nova Scotia, Newfoundland and Labrador, the Northwest Territories, British Columbia and New Brunswick continue to meet the federal benchmark stringency requirements. Provincial systems in place in Prince Edward Island, Alberta, Saskatchewan and Ontario meet the federal benchmark stringency requirements for the emission sources they cover. The federal backstop applies in these provinces to emission sources not covered by the provincial systems.

Greenhouse Gas Emissions Reporting Program (Federal)

In March 2004, the federal government announced the introduction of the Greenhouse Gas Emissions Reporting Program (GHGRP), which applies to large industrial GHG emitters in Canada. Each year, ECCC publishes its updated requirements and step-by-step reporting instructions in the Canada Gazette for the previous compliance year. Under the GHGRP, the reporting threshold is 10,000 tonnes of CO_2e. Facilities in BC, Alberta and Ontario may submit their GHG reports online through Environment Canada's Single Window system, which connects to a series of reporting modules that support various partner programs including the GHGRP.

Provincial

Provincial and territorial leaders have taken a leadership role on the climate change file and have recognized the importance of joint action to adapt to and combat climate change. At the Québec Summit on Climate Change held in April 2015, all of the provinces and territories issued a joint declaration in which they committed to foster the transition to a lower-carbon economy and increase adaptation initiatives to build resiliency. A more detailed look at each of the climate change programs of each province and territory is set out below and is accompanied by a summary table which provides an overview of the key climate change legislation, policies, targets, GHG reporting requirements and carbon pricing mechanism of each provincial and territorial jurisdiction.

Local Government Action

Recognizing that climate change has immediate, tangible impacts on local infrastructure as well as public health and safety, local governments have been pro-active in building resilient communities and establishing the right conditions for climate change adaptation. While a consideration of local government climate change initiatives is outside the scope of this guide, the role of local governments will be key to ensuring that communities have the right resources to address the impacts of rising temperatures and increasingly frequent storm events on municipal services and infrastructure. The provinces are also recognizing the important role of local governments in addressing climate change and as a result, are providing much needed resources to local governments. For example in BC, the Climate Action Toolkit provides best practices, practical advice, information, and strategic guidance to help BC local governments successfully reduce their greenhouse gas emissions. In Alberta, the Municipal Climate Change Action Centre provides technical assistance, expertise, and funding programs to support Alberta municipalities in reducing their greenhouse gas emissions and improving energy efficiency. In the Atlantic region, over 50 Nova Scotian municipalities have developed Municipal Climate Change Action Plans to build knowledge and capacity at the local level so that local communities can effectively respond to climate change.

A Word on Regional Initiatives

There has been a proliferation of regional climate initiatives to fill the void left by national inaction on climate change. Early regional initiatives such as the Western Climate Initiative (WCI) and the Regional Greenhouse Gas Initiative (RGGI), have given way to larger regional initiatives such as the Under2 Coalition, which is the largest global network of state and regional governments committed to reducing emissions in line with the Paris Agreement. The Under2 Coalition brings together 260 governments representing 1.75 billion people and 50% of the global economy. Over 40 states and regions have committed to reach net zero emissions by 2050 or earlier.

Within the context of Canadian climate change policy, two regional initiatives have an important bearing on the direction of climate policy for both east and west coast provinces. The first is the Pacific Coast Collaborative (PCC), which is a framework for co-operative climate action that was established in 2008 by BC, Washington, Oregon and California. The vision of PCC members is to dramatically reduce GHG emissions and create a low carbon regional economy by transforming energy systems, buildings, transportation, and food waste management. On the east coast, the New England Governments/Eastern Canadian Premiers (NEG/ECP) Annual Conference (NEG/ECP Conference) has been instrumental in setting regional emission reduction targets for the Atlantic provinces. Since 1973, the NEG/ECP Conference has sought to advance the interests of five provinces (New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, and Québec) and six states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) through the implementation of regional initiatives in the areas of trade, energy, economic development, environment, oceans, forestry, agriculture, fisheries, and transportation. On climate change, the NEG-ECP Climate Change Action Plan 2001 calls for a reduction in emissions to 1990 levels by 2010, at least 10% below 1990 levels by 2020, and a 75-85% reduction of 2001 levels as a long-term goal. At the 39th conference in 2015, the NEG/ECP adopted Resolution 39-1, which established a formal regional GHG reduction progress marker, i.e. 35-45% below 1990 emissions levels by 2030.

Overview of Provincial Frameworks for Climate Change Action

British Columbia

The BC government released its updated climate change plan in October 2021. The CleanBC Roadmap to 2030 builds on the CleanBC plan released in 2018, and sets out policy plans to help BC achieve the province's emission reduction target for 2030 and to reach net-zero by 2050. The CleanBC Roadmap to 2030 includes a series of actions across a number of pathways, including increases to carbon pricing, requirements for new industry projects to have plans to achieve BC's sectoral targets and net zero by 2050, measures to reduce industrial methane emissions, a review of the oil and gas royalty system to ensure it aligns with BC's climate goals, requirements to make all new buildings zero-carbon by 2030, targets for adopting zero-emission vehicles (ZEVs), increased clean fuel and energy efficiency requirements; and support for innovation in areas like clean hydrogen, the forest-based bio-economy and negative emissions technology.

As part of its emission reduction efforts, the BC government is also targeting sector-specific emissions. In March 2021, it set sectoral GHG targets as part of its CleanBC plan. Sectoral targets for 2030 have been established for the following sectors (expressed as a percentage reduction from 2007 sector emissions): (i) transportation – 27 to 32%; (ii) industry – 38 to 43%; (iii) oil and gas – 33 to 38%; and (iv) buildings and communities – 59 to 64%. As part of legislated requirements, government will review the targets by 2025, with options to expand the number of sectors included and narrow the percentage ranges. To support emission reductions, the BC government launched a new round of applications for emission reduction projects for 2021 through the CleanBC Industry Fund, with temporary changes to increase the provincial share of funding up to 90% of project costs with a cap of $25 million per project to encourage a greater number of proposals. In addition, a new stream of the CleanBC Industry Fund known as the Innovation Accelerator was announced to support industry projects that use advanced clean tech solutions for tough-to-solve emission problems.

In July 2021, BC became the first province in Canada to release a comprehensive hydrogen strategy. Part of the CleanBC plan, the BC Hydrogen Strategy includes 63 actions for government, industry and innovators to undertake during the short term (2020-25), medium term (2025-30) and long term (2030 and beyond). Under the BC Hydrogen Strategy, immediate priorities include scaling up production of renewable hydrogen, establishing regional hydrogen hubs, and deploying medium- and heavy-duty fuel-cell vehicles. The provincial government is supporting the BC Hydrogen Strategy with further investments announced as part of Budget 2021, including $10 million over three years to develop policy on reducing the carbon intensity of fuel and advancing the hydrogen economy. In addition, BC Hydro recently introduced a discounted electricity rate for renewable hydrogen production to attract new investment in clean industry.

One of the targets under the earlier 2008 Climate Action Plan was for the BC public sector to be carbon neutral by 2010. Under the *Carbon Neutral Government Regulation* (legislated under the Climate Change Accountability Act), all public sector organizations are required to follow a

prescribed process for becoming carbon neutral. In 2021, BC reported that it achieved carbon neutrality across its provincial public sector for the eleventh consecutive year, as confirmed in the 2020 Carbon Neutral Government Year in Review summary.

Along with California, BC was the first to implement a low carbon fuel standard beginning in 2010. Transportation emissions account for approximately 37% of the province's emissions, which represents the largest source of emissions. BC's *Renewable and Low Carbon Fuel Requirements Regulation* sets increasingly stringent carbon intensity reduction targets each year, and requires a 5% annual average renewable content in gasoline and 4% renewable content in diesel. As part of the 2018 CleanBC plan, BC announced an increase of the carbon intensity target to 20% by 2030.

BC also has mandatory GHG reporting requirements, which were introduced in 2009 and requires facilities in BC emitting 10,000 tonnes or more of CO_2e per year to report their emissions. Those reporting operations with emissions of 25,000 tonnes or greater are required to have emissions reports verified by a third party. Under the *Greenhouse Gas Industrial Reporting and Control Act* (discussed in further detail below), the previous *Reporting Regulation* has been replaced by the *Greenhouse Gas Emission Reporting Regulation* (which came into force on January 1, 2016).

BC's *Greenhouse Gas Industrial Reporting and Control Act* (the Act) came into force on January 1, 2016. The Act was originally passed by the BC legislature in November 2014 and enables performance standards to be established for industrial facilities or sectors. The Act currently sets a GHG emissions benchmark for liquefied natural gas (LNG) facilities, along with an emissions benchmark for coal-based electricity generation operations. Performance standards for other industrial facilities and sectors will likely be added later on. The Act also streamlines several aspects of existing GHG legislation into a single legislative and regulatory system, including the GHG reporting framework established under the *Greenhouse Gas Reduction (Cap and Trade) Act*. Three regulations necessary to implement the Act also came into effect on January 1, 2016:

- *Greenhouse Gas Emission Reporting Regulation*, which replaces the existing *Reporting Regulation* and adds compliance reporting requirements.
- *Greenhouse Gas Emission Control Regulation*, which establishes the BC Carbon Registry to track compliance unit transactions and sets criteria for developing emission offsets issued by the BC government. The regulation also establishes a price of $25 for funded units issued under the Act that will be put towards a technology fund to support the development of clean technologies. Regulated operations will purchase offsets from the market or funded units from government to meet emission limits.
- *Greenhouse Gas Emission Administrative Penalties and Appeals Regulation*, which establishes the process for when, how much, and under what conditions administrative penalties may be levied for non-compliance with the Act or regulations.

This legislation represents BC's efforts to keep its emissions in check as the province strives to achieve its legislated GHG emission reduction targets of 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050.

Alberta

The *Technology Innovation and Emissions Reduction Regulation* (TIER) provides the foundation for Alberta's industrial GHG emissions pricing program and emissions trading system. Facilities regulated under TIER must reduce emissions to meet facility benchmarks. TIER, which replaced the *Carbon Competitiveness Incentive Regulation* (CCIR) on January 1, 2020, applies to approximately 60% of Alberta's emissions. Facilities that reduce emissions beyond their benchmark can generate emissions performance credits. Facilities that do not directly meet their benchmark can comply in one of three ways:

1. submit Alberta Emission Offsets generated from qualifying emissions reductions outside of regulated facilities;

2. submit emissions performance credits; or

3. obtain fund credits by paying the prescribed price into the TIER fund.

TIER facilities are exempt from paying the federal fuel charge. The TIER regulation applies to facilities that emitted 100,000 tonnes of carbon dioxide equivalent CO_2e or more per year of greenhouse gases in 2016, or a subsequent year. A facility with less than 100,000 tonnes CO_2e per year may be eligible to opt-in to the TIER if it competes against a facility regulated under the TIER regulation, or emits 10,000 tonnes CO_2e or more per year and belongs to a sector with high emissions intensity and trade exposure.

Emissions from Alberta's oil sands sector (which account for approximately one-quarter of Alberta's annual emissions) have been capped at 100 Mt per year. The Alberta government has indicated that this cap will be legislated.

Under Alberta's *Specified Gas Reporting Regulation*, facilities emitting 10,000 tonnes of CO_2e or more must submit a specified gas report to Alberta Climate Change Office via ECCC's SWIM reporting system.

Saskatchewan

Since launching its climate change strategy in December 2017 – Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy (the Strategy) – the Saskatchewan government has been working on implementing the Strategy, which sets out 40 commitments based on the principles of readiness and climate resilience, curbing GHG emissions, and preparing for changing conditions such as extreme weather, drought or wildfire. The Strategy relies on the following pieces of provincial legislation and regulation:

- *The Management and Reduction of Greenhouse Gases Act*, which provides authority for the output-based emissions management framework.

- *The Management and Reduction of Greenhouse Gases (General and Electricity Producer) Regulations*, which provides for an equivalency agreement with the federal government

on coal-fired electricity, enabling Saskatchewan to regulate its own emissions from SaskPower's coal-fired power plants.

- *The Management and Reduction of Greenhouse Gases (Reporting and General) Regulations*, which requires facilities emitting more than 10,000 tonnes of GHG emissions per year to report those emissions.

- *The Management and Reduction of Greenhouse Gases (Standards and Compliance) Regulations*, which provide parameters for mandatory GHG reductions through output-based performance standards for industry.

- *The Oil and Gas Emissions Management Regulations*, which regulates flared and vented methane emissions in the upstream oil and gas sector and aims for a projected emission reduction of 40-45% by 2025.

In November 2018, Saskatchewan released its Climate Resilience Measurement Framework (the Framework), which uses 25 science-based indicators to monitor resilience-related progress in five key areas: (i) natural systems (including our land, water and forests), (ii) physical infrastructure, (iii) economic sustainability, (iv) community preparedness, and (v) the well-being of people to adapt and prosper in a changing environment. The Framework was followed up with its first report in 2019 and a second report in 2020. Eighteen measures in the 2020 report were classified as good, an increase from 15 in the 2019 report.

Saskatchewan has also identified technology as a key driver of emission reductions, including carbon capture use and storage as well as renewable energy. In 2015, SaskPower set a target of doubling its percentage of electricity capacity from renewable energy sources, i.e. to have 50% of the province's power sourced from renewables by 2030.

Manitoba

In October 2017, Manitoba released its Made-in-Manitoba Climate and Green Plan (the Plan), which focuses on four main pillars for sustainable growth: (i) climate; (ii) jobs; (iii) water; and (iv) nature. The province's *Climate and Green Plan Implementation Act, 2018* (the Act) introduced a Carbon Savings Account (CSA), which sets cumulative emissions reduction goals for five-year periods and is supported by accountability features and process, including an independent expert advisory body, compulsory government action plans, and regular monitoring and reporting. The Act also sets out Manitoba emission reduction goals for 2018 to 2022, which is 1 Mt of CO_2e relative to a forecast of the total GHG emissions that would have occurred in that period. More specifically, the Government of Manitoba established a cumulative GHG emissions reduction goal of 1 Mt for the 2018 to 2022 CSA period, based on the recommendations of the independent Expert Advisory Council. The CSA is Manitoba's approach to setting, tracking, and reporting GHG emission reductions. Key features that distinguish the CSA approach of setting reduction targets are:

- shorter five-year GHG emission reduction goals, rather than temporarily distant targets (e.g., 2030 or 2050), to ensure governments are accountable to achieve the target it sets;

- measuring cumulative GHG emission reductions, rather than GHG emission reductions in a single year to more effectively address the 'stockpiling' of CO_2e in the atmosphere overtime; and

- a debit feature requires any emission reductions shortfall at the end of a CSA period to be made up in the following CSA period.

Under the federal Low Carbon Economy Fund, Manitoba is using funds to target emissions from the transportation sector, in particular emissions from heavy-duty vehicles which account for approximately 11% of the province's emissions. Manitoba's Efficient Trucking Program supports retrofits in the transportation sector through fuel-saving devices and technologies, reducing energy consumption, and providing environmental benefits.

In January 2012, Manitoba introduced a tax on coal emissions through the *Emissions Tax on Coal Act*. All coal tax revenues are being redirected to the Manitoba Agriculture, Food and Rural Development's Biomass Energy Support Program in order to support the conversion to biomass energy. Manitoba has also banned the use of coal and petroleum coke for space heating and taxing petroleum coke used for non-space heating purposes (which was phased-in beginning January 1, 2014).

Ontario

The Ontario government's climate strategy is outlined in its 2018 Made in Ontario Environment Plan (the Plan). The Plan addresses initiatives to protect air, land and water resources, as well as climate change. In April 2022, Ontario updated its forecast to meet the province's 2030 emission reduction target. The updated forecast shows some departures from the Plan, including the omission of reductions from a greater uptake of electric vehicles and the Ontario Carbon Trust, which had been previously touted as a significant source of emission reductions.

In 2019, the Ontario government created the Ontario Emission Performance Standards (EPS) as an alternative to the federal government's output based pricing system (OBPS) for industrial emitters. Both the EPS and OBPS programs regulate emissions from industrial facilities by setting industry-specific emission standards for regulated facilities. Although the administrative requirements of the Ontario EPS program came into effect in 2019, the substantive requirements were dormant as the federal government's OBPS was in force in Ontario. In September 2021, the federal and Ontario governments finalized their agreement to have the EPS apply in Ontario effective January 1, 2022 and to remove the application of the federal OBPS on the same date. The EPS program requires regulated facilities to meet an annual baseline amount of greenhouse gas emissions that is calculated using a an industry-specific performance standard. If a regulated facility exceeds this baseline emissions limit, it will have to pay a carbon price for the emissions output that is in excess. The emissions performance standards, and thus the emissions limits for regulated facilities, are expected to become more stringent over time, and the price on carbon is expected to rise annually. The Ontario government has indicated that it will design the next phase of the EPS program (for the period from 2023-2030) to meet the updated federal benchmark and ensure that the EPS program continues to apply in Ontario for the 2023-2030 period.

Québec

Following the adoption of the Kyoto Protocol, Québec set out province's climate change commitments in its 2006-2012 Climate Change Action Plan (CCAP 2006-2012). The CCAP 2006-2012 was followed by the 2013-2020 Climate Change Action Plan (CCAP 2013-2020), which establishes measures for every GHG-emitting sector in Québec, including the transportation, industry, and construction sectors. Several measures were also put into place to support adaptation efforts under the 2013-2020 Government Strategy for Climate Change Adaptation, include initiatives relating to land use management, research and innovation, public awareness, production methods, consumption habits and organization of local communities.

One of Québec's key climate change initiatives is its cap-and-trade system, which was officially launched on January 1, 2013. Québec's cap-and-trade program, which covers close to 85% of the province's emissions, was linked to California's cap-and-trade program on January 1, 2014. Revenue generated by the carbon market is allocated to the Green Fund and reinvested in full for the implementation of the CCAP 2013-2020.

Québec has also released its 2030 Plan for a Green Economy, which is the province's first electrification and climate change policy framework. The plan is designed to help achieve Québec's 2030 GHG reduction target of a 37.5% reduction compared with 1990 levels, and the province's goal to reach carbon neutrality by 2050.

MECHANICS OF QUÉBEC'S CAP & TRADE SYSTEM

The Québec government has adopted a mid-term GHG emissions reduction target of 37.5% below 1990 levels by 2030.

The Québec government has set a cap on the number of emission units that are put into circulation each year, which began gradually declining in 2015. Businesses emitting 25,000 tonnes or more of CO_2e per year are subject to the cap-and-trade system. To participate, businesses must be registered with the Compliance Instrument Tracking System Service (CITSS), a management and tracking system for accounts and compliance instruments issued through participating WCI cap-and-trade programs. Administered by the Western Climate Initiative, Inc., CITSS tracks compliance instruments (emissions allowances and offsets) from the point of issuance by jurisdictional governments, to ownership, transfer by regulated greenhouse gas emitters and other voluntary or general market participants, and to final compliance retirement.

For the first compliance period (2013-2014), only the industrial and electricity sectors were subject to the system. However, during the second and third compliance periods (2015-2017 and 2018-2020), fossil fuel distributors will also be included in the system. In addition, the cap-and-trade system is open to individuals and other non-regulated entities that would like to participate in the carbon market. In 2013 and 2014, industrial emitters exposed to foreign competition received most of the emission units they needed free of charge in order to prevent carbon leakage (that is, the movement of companies to other jurisdictions with less stringent or no emission reduction requirements). Starting in 2015, however, the number of units allocated free of charge to these emitters will generally drop about 1% to 2% a year (notably for combustion emissions).

Subject to certain exceptions, electricity producers and fossil fuel distributors do not receive free allocations.

Emission units not allocated free of charge are auctioned off by the government four times a year. A minimum price of $10.75 was set for 2013, which increases at a rate of 5% plus inflation every year until 2020. For joint auctions with California, the minimum price is set by retaining the higher of the two system's minimum prices at the exchange rate prevailing at the time of the auction. Auctions are open to all emitters and other participants registered with CITSS. The final sale price of each emission unit is the lowest price bid for which the last available unit is awarded. The government may also organize sales of emission units for emitters that may have difficulty acquiring enough of them to meet their compliance obligations (sales by mutual agreement). All auction proceeds go to the Québec Green Fund. For 2022 vintage allowances, the auction reserve price was set at CAD $18.69.

At the end of each compliance period, all covered emitters must have sufficient GHG emission allowances in their account to cover their total reported and audited GHG emissions for the period in question. Several compliance options are available to these emitters, including the ability to acquire emission allowances during government auctions, purchasing emission allowances from other participants or purchasing emission offsets. However, the system sets holding limits to prevent market manipulation and provides for sanctions in case of non-compliance.

New Brunswick

In December 2016, New Brunswick released an updated climate action plan entitled Transitioning to a Low-carbon Economy (the Action Plan), which includes 118 actions to address climate change. A progress report released in 2020 shows the progress that the province has made so far on its commitments in the Action Plan. The provincial government has also established its own provincial GHG targets, which are included as action 31 in the Action Plan and were made part of the *Climate Change Act* in 2018. These include targets for 2020, 2030 and 2050 that reflect a total output of: 14.8 Mt by 2020; 10.7 Mt by 2030; and 5 Mt by 2050.

Atlantic Premiers Sets Mid-Term Target

At the 39th annual conference of New England Governors and Eastern Canadian Premiers held in August 2015, Eastern premiers and New England governors set a target of decreasing GHG emissions by between 35-45% below 1990 levels by 2030. The new target is meant to orient the provinces and states in their long-term goal, to reach 75-85% of 2001 emission levels by 2050.

The *Reduction of Greenhouse Gas Emissions Regulation*, under the *Climate Change Act*, came into force on January 1, 2021 and sets out specific requirements for New Brunswick's output-based carbon pricing system for large industrial emitters. The Regulation's requirements apply to owners or "operators" (the person responsible for an industrial facility's operations) of a "regulated facility": (i) any industrial facility that produces emissions of 50,000 tonnes or more of GHG on an annual basis; or (ii) facilities that "opt in" to the regime (available to any facility emitting less than 50,000, but more than 10,000, tonnes of GHG). Any facility that does not meet the standard set by the NB OBPS will have a compliance obligation, which it can meet by: (i) reducing its emissions to meet the performance standard; (ii) purchasing

performance credits; (iii) contributing to the provincial Climate Change Fund, or (iv) purchasing offset credits.

Prince Edward Island

In May 2018, PEI released its five-year Climate Change Action Plan 2018-2023. This plan details 5 action areas that PEI pledges to address within the five-year window: (i) adapting to climate change; (ii) reducing GHG emissions; (iii) carbon sequestration; (iv) education and capacity building; and (v) research and knowledge building. PEI published the first Climate Change Action Plan Progress Report (2018-2019) in October 2019.

In December 2020, PEI passed the *Net-Zero Carbon Act*, which establishes the following targets for the purpose of reducing PEI's emissions:

- by 2030 and for each subsequent calendar year, PEI's greenhouse gas emissions will be less than 1.2 Mt CO_2e per year; and
- by 2040 and for each subsequent year, PEI's greenhouse gas emissions will be net-zero.

The province's net-zero goal is also supported by the 2040 Net Zero Framework. The plan also aims to reach "net zero energy" by 2030, which means emissions produced through energy are either reduced or are offset completely by other means.

Nova Scotia

Nova Scotia's Climate Change Action Plan outlines the actions the province is taking to address climate change, including reducing GHG emissions and adapting to climate impacts. Nova Scotia reported on its progress so far in the Climate Change Progress Report (October 2019). *The Environmental Goals and Climate Change Reduction Act* provides the framework for Nova Scotia's targets to reduce GHG emissions by 53% below 2005 levels by 2030, and to achieve net-zero emissions by 2050.

In October 2017, Nova Scotia amended the *Environment Act* to implement its cap-and-trade program. In 2018, the *Cap-and-Trade Program Regulations* were made under Section 112Q of the *Environment Act.* Nova Scotia's cap-and-trade program took effect on January 1, 2019. The regulatory framework of the cap-and-trade program sets yearly limits on the total amount of GHG emissions allowed in Nova Scotia from 2019-2022. The following companies are required to register, report their GHG emissions, have them verified by a third party, and participate in the cap-and-trade program:

- facilities that generate 50,000 tonnes of GHG emissions or more per year from one or more specified activities;
- petroleum product suppliers that first place 200 litres of fuel or more per year on the Nova Scotia Market for in-province consumption;

- natural gas distributors that deliver natural gas for in-province consumption that produces 10,000 tonnes of GHG emissions or more per year; and

- electricity importers that import electricity for in-province consumption and whose greenhouse gas emission from the generation of the electricity imported is greater than 10,000 tonnes of GHG per year.

In 2009, the *Greenhouse Gas Emissions Regulations* established greenhouse gas emission caps on the electricity sector. These regulations require the electricity sector to reduce its greenhouse gas emissions by 25% by 2020 and 55% by 2030.

Nova Scotia's Renewable Electricity Plan sets targets for renewable electricity generation like wind, tidal, biomass, and hydro. In 2015, we surpassed our target of 25% of electricity from renewables, and we are on track to reach 40% by 2020.

Newfoundland & Labrador

The government of Newfoundland & Labrador has committed to pursuing the regional GHG reduction targets of the Conference of New England Governors and Eastern Canadian Premiers:

- reducing GHG emissions to 1990 levels by 2010;

- reducing GHG emission to 10% below 1990 levels by 2020; and

- reducing GHG emissions to 75-85% below 2001 levels by 2050.

In 2015, in recognition of the importance of tracking progress between 2020 and 2050, the province joined other members of the Conference of New England Governors and Eastern Canadian Provinces in adopting a regional GHG reduction marker for 2030, i.e. to reduce regional GHG emissions by 35-45% below the 1990 regional GHG emissions level.

Newfoundland and Labrador's updated climate change action plan, The Way Forward: On Climate Change in Newfoundland and Labrador, was released in 2019. The five-year plan guide provincial action on climate change and to support implementation of the federal *Pan Canadian Framework on Clean Growth and Climate Change*.

In June 2016, the government passed the *Management of Greenhouse Gas Act*, which establishes a legislative framework for reducing GHG emissions by industrial emitters in the province (i.e. those industrial facilities emitting 15,000 tonnes of CO_2e per year). The legislation provides for two years of emissions monitoring to help set reduction targets that will apply to large industrial facilities emitting 25,000 tonnes of CO_2e per year, and establishes a fund to support emissions reduction technology, which will be fully funded by industry. In addition, the *Management of Greenhouse Gas Reporting Regulations* require facilities meeting the 15,000 tonne threshold to report annually on GHG emissions.

Nunavut

Nunavut's approach to climate change was first articulated in its 2003 Climate Change Strategy, which established goals and associated actions over a ten-year period to (i) control and reduce greenhouse gas emissions, (ii) identify and monitor climate change impacts, and (iii) develop adaptation strategies. Nunavut has since identified adaptation as a high priority in its climate policy. To further adaptation planning, the Government of Nunavut subsequently released Upagiaqtavut – Setting the Course: Climate Change Impacts and Adaptation in Nunavut, which sets the strategic direction for climate change adaptation in Nunavut. In particular, the Upagiaqtavut document establishes a framework for climate change impacts and adaptation initiatives in Nunavut. The adaptation approach outlined in Upagiaqtavut is organized around four main components, or napuit, each with a set of corresponding objectives. These napuit centre around partnership building, research and monitoring, education and outreach, and government planning and policy.

Northwest Territories

In May 2018, the NWT government released the 2030 NWT Climate Change Strategic Framework. The framework addressed the following goals: (i) transitioning to a lower carbon economy; (ii) improving knowledge of climate change impacts; and (iii) building resilience and adapting to a changing climate. Together with the Department of Infrastructure's 2030 Energy Strategy, the framework sets out the targets that will reduce the territory's GHG emissions in line with Canada's national targets. Implementation of the 2030 Energy Strategy will see the NWT reduce GHG emissions from electricity generation in diesel-powered communities by an average of 25% and transportation by 10% per capita, while increasing the share of renewable energy used for space heating by 40% and increasing residential, commercial, and government building energy efficiency by 15%. The framework was followed up with the 2019-2023 Action Plan, which provides the NWT with a roadmap for addressing climate change. The 2019-2023 Action Plan is the first of two plans to support the implementation of the framework.

Yukon

Yukon's climate change plan is set out in Our Clean Future: A Yukon strategy for climate change, energy and a green economy. The strategy sets out a number of goals, including:

- reducing Yukon's GHG emissions from transportation, heating, electricity generation and other areas by 45% compared to 2010 levels by 2030;
- reducing GHG emissions from the Yukon's mines per unit of material produced;
- generating 97% of the electricity on the Yukon's main grid from renewable sources by 2030 on average;
- ensuring the Yukon is highly resilient to the impacts of climate change by 2030; and
- building a sustainable green economy.

The Yukon government has also indicated that it will aim for the territory to have net-zero emissions by 2050.

Quick Summary Table – Federal, Provincial and Territorial Climate Change Frameworks[1]

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
Federal	▪ *Canadian Environmental Protection Act, 1999* ▪ *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* ▪ *Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations* ▪ *Renewable Fuels Regulations* ▪ *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations* ▪ *Greenhouse Gas Pollution Pricing Act*	▪ Pan-Canadian Framework on Clean Growth and Climate Change (December 2016) ▪ A Healthy Environment and a Healthy Economy (December 2020) ▪ 2030 Emissions Reduction Plan (March 2022)	▪ 40-45% below 2005 levels by 2030. ▪ Net-zero by 2050.	Greenhouse Gas Emissions Reporting Program (GHGRP) requires facilities emitting ≥ 10,000 tonnes of CO_2e per year are required to submit a report to Environment Canada by June 1 each year.	▪ Minimum price on carbon starting at $20 per tonne of CO_2e in 2019, which will increase by $10 per year until it reaches $50 per tonne of CO_2e by 2022. ▪ From 2023, the carbon price will rise by $15 per tonne annually until it reaches $170 per tonne in 2030. ▪ Each province and territory is required to implement carbon pricing in its jurisdiction, whether in the form of a carbon tax or a cap-and-trade system; in the absence of a minimum carbon price, the federal government will step in and impose a carbon price that makes up the difference and return the revenue to the province/territory.
BC	▪ *Greenhouse Gas Reduction Targets Act* ▪ *Carbon Tax Act* ▪ *Carbon Neutral Government Regulation* ▪ *Greenhouse Gas Emission Reporting Regulation*	▪ CleanBC Plan (October 2021) ▪ CleanBC Roadmap to 2030 (October 2021)	▪ 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050. ▪ The Province also has an interim target to reduce emissions 16% by 2025.	▪ Facilities emitting ≥ 10,000 tonnes of CO_2e per year are required to report total annual GHG emissions. ▪ Large industrial emitters are also required to report under federal GHGRP.	▪ Carbon tax implemented on July 1, 2008; currently set at CAD $50 per tonne of CO_2e. ▪ From 2023 to 2030, BC's carbon tax will increase by $15 per tonne of CO_2e per year until it reaches $170 in 2030 (in line

[1] As of April 15, 2022.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
	▪ *Greenhouse Gas Emission Control Regulation* ▪ *Greenhouse Gas Emission Administrative Penalties and Appeals Regulation* ▪ *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act* ▪ *Local Government (Green Communities) Statutes Amendment Act* ▪ *Greenhouse Gas Industrial Reporting and Control Act* ▪ *Climate Change Accountability Act* ▪ *Zero-Emission Vehicles Act*			▪ BC participates in Environment Canada's Single Window GHG reporting system.	with the federal carbon pricing plan).
Alberta	▪ *Emissions Management and Climate Resilience Act* ▪ *Technology Innovation and Emissions Reduction Regulation* (TIER) ▪ *Specified Gas Reporting Regulation*	▪ Alberta Climate Change Initiatives	▪ Alberta has not established any emission reduction targets; however the oil sands sector will face a cap of 100,000 Mt in any year.	▪ Industrial facilities that emit 100,000 tonnes or more per year are subject to TIER and must reduce emissions to meet facility benchmarks. ▪ TIER applies to about 60% of Alberta's emissions. Facilities that reduce emissions beyond their benchmark can generate emissions performance credits. Facilities that do not directly meet their benchmark can comply by (i)	▪ The federal fuel charge applies in Alberta. ▪ TIER meets the federal benchmark stringency requirements for the emission sources it covers, so the federal OBPS system does not apply in Alberta.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
				submitting emission offsets, (ii) submitting emissions performance credits, and (iii) paying into the TIER fund. ▪ A facility with less than 100,000 tonnes CO_2e per year may be eligible to opt-in to the TIER if it competes against a facility regulated under the TIER regulation, or emits 10,000 tonnes CO_2e or more per year and belongs to a sector with high emissions intensity and trade exposure. ▪ Large industrial emitters are also required to report under the federal GHGRP. ▪ Alberta participates in Environment Canada's Single Window GHG reporting system.	
Saskatchewan	*The Management and Reduction of Greenhouse Gases Act* (the Act) *The Management and Reduction of Greenhouse Gases (General and Electricity Producer) Regulations* *The Management and Reduction of Greenhouse Gases (Reporting and General) Regulations*	▪ Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy (2017) ▪ Climate Resilience Measurement Framework	▪ The Act governs the output-based emissions management system for large emitters, including compliance options such as the technology fund.	Any provincial facility that emits more than 10,000 tonnes per year to report those emissions.	▪ The federal fuel charge applies in Saskatchewan. ▪ Saskatchewan's output-based emissions management system partially meets the federal benchmark stringency requirements for the emission sources it covers, so the federal OBPS only applies to emission sources not covered by the provincial system.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
	The Management and Reduction of Greenhouse Gases (Standards and Compliance) Regulations				
Manitoba	*The Climate and Green Plan Act* *Climate and Green Plan Implementation Act, 2018*	▪ A Made-in-Manitoba Climate and Green Plan (October 2017)	▪ Manitoba's GHG emissions reduction goal for the January 1, 2018 to December 31, 2022 period is 1 Mt of CO_2e relative to a forecast of the total GHG emissions that would have occurred in that period.	▪ Large industrial emitters report under the federal GHGRP.	The federal fuel change and OBPS apply in Manitoba.
Ontario	▪ *Environmental Protection Act* ▪ *Greenhouse Gas Emissions: Quantification, Reporting and Verification Regulation* ▪ *Emissions Performance Standards Regulation*	▪ Made-in-Ontario Environment Plan	▪ 30% below 2005 levels by 2030	▪ Facilities emitting ≥ 10,000 tonnes of CO_2e to annually report GHG emissions. Facilities that are required to register under the *Emissions Performance Standards Regulation* must have their reports verified. ▪ Large industrial emitters also required to report under federal GHGRP. ▪ Ontario participates in Environment Canada's Single Window GHG reporting system.	▪ The federal fuel charge applies in Ontario. ▪ Ontario's output-based system meets the federal benchmark stringency requirements for the emission sources it covers, so the federal OBPS system does not apply in Ontario.
Québec	▪ *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances* ▪ *Regulation respecting mandatory reporting of*	▪ 2030 Plan for a Green Economy	▪ 37.5% below 1990 levels by 2030. ▪ Net-zero by 2050.	▪ The *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere* requires Québec facilities emitting ≥ 10,000 tonnes of CO_2e per year to	▪ Cap-and-trade system. ▪ Auction reserve price for 2022/2025 vintage allowances: CAD $18.69.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
	certain emissions of contaminants into the atmosphere			report total annual GHG emissions ▪ Large industrial emitters also required to report under federal GHGRP.	
New Brunswick	▪ *Climate Change Act* ▪ *Reduction of Greenhouse Gas Emissions Regulation*	▪ Transitioning to a Low-carbon Economy (2016) ▪ New Brunswick's Climate Change Action Plan Progress Report 2020	▪ 14.8 Mt by 2020. ▪ 10.7 Mt by 2030. ▪ 5 Mt by 2050. ▪ Regional GHG reduction target for 2030 of 35-45% below the 1990 regional GHG emissions level (as adopted by Conference of New England Governors and Eastern Canadian Provinces).	Large industrial emitters report under federal GHGRP.	▪ New Brunswick has implemented a tax on gasoline, motive fuel and carbon emitting products. The tax is levied at a rate of $50 per tonne as of April 1, 2022. ▪ New Brunswick also regulates emissions of large emitters though an output-based pricing system, so the federal OBPS does not apply in New Brunswick.
Prince Edward Island	▪ *Climate Leadership Act* ▪ *Climate Leadership Regulations* ▪ *Net-Zero Carbon Act*	▪ Climate Change Action Plan (May 2018) ▪ Climate Change Action Plan 2018-2023 (2018) ▪ Climate Change Action Plan Progress Report (2018-2019) (October 2019) ▪ 2040 Net Zero Framework	▪ By 2030 and for each subsequent calendar year, PEI GHG emissions will be less than 1.2 Mt CO_2e per year. ▪ By 2040 and for each subsequent year, PEI GHG emissions will be net zero. ▪ Regional GHG reduction target for 2030 of 35-45% below the 1990 regional GHG emissions level (as adopted by Conference of New England Governors and Eastern Canadian Provinces).	Large industrial emitters report under federal GHGRP.	▪ The federal fuel charge and OBPS apply in PEI.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
Nova Scotia	▪ *Environmental Goals and Climate Change Reduction Act* ▪ *Greenhouse Gas Emissions Regulations* ▪ *Environment Act* ▪ *Cap-and-Trade Program Regulations* ▪ *Quantification, Reporting and Verification Regulations*	▪ Toward a Greener Future: Nova Scotia's Climate Change Action Plan (January 2009) ▪ Climate Change Progress Report (October 2019)	▪ 53% below 2005 levels by 2030. ▪ Net-zero by 2050. ▪ Regional GHG reduction target for 2030 of 35-45% below the 1990 regional GHG emissions level (as adopted by Conference of New England Governors and Eastern Canadian Provinces).	▪ Large industrial emitters report under federal GHGRP. ▪ For the electricity sector, the *Greenhouse Gas Emissions Regulations* require an annual GHG emissions report to be filed by March 31 each year.	▪ Nova Scotia's cap-and-trade program sets annual limits on the total amount of GHG emissions allowed in the province for the years 2019–2022.
Newfoundland & Labrador	▪ *Management of Greenhouse Gas Act* ▪ *Management of Greenhouse Gas Reporting Regulations* ▪ *Revenue Administration Act*	▪ The Way Forward on Climate Change in Newfoundland and Labrador	▪ 30% below 2005 levels by 2030. ▪ Regional GHG reduction target for 2030 of 35-45% below the 1990 regional GHG emissions level (as adopted by Conference of New England Governors and Eastern Canadian Provinces).	▪ Large industrial emitters report under federal GHGRP. ▪ *Management of Greenhouse Gas Reporting Regulations* require facilities emitting ≥15,000 tonnes of CO_2e to file annual GHG reports by June 1 each year.	▪ Newfoundland has implemented a "hybrid" carbon pricing program, which came into effect on January 1, 2019. It consists of two elements: 1) a carbon tax applied to combusted fossil fuels across the economy; and 2) a performance standard system for both onshore and offshore large industrial facilities and large-scale electricity generation that emit more than 25,000 tonnes of CO_2e annually. Large industrial facilities and large-scale electricity generation are required to reduce their GHG emissions by 10% in 2021, and 12% in 2022.

Jurisdiction	Key Climate Change Legislation	Key Policy Documents	Emission Reduction Targets	Mandatory GHG Reporting Requirements	Carbon Pricing Mechanism
Nunavut	*Greenhouse Gas Pollution Pricing Act*	▪ Upagiaqtavut: Climate Change Impacts and Adaptation in Nunavut (2011) ▪ Pan-Territorial Adaptation Strategy (2011) ▪ Nunavut Climate Change Strategy (2003)	No targets.	Large industrial emitters report under federal GHGRP.	The federal fuel charge and OBPS apply in Nunavut.
Northwest Territories	▪ *Petroleum Products and Carbon Tax Act* ▪ *Petroleum Products and Carbon Tax Act Regulations*	▪ 2030 NWT Climate Change Strategic Framework (May 2018)	▪ 2020 milestone target = 1,550 kt CO2 e (61 kt CO2 e or 3.7% reduction over 4 years from 2016). ▪ 2025 milestone target = 1,400 kt CO2 e (150 kt CO2 e or 9.7% reduction over 5 years from 2020). ▪ 2030 final target = 1,094 kt (306 kt CO2 e or 21.9% reduction over 5 years from 2025).	Large industrial emitters report under federal GHGRP.	A carbon tax applies on all fuel sold in the NWT, in accordance with the NWT Carbon Tax Rate Schedule.
Yukon	▪ *Greenhouse Gas Pollution Pricing Act* ▪ *Yukon Government Carbon Price Rebate Act*	▪ Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy (September 2020)	▪ By 2030, Yukon will reduce its total GHG emissions from transportation, heating, electricity generation, other commercial and industrial activities, waste and other areas so that their emissions in these areas are 30% lower than they were in 2010.	Large industrial emitters report under federal GHGRP.	The federal fuel charge and OBPS apply in Yukon.