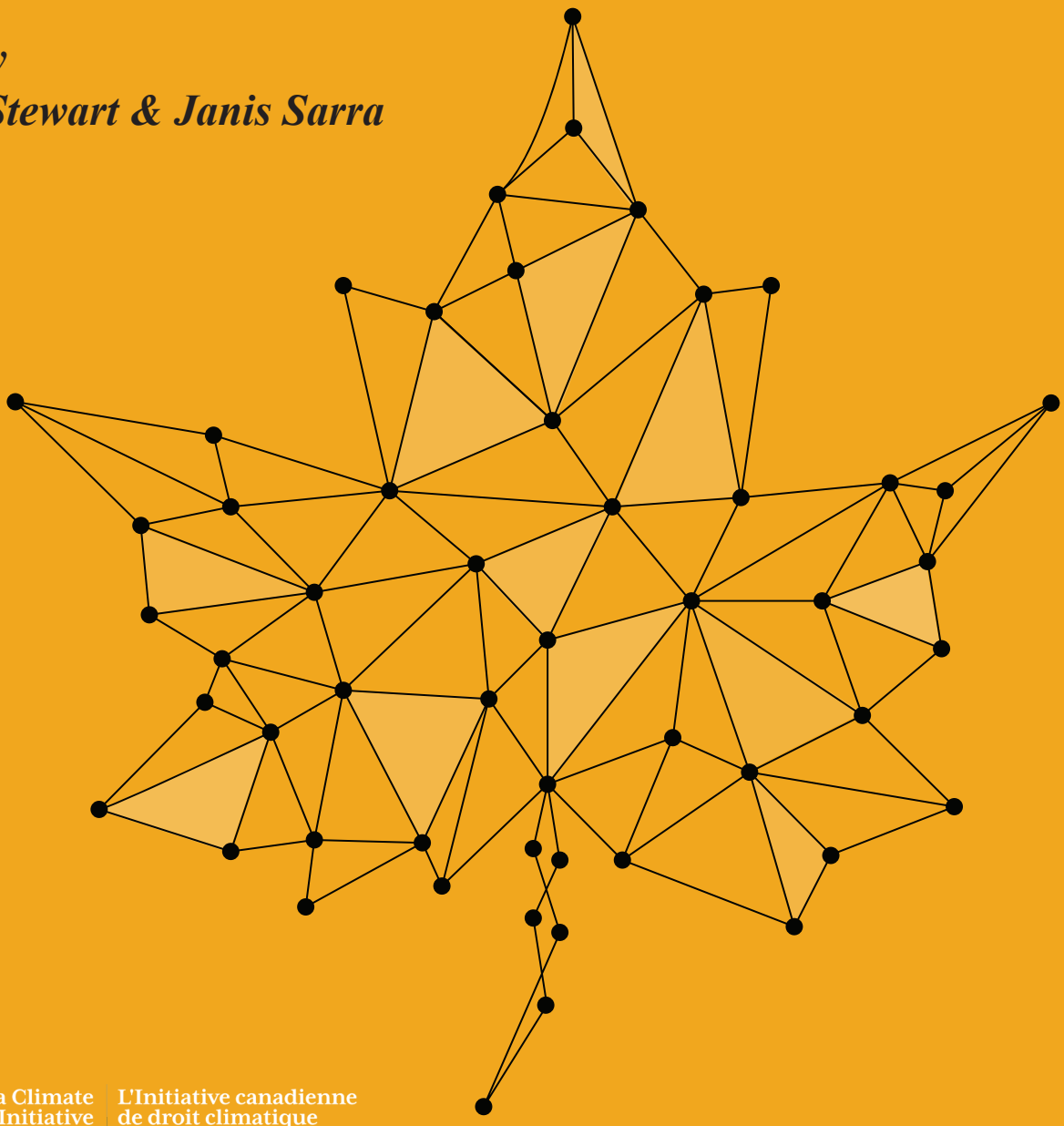
Reflections on Connecting Canada's Climate Policy Network

Edited by
Fenner Stewart & Janis Sarra



Canada Climate Law Initiative | L'Initiative canadienne de droit climatique

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CANADA CLIMATE LAW INITIATIVE 2023
VANCOUVER WWW.CCLI.UBC.CA OPEN ACCESS PUBLICATION

Canada Climate Law Initiative | L'Initiative canadienne de droit climatique

Library and Archives Canada Cataloguing in Publication

Reflections on Connecting Canada's Climate Policy Network / edited by Fenner Stewart & Janis Sarra

Includes bibliographical references.
ISBN 978-0-88865-489-2

1. Climate Policy – Social aspect – Canada. 2. Climate Policy – Political aspect – Canada.
3. Governance – Philosophy. 4. Reconciliation – Political aspect – Canada.

I. Stewart, Fenner, editor
II Sarra, Janis, editor

This book has been published with the help of a grant from the Federation for the Humanities and Social Sciences, using funds provided by the Social Sciences and Humanities Research Council of Canada.

The realization of this book would not have been possible without contributions from the following organizations and institutions. We extend our deepest gratitude. Thank you.

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Acknowledgments

This project began with a plan to help better connect climate governance in Canada. One of its early initiatives was an online conference, during the pandemic, entitled "Connecting Canada's Climate Policy Network." The public feedback from the conference inspired further discussions, which ultimately led to this edited volume. We would like to thank the conference organizers, presenters, discussants, moderators, and rapporteurs for making it a catalyst event.

Also, we are grateful to the members of the public who watched the conference and took the time to provide their feedback. Sincere thanks for to them taking personal responsibility to ensure public engagement. The proper functioning of democratic societies relies on a robust public sphere. It is citizens like the conference attendees, who are its guardians. They are an inspiration to us all.

We would like to thank the presenters for their post-conference discussions and for their commitment to converting their presentations into chapters. This process became integral to the concept and content of this edited volume. In addition, we would like to thank all the anonymous reviewers for their constructive comments. Finally, we would like to thank all the student research assistants for their hard work and fresh perspectives on the topics covered.

Without the support of several institutions, this book would not have been possible. They include the Social Sciences and Humanities Research Council of Canada, the University of Calgary Faculty of Law, the Allard School of Law at the University of British Columbia, the Canada Climate Law Initiative at the Allard School of Law, the Centre for Business Law at the Allard School of Law, the Canadian Institute of Natural Resources, and the Commonwealth Climate Law Initiative at the Smith School of Enterprise and the Environment at the University of Oxford.

We would be remiss if we failed to highlight the generosity of several key individuals, who are listed below.

- Dr. Cynthia Williams (Professor Emeritus at Osgoode Hall Law School at York University) and Dr. Carol Liao (Associate Professor and Director of the Centre for Business Law and the Allard School of Law), for their strategic guidance and administrative support;
- Dr. Ian Holloway (Dean at the University of Calgary Faculty of Law), Dr. Lyndsay Campbell (Associate Dean of Research at the University of Calgary Faculty of Law), and Susan Marks (Manager of Operations at the University of Calgary Faculty of Law), for facilitating all supports from the University of Calgary;
- Sonia li Trottier (Director and former Communications Manager at the Canada Climate Law Initiative), Juvarya Veltkamp (former Director at the Canada Climate Law Initiative), and

Melissa Reichwage (Communications Manager at the Canada Climate Law Initiative), whose assistance and participation were key to achieving project targets;

- Professor Allan Ingelson (Executive Director at the Canadian Institute of Resources Law) for his assistance in outreach and strategic planning;
- Ellie Mulholland (Executive Director at the Commonwealth Climate Law Initiative) for her assistance in international outreach and strategic planning;
- The research assistants from the University of Calgary who worked on this project: Katelyn Deyholos, Nick Ettinger, João Victor Lima, Laura Glover, Amelia Harman, Evan Matthews, Shaun Williamson, and Charlotte Woo;
- Charles Lee (Centre for Business Law at the Allard School of Law) for all of his behind-the-scenes work at the conference;
- Finally, special thanks to Joel Andersen, a JD student at the University of Calgary and research assistant on this project, for his dedication in helping with the completion of this edited volume, in particular when Dr. Stewart was recovering from unforeseen circumstances. Help in a time of need is always deeply appreciated. Thank you.

Dr. Fenner Stewart
Dr. Janis Sarra
March 2023

Introduction

Fenner Stewart

In 2021, the Supreme Court of Canada (the Court) warned that Canada, to date, was "failing to meet"[1] the greenhouse gas (GHG) emission reduction targets required to mitigate the "grave threat to humanity's future" posed by climate change.[2] The reason for Canada's failure, in the Court's opinion, was its lack of climate policy coordination at the subnational level.[3] In fact, it found that this lack of policy coordination was so serious as to amount to a national concern.[4] Moreover, the Court recognized that the federal government had the power to remedy this problem through the establishment and enforcement of minimum national standards for GHG emission pricing.[5] This judicial act indicates the importance of policy coordination between governance actors, and not only those from government, if meaningful decarbonization is to be accomplished within Canadian borders and beyond.

The climate threat is a global issue: no country can protect itself from its effects without the cooperation of the rest of the global community. This global effort needs leadership, and Canada, as one of the wealthiest nations per capita in the world, can and should be taking a leadership role.[6] A first step in assuming leadership is for Canadians to order their domestic affairs vis-à-vis the climate, effecting better coordination of climate initiatives, including those from civil society, industry, and government. If dramatic action is not taken soon, both domestically and internationally, the next generation will suffer significant, negative shifts and impacts in biodiversity, agricultural output, mortality, unemployment, coastal damage, property destruction, social unrest, and violence.[7]

This book explores paths to improving climate policy coordination, blurring public–private divides and revealing where responsibility for change must rest. The seeds of this book originated from a SSHRC-sponsored conference on the topic, which was open to the public. The conference, titled "Connecting Canada's Climate Policy Network," was hosted by the Canada Climate Law Initiative with the support of the Government of Canada, the Centre for Business Law at the Peter A. Allard School of Law, the University of Calgary Faculty of Law, the Commonwealth Climate and Law Initiative, and the

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1 *References re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 at para 13 [*References re GGPPA*].

2 *References re GGPPA* at para 2.

3 *References re GGPPA* at para 24. See also Nicholas P Ettinger, "Re-clarifying the Purpose for Maintaining Bold Canadian Climate Policy" (Chapter 12).

4 *References re GGPPA* at paras 207 & 211.

5 *References re GGPPA* at paras 5 & 206.

6 Credit Suisse Research Institute, *Global Wealth Databook 2021* (Zürich: Credit Suisse, 2021) at 21.

7 Solomon Hsiang et al, "Estimating Economic Damage from Climate Change in the United States" (2017) 356 Science 1362.

Canadian Institute of Resources Law. The presentations at the conference presented plain-language insights into how to think about climate policy in Canada, offering a rich understanding of how it could be better coordinated. Nevertheless, it was only a rough sketch, an incomplete map, of Canadian climate policy.

The public feedback from the conference was so positive that we decided to collect the conference presentations in an edited volume. Each chapter represents an invitation for further research on an aspect of climate policy coordination. Together, they are designed to inspire others to continue this conversation, to explore the potential capacity of Canada's climate policy network. Developing such knowledge offers policy insiders a powerful tool to make strategic choices, which identify and leverage opportunities to help Canada, as a society, become a leader in global climate action.

This book represents an initial step to mapping the layers of Canadian climate policy activities across government, industry, and civil society. Its guiding presumption is that such mapping will help align efforts to decarbonize. A consensus point among all authors is that new alliances need to be forged, and old ones need to be refreshed, strengthened, and broadened. Such allyship will prove essential to supporting efforts to combat climate change, galvanizing and prioritizing support for the global transition to carbon-neutrality.

When climate change actors can find ways to better coordinate, they will build the sort of networked institutional thickness that can effect directed change while standing as a formidable fail-safe to policy backslide when tough choices require commitment. Our book offers direction toward such institutional thickness within climate governance, a thickness that can ensure that meaningful decarbonization occurs. It does so by offering a glimpse into how policy actors, including self-empowered individuals, can protect tomorrow from the perils of the present.

We have divided the book into four parts. Part 1 introduces aspects of Canada's climate policy and the challenges that it currently faces. Part 2 details the structure of climate governance. Part 3 focuses on Indigenous law and ethics, offering two Indigenous perspectives on climate change; each contributes to an understanding of climate governance and ought to be embraced to enhance both climate action initiatives and Indigenous–settler relations. Part 4 focuses on the mechanics of Canada's current climate policy network, offering insider perspectives from four vantage points: within the federal government, the environmental NGO community, the academic academy, and the energy industry, respectively.

Part 1 consists of three chapters. Dr. Margot Hurlbert authors the first, titled "Mapping the GHG Governance Landscape: Directions for Climate Policy." Dr. Hurlbert is the Tier 1 Canada Research Chair in Climate Change, Energy and Sustainability Policy, and a professor at the Johnson Shoyama Graduate School of Public Policy at the University of Regina. Her chapter briefly sketches Canada's climate policy and its network of institutions before identifying opportunities for improvement.

Dame Céline Bak authors the second chapter, titled "Leveraging EU Policies in Canada and Limiting Warming to 1.5 °C." Dame Bak is a Canadian climate specialist, who the President of France knighted as a Chevalier de l'Ordre national du Mérite for mobilizing the private sector prior to the *Paris Agreement*. In her chapter, she reports on climate policy in Europe, offering a measure for evaluating climate policy in Canada.

Laura Glover authors the final chapter of Part 1, titled "All Hands on Deck: Assessing Canada's Current Federal and Provincial Climate Policy." Ms. Glover is a graduate of the University of Calgary Faculty of Law and an articling student at a full-service law firm in Calgary. Her work responds to the first two chapters, making the case for why a rapid shift away from fossil fuels is needed urgently, before assessing Canadian climate policy at both the federal and provincial levels. She highlights gaps in policy, ending with a call to action for Canadians to take the action required to affect change.

Part 2 also consists of three chapters. I author the first one, titled "The Problem, Solution, and Public Governance of Climate Change." I am an associate professor of law at the University of Calgary; my research focuses on the confluence of state and non-state regulation within energy governance. This chapter explains the problem of climate change, the solution to that problem, and the government's role as a facilitator of that solution. My chapter sets the stage for Professor Temitope Onifade's explanation of non-state governance in the second chapter of Part 2.

Professor Onifade authors the second chapter of Part 2, titled "A Model of Climate Governance: Canada's Interorganizational Complex." Soon-to-be Dr. Onifade is an assistant professor (lecturer) and the Director of the Master of Research program in Sustainable Futures at the University of Bristol, a Vanier Scholar, a doctoral candidate at the University of British Columbia, and an alumnus of the University of Calgary. His research focuses on low-carbon regulation, sustainable finance, climate justice, and sustainable development in Africa. His chapter presents a model that also stands as a measure of Canadian climate governance, offering valuable insight into how subnational climate action works.

Charlotte Woo authors the final chapter, titled "Modelling Climate Policy Networks." Ms. Woo is a graduate of the University of Calgary Faculty of Law and an articling student at a full-service law firm in Calgary. Her analysis responds to the preceding chapters of Part 2, offering an overview of collaborative governance and its goals before explaining how it can be employed to improve climate policy.

Part 3 consists of two chapters. Dr. John Borrows authors the first, titled "Indigenous Law and Canadian Climate Governance." Dr. Borrows is professor and Loveland Chair in Indigenous Law at the University of Toronto Faculty of Law and the former Tier 1 Canada Research Chair in Indigenous Law at the University of Victoria Law School. The Governor General of Canada awarded Dr. Borrows the Order of Canada for his leadership in Indigenous–settler relations. His chapter details the relationship between Indigenous law and ethics in Canadian climate governance, exploring how such governance can learn from Indigenous knowledge. In particular, the chapter explores the law and ethics of Dr. Borrows's people, the Anishinaabe of the Great Lakes region.

Amelia Harman and Emily Jones co-author the second chapter of Part 3, titled "The Multi-narrative Nature of Climate Change Policy." Ms. Harman is a graduate of the University of Calgary's joint program in law and public policy, with a Juris Doctor from the Faculty of Law and a Master of Public Policy degree from the School of Public Policy. She is presently an articling student at a full-service law firm in Calgary. She identifies as Chipewyan Dené and North Slave Métis. Ms. Jones is a Denésôliné elder and matriarch. She was a radio announcer broadcasting in Denésôliné at the

Missinipi Broadcasting Corporation, before joining the Canadian Broadcasting Corporation North Radio. Ms. Jones also provides Dené translation services to support residential school survivors. She is Ms. Harman's grandmother. Their chapter builds upon the contribution by Dr. Borrows, reflecting upon how a broad spectrum of narratives offers a holistic understanding of climate action. They detail the rich contribution the values, principles, and experiences of the Denésôliné can make to Canada's climate policy network.

Part 4 is the final section of the book, and it consists of four chapters. Rachel Samson writes the first chapter, titled "The Cusps of Canada's Climate Policy Network." Ms. Samson is currently Vice-President of Research at the Institute for Research on Public Policy. She has worked on climate change policy and the intersection of environmental and economic policy, for over 20 years. She has held various positions within Canada's climate policy network, including Research Director for Clean Growth at the Canadian Climate Institute, economist at Finance Canada, and Director of Current Analysis and Economic Research at Environment and Climate Change Canada. In her chapter, Ms. Samson reflects on her experience working within Canada's climate policy network, using her insights from various vantage points to explain interactions between government and the academic community, civil society, and industry.

Arlene Strom authors the second chapter, titled "Corporate Commitment to the Climate Imperative." Ms. Strom is the chief sustainability officer, general counsel, and corporate secretary for Suncor Energy. Her father was Harry Strom, a Premier of Alberta in the 1960s and 1970s and the last of the Social Credit dynasty, and she was politically conscious from a young age. Her chapter explores how responsible corporate actors within the energy sector work collaboratively with stakeholders to find ways to supply reliable energy while mitigating GHG emissions.

Dr. Andrew Leach writes the third chapter, titled "From the Ivory Tower to the Halls of Power." Dr. Leach is an energy and environmental economist, who holds a joint-appointed professorship in the University of Alberta's Department of Economics and Faculty of Law. In his chapter, Dr. Leach draws from two experiences as an academic to offer insight into the operation of Canada's climate policy network. The first was his term as a visiting scholar at Environment Canada in 2012-2013; the other was as Chair of the Advisory Panel to Alberta's Minister of Environment in 2015, when he took a leadership role in the design of Alberta's Climate Leadership Plan.

Nicholas Ettinger authors the final chapter of Part 4, titled "The Importance of Canada's Climate Policy Network in View of the Escalating Climate Crisis and Potential Backsliding International Policy." Mr. Ettinger is a graduate of the University of Calgary Faculty of Law, a former law clerk within Canada's judicial branch, and an articling student at a full-service law firm in Calgary. In his chapter, he warns of the risk of backslide in the fight against climate change. He suggests that a clear purpose must drive Canada's climate policy network, a purpose that can remind its actors of the rapidly escalating climate crisis and the need for coordinated implementation of bold policies to affect change.

Dr. Janis Sarra offers final thoughts on the contributions. She is a Professor at the Allard School of Law, the Principal Co-investigator of the Canada Climate Law Initiative, a Canadian investigator of the Commonwealth Climate and Law Initiative, and the founding Director of the National Centre for

Business Law at the Allard School. She was the University of British Columbia (UBC) Presidential Distinguished Professor from 2014 to 2019 and a leader at multiple levels within UBC's administration for decades. Dr. Sarra is my co-editor and a valued mentor, who helped me – and many others – join the ranks of the legal academy.

In conclusion, this edited book has at least two umbrella themes. First is that if dramatic climate action is not forthcoming, a climate tipping point will occur soon. Such action thus offers the best chance of mitigating the harm which is all but certain otherwise. Second is that without effective climate governance to safeguard against delay and to support the climate imperative, immediate problems often take priority over the risks to tomorrow, risks which have a closing window of opportunity for mitigation before they will entail irreversible harm to the natural world. The pandemic, public debt, inflation, recession, war in Europe, a global food shortage, and other crises of the present are distractions, delaying climate action, which ought to have occurred long before the pandemic if success in the fight against climate change were to be assured. To be clear, nothing we currently face as a global community compares to what awaits if inaction continues. Hopefully, this work can inspire, refocus, and refuel the continued call for meaningful climate action.

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PART ONE

Directions for Climate Policy

1 Mapping the GHG Governance Landscape: Directions for Climate Policy

Margot Hurlbert

The World Economic Forum continues to identify 'climate action failure' and 'extreme weather due to climate change' as the top two global risks,[1] even after our experience with COVID-19. Climate change is occurring everywhere, and in the future more severe droughts in length and duration as well as increases in rainfall intensity and flooding, heat stress, dry spells, and sea-level rise are expected.[2] This paper will briefly overview Canada's climate policy and its network of related institutions, and will make suggestions for improvement. Continued focus on climate change solutions is important to achieve United Nations Sustainable Development Goal 13, which addresses climate change.

Evidence of the impacts of climate change has been undeniable during the COVID-19 pandemic, including fires in Australia and North America, floods in Indonesia and Europe, and locust swarms in East Africa. Climate change is real and is happening now, and humans are both the cause and the solution.[3] The change in global surface air temperature over land has risen 1.9 °C since 1850.[4] In Saskatchewan we experience this change in climate as being "less cold." Our average winter minimum temperature has increased to minus 16 °C today from minus 22 °C 55 years ago (a 6 °C warming). Our average frost-free growing period has similarly increased to 140 days, up from 106 days in the mid-1960s.[5] This warming has manifested in such phenomena as the advent of West Nile virus and the unprecedented extent and severity of pine beetle infestation.[6]

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3 Intergovernmental Panel on Climate Change, "Global Warming of 1.5 °C. An IPCC Special Report on the Impacts of Global Warming of 1.5 °C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty", online: <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf> [IPCC, "Global Warming"]; *ibid,* IPCC, "Climate Change and Land"; Intergovernmental Panel on Climate Change, "Summary for Policymakers, IPCC Special Report on the Ocean and Cryosphere in a Changing Climate", online: <https://www.ipcc.ch/srocc/chapter/summary-for-policymakers/> [IPCC, "Ocean and Cryosphere"].

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Globally interconnected climate change risks are only beginning to be understood and experienced. Multiple food supply failures exacerbate urbanization, migration, and conflict as El Niño and La Niña events potentially create cascading risk through the Northern and Southern Hemispheres. In a synthesis of the latest peer-reviewed state-of-the planet research, more than one-third of scientists identified an underlined threat posed by the synergistic interplay and feedback loops between the top five global risks, which "might cascade to create global systemic crisis."[7] These effects can be expected concurrently, and include extreme heatwaves accelerating global warming by releasing large amounts of stored carbon, intensifying water crises and/or food scarcity, and loss of biodiversity weakening the capacity of natural and agricultural systems to cope with climate extremes, increasing vulnerability to food crises.[8]

Extreme weather events, droughts, floods, and fires are increasing in frequency, intensity, and duration. Shocks (such as environmental disasters, but also political and economic ones) manifest the failure of the current social contract to provide security from disaster and offer the potential for transformative change by changing critical consciousness.[9] Over the past decades, a climate change "crisis" has developed.[10] Crisis is defined as an event or process that is uncertain, but constitutes a threat that is urgent in relation to core community structures and values.[11] The word "crisis" in relation to climate change can be traced to 2006, with Al Gore's release of *An Inconvenient Truth*. Its more recent proliferation also coincides with the use of the related term "climate emergency."[12] Terms such as "Anthropocene," "climate emergency," and "climate catastrophe" have all entered into common discourse,[13] and with this framing, new policy solutions and actions are being taken by actors within Canada's climate governance and policy network.

The Intergovernmental Panel on Climate Change (IPCC), in which Canada participates, cautiously assesses, diagnoses, and makes recommendations portraying climate change as a risk, describing underlying drivers and ranges of possibilities using a scientific consensus approach.[14] The IPCC has organized around concepts of risk and climate change defining risk as "the potential for adverse consequences for human or ecological systems, recognizing the diversity of values and objectives

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8 *Ibid*.

9 Mark Pelling, *Adaptation to Climate Change: From Resilience to Transformation* (London: Routledge, 2011).

10 Eva-Karin Olsson, "Responsibility Framing in a 'Climate Change Induced' Compounded Crisis: Facing Tragic Choices in the Murray–Darling Basin" (2009) 8 Envtl Hazards 226.

11 Arjen Boin *et al*, *The Politics of Crisis Management: Public Leadership Under Pressure, 2nd ed* (Cambridge: Cambridge University Press, 2017).

12 Andrew Jordan Wilson & Ben Orlove, "What Do We Mean When We Say Climate Change is Urgent?", online: <https://academic-commons.columbia.edu/doi/10.7916/d8-b7cd-4136>.

13 Frank Biermann & Eva Lövbrand, "Encountering the 'Anthropocene': Setting the Scene" in Frank Biermann & Eva Lövbrand, eds, *Anthropocene Encounters: New Directions in Green Political Thinking* (Cambridge: Cambridge University Press, 2019) 1; Anna R Davies *et al*, "Editorial: Is There a New Climate Politics?" (2021) 9 Pol &Governance 1; Denise Jodelet *et al*, "Introduction – Threats: An Indispensable Debate" in Denise Jodelet *et al*, eds, *Societies under Threat, A Pluri-Disciplinary Approach* (Cham: Springer Nature Switzerland, 2020) 1; Xira Ruiz-Campillo *et al*, "Motivations and Intended Outcomes in Local Governments' Declarations of Climate Emergency" (2021) 9 Polit Govern 17; Carl Cassegård & Håkan Thörn, "Toward a Postapocalyptic Environmentalism? Responses to Loss and Visions of the Future in Climate Activism" (2018) 1 Envtl Plan E: Nat Space 561.

14 Martin L Weitzman, "Fat-Tailed Uncertainty in the Economics of Catastrophic Climate Change" (2011) 5 Rev Envtl Econ Policy 275.

associated with such systems."[15] The term "threat" is less used by the IPCC.[16] However, the IPCC has reported the urgent need to address climate change.

After perceived deficiencies of the *Kyoto Protocol* and inaction at the Copenhagen COP, the *Paris Agreement* united the world in the commitment to keeping global temperature increases this century well below 2 °C, pursuing 1.5 °C. Countries committed individual pledges in Nationally Determined Contributions. But these pledges have not been enough, have not been achieved, and we are still expected to overshoot this target this century. COVID-19, although significant, has not changed this trajectory – reduced air travel and automobile or transportation use are not the long-term changes needed to address climate change, and moreover have lasted only temporarily.

There is high confidence "that the window of opportunity, the period when significant change can be made, for limiting climate change within tolerable boundaries is rapidly narrowing."[17] We as Canadians have no option but to rebuild our economy post COVID-19 in a way that is mindful of reducing climate change risk and thoughtfully decarbonizing the economy. The world's remaining carbon budget, the amount of GHG emissions that can be released into the atmosphere over time, may be depleted as soon as 2028.[18] At this point, if we emit further carbon into our atmosphere, we will likely be unable to meet our *Paris Agreement* commitments. This means that in five years we need to be close to achieving net zero carbon emissions. It is clear that urgent action is required – a combination of new technology (clean and renewable), energy efficiency, and societal change.[19] Our stated policies will only get us partway there; more measures are required.

The majority of climate change scenarios consistent with the *Paris Agreement* rely on negative emission technologies (NET), carbon dioxide removal (CDR), and clean energy technologies such as solar, wind, and nuclear. Negative emission technologies include planting trees, converting biomass to biochar (a charcoal-like substance made by burning organic material in a controlled process, then using it as a soil amendment), direct air capture through carbon capture and storage (CCS), and bioenergy CCS (that is, burning switchgrass or loblolly pine (as examples) to produce energy and capture CO_2 by using CCS).[20] CDR is achieved through agricultural best management practices that increase soil organic carbon content; reduce soil erosion, salinization, and compaction; and include soil carbon

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15 Andy Reisinger *et al*, "The Concept of Risk in the IPCC Sixth Assessment Report: A Summary of Cross-Working Group Discussions", online: <https://www.ipcc.ch/site/assets/uploads/2021/01/The-concept-of-risk-in-the-IPCC-Sixth-Assessment-Report.pdf>.

16 Intergovernmental Panel on Climate Change, "Intergovernmental Panel on Climate Change, 5th Assessment Report, WGI, WGII and WGIII", online: <https://www.ipcc.ch/report/ar5/wg3/> [IPCC 2014]; Laurence Tubiana & François Lerin, "Climate Change: Anticipated Risk or Heralded Catastrophe? Questions from a Thwarted Public Enquiry" in Denise Jodelet *et al*, eds, *Societies under Threat, A Pluri-Disciplinary Approach*, (Cham: Springer Nature Switzerland, 2020) 157.

17 IPCC, "Climate Change and Land", *supra* note 2 at 81.

18 The remaining carbon budget for a one-in-two chance of limiting global warming to 1.5 °C is about 580 GtCO2, and about 420 GtCO2 for a two-in-three chance. These budgets are reduced by approximately 100 GtCO2 when permafrost and other less-represented Earth system feedback are taken into account. At constant 2017 emissions these budgets would be depleted by the years 2032 and 2028 respectively (see: IPCC, "Global Warming"; IPCC, "Climate Change and Land"; IPCC, "Ocean and Cryosphere").

19 IPCC 2014, *supra* note 16.

20 IPCC, "Climate Change and Land", *supra* note 2.

sequestration and processes to speed carbon mineralization.[21]

Direct air capture initiatives exist around the world, but they are very expensive. That said, other CCS options exist, as indicated above. The *Land and Climate Report* concludes that growing forests is critical for carbon capture.[22] Bioenergy with CCS is a negative emission technology, which combines the ability of forests to pull CO_2 from the atmosphere with CCS techniques. Canadian industry has started using such technology.[23] Also, in Alberta, a carbon trunk line exists, meaning carbon is extracted from industrial processes and shipped to places that can use the carbon as an asset, before putting it into underground storage.

There is no one policy solution; instead we need a system or suite of policy options. Economists prefer a carbon tax for its economic efficiency and because it is technology neutral, allowing producers and consumers to make the ultimate choice. But markets are not always efficient, and often new technology and innovation requires a different impetus. CO_2 pipelines, infrastructure for electric or hydrogen vehicles, and geothermal heating all require government leadership. Green financing, targeted tax credits (such as the American section 45Q credit), and other such policy incentives can accelerate efficiencies and advance nature-based solutions (NBS) (that is, constructing wetlands, employing rainwater harvesting, establishing conservation easements, building green walls to reduce urban heat islands, protecting grass and grazing lands, *etc.*). How to optimize these decisions in the face of increasingly legally binding commitments is a key question. Rigid provincial, territorial, or sectoral targets give rise to burden-sharing decisions. British Columbia and Manitoba have legislated climate accountability frameworks, along with New Zealand and the United Kingdom.[24]

It is important to think deeply about the interrelationship of certain policies. We do not frame some policies as impacting climate change even though they do. For instance, the Shelterbelt policy provided incentive for agricultural producers in the prairies to have tree belt lines and was the solution to the 1930's drought, but it also resulted in soil carbon sequestration that helped keep soil healthy, which prevented desertification. It was thus also a form of climate change mitigation, reducing greenhouse gases. One would never think that this small policy had had such impact. This is just one example. There are many policies that manage the land–climate connection. If we have the right policies and practices in place, we can save our soil and save its sequestration processes.

The World Economic Forum has recognized that a systems approach is the best practice for enabling a transition. It uses an Energy Transition Index (ETI), which enables policymakers and businesses to plot the course for a successful energy transition. Important transition dimensions include energy system structure, human capital and consumer participation, infrastructure and innovative business environment, institutions and governance, regulation and political commitment, and capital and

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21 *Ibid*.

22 *bid*.

23 *Ibid*.

24 Canadian Institute for Climate Choices, "Marking the Way: How Legislating Climate Milestones Clarifies Pathways to Long-Term Goals", online: <https://climatechoices.ca/wp-content/uploads/2020/06/CICC-climate-accountability-framework-FINAL.pdf> [CICC 2020].

investment. Of note is that Canada's ETI score has regressed, decreasing between 2015 and 2020.[25]

Governments are increasingly recognizing the need to embrace laws and policies with targets of net zero emissions by 2030 or 2050. Many countries have declared ambitious net zero emissions goals, including Sweden, the United Kingdom, France, Denmark, New Zealand, Hungary, Spain, Chile, and Fiji.[26] Meanwhile, Finland, Austria, Iceland, Germany, Switzerland, Norway, Ireland, Portugal, Costa Rica, Slovenia, and the Marshall Islands have referred to such targets in policy documents,[27] and Uruguay, Italy, South Korea, Mexico, the Netherlands, Colombia, Argentina, Belgium, Pakistan, and many more are considering these measures.[28] In all, 77 countries, 10 regions and more than 100 cities have announced their commitment to net zero carbon emissions by 2050; the momentum is building.[29] Canada has passed the *Canadian Net-Zero Emissions Accountability Act*,[30] enshrining its commitment to national targets to reduce GHGs to net zero by 2050. A large number of global organizations have also declared carbon neutral targets, especially those with end-consumer-facing business models (including Amazon, Google, Apple, Cenovus Energy, TELUS, and Maple Leaf Foods).

Planning only for the short term while undermining long-term resilience is antithetical to being a good corporate citizen. As airlines realized during COVID-19, governments and funders are reticent to bail out an industry whose economic vulnerability exists because it overpaid shareholders for decades, depleting its equity cushion. The next generation wants faster change, and they are willing to pay for it and accept the lifestyle impacts required.[31] This new sense of corporate and individual responsibility is backed by other Canadian institutions. For instance, the federal government released a strengthened climate plan in December of 2020 that contains many policy initiatives. Also, the Supreme Court of Canada decided in early 2021 that the federal government has the jurisdiction to implement its carbon pricing backstop policy.

The consideration of this myriad of climate change actors in the climate change governance network illustrates the ‘‘system: of political jurisdictions, jurisdictional levels, and diversity of actors. We also need to think about climate governance in our daily lives, on the home level. What will our homes look like in the future? We will have electric vehicles that will also serve as a means of energy storage, a source of energy when the sun is not shining and the wind is not blowing. Also, we need to bring clean energy other than wind and solar, like hydroelectricity, into towns and communities which do not have access to clean energy resources. Thinking about our homes also makes us link different systems together.

System-level climate change policy considerations will be important. But if these efforts are to be effective, they must move beyond thinking that is limited to a particular sector. A more holistic approach is required. For instance, electric vehicles are great, but thinking about electric vehicles only within the

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25 WEF 2020, *supra* note 1.

26 Energy & Climate Intelligence Unit, “Net Zero Scorecard”, online: <https://eciu.net/netzerotracker>.

27 *Ibid*.

28 *Ibid*.

29 CICC 2020, *supra* note 24.

30 SC 2021, C – 12.

31 WEF 2020, *supra* note 1.

narrow confines of the transport sector does not provide a complete picture. If 90% of all vehicles are electric in 2035, this achievement will appear to be a positive step toward combatting climate change if one is looking only within the transport sector. But if we look to how these cars are powered and discover that we are burning coal to produce the electricity to power them, it is not such a great thing.

Former Bank of England and Bank of Canada governor Mark Carney refers to the climate crisis as the "tragedy of the horizon."[32] In other words, our socio-ecological systems are not developing fast enough for the world to reach net zero. The fact is that the severe effects of climate change will be felt well beyond the traditional horizons of most governments and businesses, imposing a cost on future generations that we, the current generation, have little immediate incentive to fix.

Projections by the International Energy Agency (IEA) indicate that global demand for oil and gas will reach its peak by about 2025 and then remain relatively constant through to 2050. Having said that, the energy supply chain will very likely be different. To achieve Paris commitments, the IEA states, "renewables will not be enough on their own,"[33] and solar, wind, low-carbon hydrogen, batteries, and carbon capture and storage (CCUS) should be a part of governments' plans for both stimulating clean energy transitions and stimulating economies.[34] Further, we will not achieve Paris commitments without decarbonizing the transport sector.[35]

One consequence of the COVID-19 pandemic is that people are savvier about global supply chains. This will have significant impacts. For example, our medical system depends on products such as plastics, syringes, and other equipment derived from oil. Moreover, electric vehicles still require oil and gas products in their construction, and many of our household products and clothes contain oil and gas derivatives. As global consumers demand low- to zero-emission mining, industry, and transportation, the challenge becomes how we will supply essential products. Canada has released a hydrogen strategy, and it is exciting to think about the opportunities that this strategy is giving to our businesses and industries. Multiple methods of creating hydrogen and potential uses opens a large space for innovation.

Management of the agricultural sector will be critical to fighting climate change. We need to start thinking about accountability, verification, and reporting of greenhouse gases. For example, how much carbon was emitted to produce what I am eating on my plate? Am I eating local food, or am I eating food that has been transported from various areas of the world? We do not yet have the accounting, verification, or reporting mechanisms to know how much carbon is emitted from what we eat. Without such knowledge, it becomes difficult for us to select food which is clean and carbon free.

There is much diversity and ambiguity surrounding the goal of 'net zero': from the choice of greenhouse

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[32] Mark Carney, "Fifty Shades of Green: The World Needs a New, Sustainable Financial System to Stop Runaway Climate Change" (2019) 56 Finance Dev at 12 [Carney].

[33] Nina Chestney, "Huge Acceleration of Clean Energy Innovation Needed to Meet Net Zero Target: IEA", *Reuters* (1 July 2020), online: <https://www.reuters.com/article/us-iea-cleanenergy/huge-acceleration-of-clean-energy-innovation-needed-to-meet-net-zero-target-iea-idUSKBN2430FJ> [Chestney].

[34] Fatih Birol, "Coronavirus: Economic Stimulus Plans Open a Door for Clean Energy", *Energy Post EU* (17 March 2020), online: https://energypost.eu/coronavirus-economic-stimulus-plans-open-a-door-for-clean-energy/.

[35] Chestney, *supra* note 33.

gasses to the treatment of offsets and negative emission alternatives to the boundaries for emissions accounting. There is much opportunity for tailoring a strategy through deliberative dialogue within our climate change governance system to build target points, timelines, and sector specifics into an achievable roadmap. Gradual implementation of carbon pricing mechanisms allows for adjustment. Additionally, a sector-specific approach allows for response to distributional considerations. Targeted fiscal support may be required for sectors vulnerable to challenges to their international trade competitiveness due to carbon leakage.

Climate change governance, innovation, and resilience are increasingly important. Planning for the long term is crucial for resilience. For instance, Apple has been a leader in opting not to pay large stock dividends, instead retaining profits to invest in innovation and to keep people employed through difficult times. In contrast, the automobile industry was ill prepared for the 2008 financial crisis, resulting in a lack of resilience, and suffered reputational damage as a consequence. Such myopic forms of strategic planning are becoming obsolete.

Changing public sentiment toward corporate responsibility is also paralleled by changing legal responsibility, and youth are leading this change. Youth public trust claims are increasing against governments for inadequate climate efforts, but so are lawsuits against private entities for failure to adapt to climate change, failing to incorporate climate change risks into investments and planning, failing to report climate change risks, or weak, misleading or inadequate disclosure surrounding planning for climate change risk, including climate change scenarios for limiting global warming well below 2 °C.[36] Increased obligations surrounding planning for net 2 °C and communicating it (which is equivalent to, or supported by, plans to achieve net zero by 2050)[37] have been endorsed by the G20,[38] the American Bar Association,[39] and the European Commission.[40]

One of the most important developments in the climate governance network is that reputational damage in relation to climate change is becoming a reality. Seventy percent of young people consider the speed of energy transition to be either stagnant or too slow – but the opportunity here is that they are willing to pay for it and accept the lifestyle changes required for energy transition.[41] In the words of Greta Thunberg, addressing the United Nations,

> People are suffering. People are dying. Entire ecosystems are collapsing. We are in the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth. How dare you![42]

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[36] Joana Setzer & Rebecca Byrnes, "Global Trends in Climate Change Litigation: 2019 Snapshot", online: <https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2019/07/GRI_Global-trends-in-climate-change-litigation-2019-snapshot-2.pdf>; Jacqueline Peel *et al*, "Shaping the 'Next Generation' of Climate Change Litigation in Australia" (2017) 41 Melbourne UL Rev 793.

[37] IPCC, "Global Warming", *supra* note 3.

[38] Carney, *supra* note 31.

[39] Robert F Brammer & Preetha Chakrabarti, "Scitech and the Task Force on Climate-Related Financial Disclosures" (2019) 15 Scitech Lawyer 14.

[40] Simon Zadek, "Financing a Just Transition" (2019) 32 Organ Environ 18.

[41] WEF 2020, *supra* note 1.

[42] NPR Staff, "Transcript: Greta Thunberg's Speech at the U.N. Climate Action Summit", *NPR* (23 September 2019), online: <https://www.npr.org/2019/09/23/763452863/transcript-greta-thunbergs-speech-at-the-u-n-climate-action-summit>.

Climate strikes took place in at least 150 countries worldwide, taking up Greta's challenge of 2018/19; by the end of 2019 1,480 jurisdictions spanning 28 countries and covered 820 million citizens had issued "climate emergency" declarations.[43] The emerging "climate crisis" discourse, together with recent policy changes and the activism of our youth, signals a very different climate governance landscape in the future.

[43] REN21, "Renewables 2020: Global Status Report", online: <https://www.ren21.net/wp-content/uploads/2019/05/gsr_2020_full_report_en.pdf>.

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2 Leveraging EU Policies in Canada and Limiting Warming to 1.5 °C

Céline Bak

I am not a lawyer, but reviewing Dr. Hurlbert's chapter, I thought about the great capacity that lawyers have to start with first principles and to consider policy from a foundational basis. Given the nature and size of the Canadian policy environment, and the size of the task that we have in front of us, we are going to all have to be like Swiss Army knives. We need to be able to flow into different policy areas, because there are going to be many different things happening at any given time.

I will write about the European Union, although I introduce the chapter with a quotation from President of the United States Joe Biden, and I will follow very much along the lines that Dr. Hurlbert expressed: We need to get to net zero by 2050.

I will write about three things: (1) Framing: International Panel on Climate Change (IPCC) 1.5 C scenarios, (2) EU macro-level economic policy and the European Green Deal, and (3) current EU regulatory packages.

In terms of the IPCC, I will briefly frame the issue, providing an enrichment of what Dr. Hurlbert referred to in the previous chapter. Then, I will discuss the EU and the work that I am doing from Madrid. My work in Spain has offered me the opportunity to work in the private sector on EU-related matters. There are so many things that we can and should leverage from what is being done in Spain, because there will be so much to do in such a short time, and we can only be Swiss Army knives to a certain extent.

I want to bring our awareness to the fact that not all 1.5 °C scenarios are the same. In the IPCC 1.5 °C Special Report, there were four illustrative scenarios. The first two, in the bottom left of the image below, have a very small overshoot, while the other two have a large and then a very large overshoot. It is not often discussed – although I believe we are settling around the language of net zero by 2050 – but there are many different discourses around this objective, and some of them are based on a much more precautionary approach, represented in the first two illustrated scenarios, with hardly any overshoot; and this in turn means that we have to do very little reverse combustion.

To give you an example, when I spoke with one of the modellers during the Madrid United Nations–sponsored Conference of the Parties (COP) about the International Energy Agency's Sustainable Development scenario, she said that it contemplated reverse combustion at the scale of one-third of global annual emissions today: 15 gigatons. That is an enormous amount of direct air capture (DAC) combined with carbon sequestration. So, I want us to bear in mind that this precautionary approach

would not have us exceed 2 °C of warming and then have to come back down via atmospheric carbon removal. This approach stands in sharp contrast with the many scenarios that we see being referred to in the private sector that are in fact based on these overshoot assumptions.

For anyone who has not yet looked at the Climate Action Tracker's thermometer, it is an accessible way of conveying important concepts.[1] Many of you will know that there was a first tally of all the Nationally Determined Contributions in advance for the COP in Glasgow, and that we are at minus 1% of emissions by 2030. This is a very long way away from minus 50%, which is the emerging standard in both the government and private sectors and the milestone we are working towards to achieve net zero emissions by 2050 and keep 1.5 °C within reach. As you can see above, the current policies have ranges of between 2.5 °C and 3.9 °C, with pledges and targets in a range slightly tighter than that.

To put this issue in the Canadian context, today under the *Paris Agreement*, Canada's commitment to emissions reduction is a 30% reduction by 2030. This commitment, if it were the average across all *Paris Agreement* signatories, would result in failing to keep under the 1.5 °C target and having to remove greenhouse gases from the atmosphere to return to that level.[2]

By way of context, in December 2020, the European Union strengthened its Nationally Determined Contribution to the *Paris Agreement* from a 40% reduction from a 1990 baseline by 2030 to a 55% reduction from a 1990 baseline by 2030.[3] In this context, I am going to speak very briefly about the stimulus that the EU has put forward, which includes two parts. First, there is the EUR 723.8 billion Recovery and Resilience Facility (RRF), of which 30% must be dedicated to reducing emissions.[4] The same ratio is also applied to the EUR 1.1 trillion Multiannual Financial Framework. As regards the RRF, EUR 140 billion of the EUR 723 billion total will come to Spain because of Spain's particular economic circumstances. Seventy billion euros of that will be for grants, with the remainder in loans. The timing of the stimulus is for the 2022 period, with a significant element of it being driven by the private sector in order for there to be a multiplier effect, where one public euro will bring with it between three and four private sector euros. So, the market for clean, low carbon technology is obviously being opened in the EU, and that will have an important effect globally.

Recently, I moderated a panel with the Commissioner of the European Commission for the Economy, Paolo Gentiloni, who said about the RRF, "well we are so glad we did this because we have a first mover advantage," because, obviously, the US is moving in this direction as well.

The RRF funds are to be invested along three major axes: climate policy, digital policy, and social policy. These first two, climate policy and digital policy, are seen as "twin transitions," with the energy

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1 Climate Action Tracker, "The CAT Thermometer", online: https://climateactiontracker.org/global/cat-thermometer/.

2 This paper was presented on March 18, 2021. On April 22, 2021, the Government of Canada revised its Nationally Determined Contribution to the Paris Agreement to a 40%–45% reduction by 2030. See Government of Canada, "Prime Minister Trudeau Announces Increased Climate Ambition", online: <https://pm.gc.ca/en/news/news-releases/2021/04/22/prime-minister-trudeau-announces-increased-climate-ambition>.

3 European Commission Climate Action, "Paris Agreement", online: <https://climate.ec.europa.eu/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en>.

4 European Commission "Recovery Plan for Europe", online: <https://ec.europa.eu/info/strategy/recovery-plan-europe_en#:~:text=The%20centrepiece%20of%20NextGenerationEU%20is,value%20of%20%E2%82%AC723.8%20billion>.

transition and the digital transition viewed as going together. The final axis is an economy that works for people. There is a very clear emphasis on next-generation investments being focused where jobs need to be created, with a focus on renewable energy and storage, retrofits to buildings, sustainable transportation, and energy infrastructure. None of these priorities are news to any of you; they are all themes that are common across the world. The three-legged stool being the foundation for this macro-economic stimulus is quite innovative, and I expect that we will see something very similar from the US when the time comes.

At a broader level, these initiatives are all policy areas of the European Green Deal. I will not take us through all of them, but imagine that there are dozens of people at the European Commission working on each of these policy packages. They have their regular regulatory workstreams, and as well, the people working on these policy areas are being called upon as experts to evaluate the national plans for the RFF funds. In addition, there are specific projects, including large hydrogen projects for example, which will come to individuals who are working in different parts of the Commission on all these files. Why is that worth mentioning? Well because, frankly, in Canada, we should beg, borrow, and steal whatever can be used from these policy initiatives, which are already underway. I think we should look at them and decide, "Does this policy serve us?" – and if it does, why start from nothing? There is a lot of consultation that has already occurred, the scientific and academic work is already in progress, the evaluation of the innovations has already occurred, and the economic multipliers and opportunities are often already there as well. So, lots of resources to leverage to our benefit.

I would like to walk through the university innovation dimension, which is something that I worked on for many years in clean technology, so that the policy community understands the opportunity for clean technology as an economic sector. The digital transformation I mentioned is "Horizon Europe." Its budget is EUR 95.5 billion for the period from 2021 to 2027.[5] If we can create a partnership with the European "Horizon Europe" facility, I advise looking seriously at that as an opportunity, because there is going to be a significant focus on targeting that money towards the twin transitions and with a view to social impact. So, we need lots of partnerships, and lots of focus on emerging and disruptive technologies. However, we also need the opportunity for the low-carbon economy to compensate for the jobs that will be lost due to the twin transitions.

Overall, the RRF is an attempt to balance the dampening effect of technology on jobs with the growing effect of investment in clean energy. In this context, it is important to mention the scope and scale of the Just Transition mechanism for Europe. This is a EUR 95.5 billion program, with a large part to be directed to Poland and Hungary. Some of the delays in the final political agreement were caused by haggling around Just Transition contributions to Hungary. These matters have since been resolved. Again, these are important policies that have been established, as well as resources that we can leverage and benefit from, as Just Transition policies continue to be developed in Canada.

I am going to close with reference to the regulatory environment and open EU regulatory packages,

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[5] European Commission Directorate-General for Research and Innovation, "Horizon Europe, Budget: Horizon Europe – the Most Ambitious EU Research & Innovation Programme Ever", online: <https://op.europa.eu/en/publication-detail/-/publication/1f107d76-acbe-11eb-9767-01aa75ed71a1>.

because this will give us an idea of what is going on. For example, there is a new road transportation package, including alternative fuel infrastructure standards for both heavy-duty and light-duty vehicles, as well as a new EU weight and dimensions package for road transportation. There is also the trans-European transportation network package, which is specific to intermodal transportation, as well as a huge shift in Europe towards rail transportation for both people and merchandise. Additionally, there is the EU maritime package, which will promote greater inclusion of the maritime sector within the European emissions trading system; and, last, there is an aviation refuel package.

There are several EU regulatory packages, including the renewed sustainability strategy, aiming at continued work on stable finance. The sustainable finance taxonomy is vitally important because it is going to give savers the right to understand the degree to which their investments are in fact aligned with their priorities and preferences. For all of this to work, state aid needs to be reformed, because to the extent that we are putting USD 723 billion on the table and some of it is going to the private sector, state aid needs to be considered, so that the EU does not get offside of the World Trade Organization (WTO). Finally, carbon markets will be reformed, and that, of course, will affect the three industries in focus right now: steel, chemicals, and fertilizers.

That is a whirlwind tour of the policy environment in Europe. Ursula von der Leyen, President of the European Commission, said in February 2020, when the negotiations around the Green Deal were happening before the pandemic:

> Those who act first and fastest, will also be the ones who grasp the opportunities from the ecological transition…. But public finances alone will not be enough. We need to tap into private investment by putting green and sustainable financing at the heart of our investment chain and financial system.[6]

Those are words to live by. I will end with a question for us to consider, which is: How can the work of climate policy, and of the climate policy network, ensure a 1.5 °C–aligned approach at the intersection of policy, civil society, and business? I have given us a sense of the policy and business side of things here in Europe now, and I welcome a broader discussion about how that intersection with civil society can advance our aims.

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[6] Spainsif, "Invirtiendo en una economía circular y neutra con el climate", online: <https://www.spainsif.es/inversiones_economia_circular/>.

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3 All Hands on Deck: Assessing Canada's Current Federal and Provincial Climate Policy

Laura Glover

We have entered a "new era of climate reality," with the World Meteorological Organization announcing that climate change is "rapid, widespread and intensifying."[1] The scale of recent changes is unprecedented in thousands of years.[2] For the benefit of policymakers, over 200 experts from the physical sciences convened by the United Nations Intergovernmental Panel on Climate Change (IPCC) summarized the current science regarding the contribution of human activity to changing climate in the first instalment of the IPCC's sixth assessment report. The IPCC stated that increases in greenhouse gas (GHG) emissions are unequivocally caused by human activities and that the environmental changes due to past and future greenhouse gas emissions are irreversible over hundreds and even thousands of years, particularly so when it comes to changes in the ocean, ice sheets, and global sea level.[3] Since 2011, GHG concentrations have steadily increased in the atmosphere, and global temperatures have been continuously rising for even longer, with each of the last four decades being successively hotter than any decade preceding it.[4]

As a result, human-induced climate change is already affecting weather and exacerbating climate extremes in every region across the globe. The atmosphere is particularly affected, having taken up a disproportionate amount of global CO_2 emissions from human activities over the course of the last 60 years.[5] Additionally, evidence of observed changes in extreme weather and climate disasters are increasing in frequency and intensity; for example, heatwaves, wildfires, heavy precipitation, droughts, and intense tropical cyclones have steadily increased since the IPCC's last report in 2014.[6] In addition, the global surface temperature has risen an average of 1.2 °C since the dawn of the Industrial

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1 World Meteorological Organization, "Globally Averaged CO2 Levels Reach 400 Parts per Million in 2015", online: <https://public.wmo.int/en/media/press-release/globally-averaged-co2-levels-reach-400-parts-million-2015>; World Meteorological Organization, "WMO: New Climate Report Is Clarion Call for Urgent Action", online: <https://public.wmo.int/en/media/press-release/wmo-new-climate-report-clarion-call-urgent-action>.

2 See, generally, Intergovernmental Panel on Climate Change, "Climate Change 2021: The Physical Science Basis Summary for Policy Makers", online: <www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf> [IPCC Report]. See also *References re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 at paras 7-12 [*References re GGPPA*].

3 *Ibid*, IPCC Report.

4 *Ibid* at 5.

5 *Ibid*.

6 *Ibid* at 9-14.

Revolution, putting us perilously close to the internationally agreed upon limit of 1.5 °C by 2050.[7]

The consequences of this rise in global temperature can already be felt across the globe.[8] At the time I am writing this paper, blistering heatwaves have killed hundreds of people in the Northwestern United States and Canada.[9] Wildfires have levelled an entire village in British Columbia,[10] and raged out of control in Siberia, Turkey, and Greece,[11] and floods have devastated swaths of Germany, Belgium, and China.[12] But that's only the beginning, as the IPCC predicts that global temperatures will continue to increase during the 21st century unless a deep reduction in CO_2 and GHG emissions occurs in the upcoming decades.[13] As a result, the IPCC's findings are being regarded as a "code red for humanity."[14]

However, despite the dire circumstances, not all hope is lost; there is still a window for humanity to prevent the planet from getting even hotter. The pathway to net zero emissions by 2050 is narrow but achievable.[15] The IPCC report concludes that that avoiding the most dangerous and disruptive impacts of climate change will require a coordinated and decisive effort amongst countries to stop adding CO_2 to the atmosphere by 2050.[16] Doing so would help limit temperature rise to 1.5 °C and avoid dangerous and irreversible climate tipping points (which are associated with a 2 °C or greater increase in global temperature above pre-industrial levels).[17]

Thus, the evidence is clear that unlocking a prosperous future and mitigating the effects of human-induced climate change requires a rapid shift away from fossil fuels starting immediately, as well as potentially removing vast amounts of CO_2 from the atmosphere. CO_2 emissions are deeply embedded within the everyday activities that characterize Canadians' everyday lives.[18] As stated by Chief Justice Wagner in the Supreme Court of Canada's *References re Greenhouse Gas Pollution Pricing Act 2021* decision:

> Climate change is real. It is caused by greenhouse gas emissions resulting from human

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7 United Nations Secretary-General, "Secretary-General's Statement on the IPCC Working Group 1 Report on the Physical Science Basis of the Sixth Assessment", online: <https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment> [UN Secretary-General].

8 Somini Sengupta, "'No One Is Safe': Extreme Weather Batters the Wealthy World", *The New York Times* (6 August 2021), online: <https://www.nytimes.com/2021/07/17/climate/heatwave-weather-hot.html?searchResultPosition=5> [Sengupta].

9 Sergio Olmos & Shawn Hubler, "Heat-Related Deaths Increase as Temperatures Rise in the West", The New York Times (9 July 2021), online: <https://www.nytimes.com/2021/07/09/us/heat-wave-deaths.html> [Olmos & Hubler].

10 Leyland Cecco, "'Lytton Is Gone': Wildfire Tears through Village after Record-Breaking Heat", *The Guardian* (1 July 2021), online: <https://www.theguardian.com/world/2021/jul/01/lytton-wildfire-heatwave-british-columbia-canada> [Cecco].

11 Sengupta, *supra* note 8.

12 *Ibid*.

13 IPCC Report, *supra* note 2, at 17.

14 UN Secretary-General, *supra* note 7.

71 IPCC Report, *supra* note 2; see also International Energy Agency, "Net Zero by 2050: A Roadmap for the Global Energy Sector", online: <https://www.iea.org/reports/net-zero-by-2050> [IEA].

16 *Ibid.*

17 James Hansen et al, "Target Atmospheric CO2: Where Should Humanity Aim?" (2008) 2 Open Atmospheric Science J 217 [Hansen et al]; see also online: <https://350.org/>.

18 Government of Canada, "Greenhouse Gas Emissions", online: <www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html> [Greenhouse Gas Emissions].

> activities, and it poses a grave threat to humanity's future. The only way to address the threat of climate change is to reduce greenhouse gas emissions.[19]

Failing to address the threat of climate change will have, and is already having, particularly severe and devastating impacts throughout Canada.[20] These impacts – which include extreme weather events such as floods and forest fires, degradation of soil and water resources, and increased frequency and severity of heatwaves – will be borne disproportionately by future generations of Canadians.[21]

According to the IPCC, nations are not doing nearly enough to prevent global warming from increasing to catastrophic levels within the lifetimes of most people on earth today.[22] In the third and final instalment of the IPCC's sixth assessment report, *Mitigation of Climate Change*, published on April 4, 2022, the IPCC found that average annual global GHG emissions were at their highest levels to date in human history between 2010 and 2019.[23] Global temperatures will continue to increase during the 21st century, unless a deep reduction in CO_2 and GHG emissions occurs in the upcoming decades.[24] Nations need to move away much faster from fossil fuels to retain any hope of preventing a perilous future on an overheated planet.

The IPCC makes it clear: Nations have delayed reducing their GHG emissions for so long that warming of 1.5 °C within the next few decades is now all but inevitable.[25] At current rates of warming, the world will likely cross the 1.5 °C threshold sometime between 2030 and 2052, well within the lifetime of most children and adults alive today[26] – and that is assuming countries even follow through on their stated climate pledges.[27] If they do not, the likelihood of warming is even worse.[28] That target – to prevent the average global temperature from increasing by 1.5 °C over preindustrial levels by 2050 – is one many

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19 *References re GGPPA*, *supra* note 2 at para 2.

20 *Ibid* at para 6.

21 Olmos & Hubler, *supra* note 9; Cecco, *supra* note 10.

22 See, generally, Intergovernmental Panel on Climate Change, "Climate Change 2022, Mitigation of Climate Change", online: <https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf> [IPCC Report II]; Raymond Zhong, "5 Takeaways from the UN Report on Limiting Global Warming", *The New York Times* (4 April 2022), online: <www.nytimes.com/2022/04/04/climate/ipcc-report-explained.html?searchResultPosition=2>.

23 *Ibid.*

24 IPCC Report, *supra* note 2 at 17.

25 IPCC Report II, *supra* note 22.

26 1.5 °C is the threshold beyond which scientists say the dangers of global warming – including worsening floods, droughts, wildfires, and ecosystem collapse – grow considerably; Alan Buis, "A Degree of Concern: Why Global Temperatures Matter", online: <https://climate.nasa.gov/news/2878/a-degree-of-concern-why-global-temperatures-matter/>.

27 UN Secretary-General António Guterres said the latest IPCC report revealed "a litany of broken climate promises" by governments and corporations, accusing them of stoking global warming by clinging to harmful fossil fuels. "Some government and business leaders are saying one thing but doing another. Simply put, they are lying …it is a file of shame, cataloguing the empty pledges that put us firmly on track toward an unlivable world"; Frank Jordans & Seth Borenstein, "UN Warns Earth 'Firmly on Track Toward an Unlivable World'", *Associated Press* (4 April 2022), online: <https://www.usnews.com/news/politics/articles/2022-04-04/world-hurtling-to-climate-danger-zone-brakes-half-pulled>; Brad Plumer & Nadja Popovich, "Yes, There Has Been Progress on Climate. No, It's Not Nearly Enough", *The New York Times* (25 October 2021), online: <https://www.nytimes.com/interactive/2021/10/25/climate/world-climate-pledges-cop26.html>.

28 IPCC Report II, *supra* note 22.

governments have agreed to pursue.[29] While it may sound modest, that number represents a host of sweeping changes that occur as GHG gases trap more heat within our planet's atmosphere, resulting in deadlier storms, more intense heatwaves, rising sea levels, and extra strain on global crop supplies.[30]

Without an extremely rapid, and perhaps unrealistically ambitious, global push to zero out fossil fuel emissions and remove existing carbon dioxide from the atmosphere, warming to 2 °C or higher this century looks increasingly likely.[31] Earth has already warmed about 1.1 °C on average since preindustrial times, mainly by burning coal, oil, and gas for energy.[32] The only way to avoid the worst impacts of climate change is to stop adding GHGs into the atmosphere by 2050.

Despite these dire circumstances, not all is lost; there is still a window for humanity to prevent the planet from getting even hotter.[33] Limiting the devastation will not be easy, but it also is not impossible if countries act now, according to the most recent IPCC report.[34] The pathway to net zero emissions by 2050 is narrow, but achievable.[35] Central to averting climate disaster is the need for immediate and deep emissions reductions across all economic sectors if we are to meet the goals of the *Paris Agreement*.[36]

Avoiding the most dangerous and disruptive impacts of climate change will require a swift, coordinated, and decisive effort amongst countries to stop adding CO_2 to the atmosphere by 2050.[37] Yet the task is daunting: To hold warming to just 1.5 C, emissions must peak by 2025, and nations must collectively reduce their planet-warming emissions roughly 43% by 2030 and stop adding CO_2 to the atmosphere altogether by 2050.[38] In contrast, current policies by governments are only expected to reduce global emissions by a few percentage points this decade.[39] Last year, fossil fuel emissions worldwide rebounded to near-record highs after a brief drop because of the COVID-19 pandemic.[40]

Rapidly shifting away from the fossil fuels that have underpinned our economy for more than a century

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29 Somini Sengupta & Jason Horowitz, "G20 Leaders Send a Symbolic Message on Key Climate Target", *The New York Times* (31 October 2021), online: <www.nytimes.com/2021/10/31/world/europe/g20-climate-temperature-rise.html>.

30 IPCC Report, *supra* note 2; Brad Plumer & Nadja Popovich, "Why Half a Degree of Global Warming Is a Big Deal", *The New York Times* (7 October 2018), online: <www.nytimes.com/interactive/2018/10/07/climate/ipcc-report-half-degree.html>.

31 *Ibid*.

32 *Ibid*; Raymond Zhong, "2021 Was Earth's Fifth Hottest Year, Scientists Say", *The New York Times* (10 January 2022), online: <www.nytimes.com/2022/01/10/climate/2021-hottest-year.html>.

33 IPCC Report II, *supra* note 22.

34 *Ibid*.

35 IPCC Report, *supra* note 2; IEA, *supra* note 15.

36 *Paris Agreement*, 12 December 2015, UN.DocFCC/CP/2015/10/Add.1, 55 ILM 740 (entered into force 4 November 2016) [*Paris Agreement*].

37 *Ibid*; IPCC Report, *supra* note 2.

38 Nathan Cooper & Amy White, "IPCC Report: Urgent Climate Action Needed to Halve Emissions by 2030", *World Economic Forum* (6 April 2022), online: <https://www.weforum.org/agenda/2022/04/ipcc-report-mitigation-climate-change>.

39 Brad Plumer & Raymond Zhong, "Stopping Climate Change Is Doable, But Time Is Short, U.N. Panel Warns", *The New York Times* (4 April 2022), online: <www.nytimes.com/2022/04/04/climate/climate-change-ipcc-un.html?action=click&module=RelatedLinks&pgtype=Article>.

40 Brad Plumer, "Carbon Dioxide Emissions Rebounded Sharply after Pandemic Dip", *The New York Times* (8 November 2021), online: <www.nytimes.com/2021/11/03/climate/carbon-dioxide-emissions-global-warming.html>.

will require enormous effort. Over the coming decades, governments and businesses will need to invest three to six times the roughly USD 600 billion they currently spend annually on encouraging clean energy and cutting emissions.[41] However, notably, the cost of inaction is also substantial, particularly in terms of deaths, displacement, and damage. In Canada, damage from floods, wildfires, drought, and other disasters related to weather and climate has totaled approximately CAD 2.4 billion annually and is only expected to rise as extreme weather events become the "new normal."[42]

Humanity needs to move swiftly to a low-carbon society; however, this shift will require massive effort by governments, corporations, and individuals. Such action could help limit temperature rise to 1.5 °C and avoid dangerous and irreversible climate tipping points (which are associated with a 2 °C or greater increase in global temperature above pre-industrial levels).[43] Swedish climate activist Greta Thunberg says that "we can still avoid the worst consequences, but not if we continue like today, and not without treating the crisis like a crisis."[44]

Thus, the evidence is clear that unlocking a prosperous future and mitigating the effects of human-induced climate change will require a rapid shift away from fossil fuels starting immediately, as well as potentially removing vast amounts of CO_2 from the atmosphere. However, reducing CO_2 emissions is unlikely to happen without government intervention and the imposition of rules and regulations that discourage the consumption of fossil fuels, with higher CO_2 emissions, and incentivize alternatives that have fewer emissions.[45]

Accomplishing this feat will entail bold, ambitious, and coordinated action on climate policy and GHG reduction from all levels of government. In a statement, Canada's Minister of Environment and Climate Change, Jonathan Wilkinson, said the science makes it clear that countries must do more to address climate change faster, and that Canada is not immune to that reality.[46] He continued that "Canada is warming at nearly twice the global rate. Parts of western and northern Canada are warming at three times the global average,"[47] making the IPCC's call to action even more urgent for Canadians. All of which begs the question of what Canada is doing to combat climate change and keep temperatures below 1.5 °C, and whether it is enough?

Canada has been internationally committed to taking steps to mitigate climate change and related

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41 IPCC Report II, *supra* note 22; see also Climate Policy Initiative, "Global Landscape of Climate Finance", online: <www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2021/>.

42 Gabriel Friedman, "'Tip of the Iceberg': New Government Report Looks at Costs of Climate Change", *The Financial Post* (28 June 2021), online: <https://financialpost.com/commodities/energy/tip-of-the-iceberg-new-government-report-looks-at-costs-of-climate-change>.

43 James Hansen et al, *supra* note 17.

44 Sam Meredith, "Landmark UN Report Delivers Stark Warning on Climate Change, Says It's 'Code Red for Humanity'", *CNBC* (9 August 2021), online: <https://www.cnbc.com/2021/08/09/ipcc-report-un-climate-report-delivers-starkest-warning-yet.html>.

45 Brendan Downey et al, "Pathways to Net-Zero: Opportunities for Canada in a Changing Energy Sector" (2021) 59 Alta L Rev 225 at 226.

46 Environment and Climate Change Canada, "Minister Jonathan Wilkinson Issues Statement on the 54th Session of the Intergovernmental Panel on Climate Change (IPCC-54)", online: <https://www.canada.ca/en/environment-climate-change/news/2021/08/minister-jonathan-wilkinson-issues-statement-on-the-54th-session-of-the-intergovernmental-panel-on-climate-change-ipcc-54.html> [Wilkinson].

47 *Ibid*.

GHG emissions since 1992, when it became a signatory to the *United Nations Framework Convention on Climate Change* (*UNFCCC*).[48] Again in 2015, Canada reaffirmed its commitments to addressing and combating climate change when it signed the *Paris Agreement*.[49] The *Paris Agreement* involves the coordinated and cumulative efforts of states to implement their own nationally determined targets and commits signing nations to implement policies to limit global temperature rise to 1.5 °C above pre-industrial levels.[50] Under the Agreement, countries committed to increase their targets at regular intervals, so as to allow a gradual transition while still keeping emissions in line with net zero.[51] In response, Canada submitted a national target of reducing GHG emissions by 30% below 2005 levels by the year 2030.[52]

However, in a parliamentary system such as Canada's, signing an international treaty does not translate into positive domestic action until that treaty is enacted into law by Parliament and the provincial legislatures under their respective powers.[53] As a result, Canadian policy regarding climate change has arguably evolved slowly, resulting in an uneven patchwork of climate legislation and policy at the provincial and federal levels.[54]

Since 2015, the federal government has invested billions of dollars in climate actions, including funding for public transit, establishing grants for home retrofits, and incentives for Canadians to drive electric vehicles.[55] Additionally, Canada has joined more than 120 countries worldwide (including all G7 member countries) in a pledge to achieve net zero emissions by 2050.[56] The recently passed *Canadian Net-Zero Emissions Accountability Act* enshrines in legislation Canada's commitment to achieve net zero greenhouse gas emissions (GHGs) by the year 2050.[57] According to the latest available national statistics, in 2020 Canada was responsible for emitting 672 Mt of CO_2 into the earth's atmosphere.[58]

In April 2021, Canada also announced a new GHG reduction target under the *Paris Agreement*, of reducing emissions by 40%–45% of 2005 levels by 2030.[59] As well as a recently announced plan

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48 *United Nations Framework Convention on Climate Change*, 12 June 1992, 1771 UNTS 107, Preamble (entered into force 21 March 1994) [*UNFCCC*].

49 *Paris Agreement*, *supra* note 36.

50 *Ibid*.

51 *Ibid.*

52 UNFCCC, "Canada's INDC Submission to the UNFCCC", online: <www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Canada/1/INDC%20-%20Canada%20-%20English.pdf>.

53 Nathalie J Chalifour "Jurisdictional Wrangling over Climate Policy in the Canadian Federation: Key Issues in the Provincial Constitutional Challenges to Parliament's Greenhouse Gas Pollution Pricing Act" (2019) 50 Ottawa L Rev 197.

54 Nathalie J Chalifour, "Making Federalism Work for Climate Change: Canada's Division of Powers Over Carbon Taxes" (2008) 22 NJCL 119.

55 Government of Canada, "Canada's Climate Actions for a Healthy Environment and a Healthy Economy", online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/actions-healthy-environment-economy.html>.

56 Wilkinson, *supra* note 46.

57 Government of Canada "Canadian Net-Zero Emissions Accountability Act", online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050/canadian-net-zero-emissions-accountability-act.html>.

58 Greenhouse Gas Emissions, *supra* note 18.

59 Wilkinson, *supra* note 46.

to invest CAD 5.3 billion over the next five years to combatting climate-related issues globally. Finally, the government has put a price on carbon by establishing a national minimum price of carbon pollution, starting at CAD 20 per tonne in 2019 and increasing by CAD 15 per tonne each year from 2023 through to 2030.[60]

More recently, climate change initiatives in Canada and around the world have accelerated because of the 26 UN Conference of the Parties (COP26), in November 2021 in Glasgow. Canada was one of 30 nations that signed a statement indicating that they would "prioritize our support fully toward the clean energy transition" and "end new direct public support for the international unabated fossil fuel energy sector by the end of 2022, except in limited and clearly defined circumstances that are consistent with a 1.5 °C warming limit and the goals of the *Paris Agreement*."[61] This agreement represented the first time Canada had committed to cutting financial support for oil and gas.[62] Prime Minster Trudeau told those present at the COP26 summit that Canada intended to impose a cap on oil and gas sector emissions "today" to ensure they "decrease tomorrow at a pace and scale needed to reach net-zero by 2050."[63] The government did seek guidance on how to implement a new "best-in-class" initiative to have the oil and gas sector achieve net zero by 2050,[64] but to date has not delivered on this commitment.[65]

Provincially, much of the climate change legislation, such as British Columbia's *CleanBC Climate Plan*,[66] is aimed at reducing GHG emissions, with emissions reduction targets of 40% by 2030, and a carbon tax increase to CAD 50 per tonne in 2022; Alberta's *Technology Innovation and Emissions Reduction (TIER) Regulation,*[67] a GHG emissions pricing regulation and emissions credit trading system, and Ontario's *Made-in-Ontario Environment Plan,* which targets reductions of 30% of GHGs by 2030 from 2005 levels. Other initiatives are intended to promote the development of clean energy,[68] support adaptation and resilience through infrastructure funding,[69] and assess the impact of projects

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60 Government of Canada "The Federal Carbon Pollution Pricing Benchmark", online: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information.html>.

61 UN Climate Change Conference, "Statement on International Public Support for the Clean Energy Transition", online: <https://ukcop26.org/statement-on-international-public-support-for-the-clean-energy-transition/>.

62 Emily Chung, "What Canada Did—and Didn't Do—at the UN Climate Summit", *CBC News* (15 November 2021), online: <www.cbc.ca/news/science/canada-cop26-summary-1.6247069>.

63 John Paul Tasker, "Canada Will Put a Cap on Oil and Gas Sector Emissions, Trudeau Tells COP26 Summit", CBC News (1 November 2021), online: <www.cbc.ca/news/politics/trudeau-cop26-cao-oil-and-gas-1.6232639>.

64 Government of Canada, "Government of Canada to Develop Guidance for Best-in-Class New Oil and Gas Projects and Net-Zero Emissions Requirements by 2050", online: <www.canada.ca/en/environment-climate-change/news/2022/04/government-of-canada-to-develop-guidance-for-best-in-class-new-oil-and-gas-projects-and-net-zero-emissions-requirements-by-2050.html>.

65 Government of Canada, "Net-Zero Emissions by 2050", online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html>.

66 Government of British Columbia, "CleanBC, Our Nature. Our Power. Our Future", online: <https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf>.

67 Government of Alberta "Technology Innovation and Emissions Reduction Regulation", online: <https://www.alberta.ca/technology-innovation-and-emissions-reduction-regulation.aspx>.

68 Government of Canada, "Financial Incentives by Province", online: <https://www.nrcan.gc.ca/energy-efficiency/homes/financial-incentive-province/4947>.

69 See, e.g., Government of Canada, "Infrastructure Funding Programs", online: <https://www.infrastructure.gc.ca//prog/programs-infc-summary-eng.html#gtf>.

and programs on climate commitments.[70]

Yet, despite these examples of climate leadership and progress made across the country, Canada still ultimately falls short of what is required to meet its stated climate goals. As the IPCC reports illustrate, the possibility of holding warming to 1.5 °C will entail much more than holding emissions to net zero. In fact, the only scenarios that manage to prevent warming from crossing the dangerous 2 °C threshold involve removing greenhouse gases from the atmosphere after zero global emissions are already achieved.[71]

Few dispute the federal government's ambitions when it comes to preventing climate change,[72] yet there are valid reasons to be critical of its execution on the matter. "Canada has missed every past emissions target it has set and remains the only G7 country whose emissions have risen since it signed the *Paris Agreement*," says Rachel LaFortune, an environmental researcher for Human Rights Watch.[73] According to government data, between 2015 and 2019 Canada's GHG emissions actually increased by 1%, despite decreases in comparable nations during the same period.[74] Further, recent modelling for the 2021 budget, which includes the federal climate policy published in December 2020, forecasts a national emissions reduction of 36% below 2005 levels by 2030, which is still short of the federal government's commitment to reduce emissions by 40% to 45% by 2030.[75]

A 2021 report by the Ottawa-based Pembina Institute found that for Canada to meet its new emission reduction target, it will need to reduce GHG emissions by an additional 296 to 333 Mt,[76] requiring an unprecedented effort from both the federal government and the provinces. This target will be an uphill battle in many ways, as the report indicated that although the federal government has set 2030 and 2050 targets, an assessment of climate policy across jurisdictions reveals that over 50% of national emissions are not covered by a provincial or territorial 2030 target.[77] Moreover, approximately three-quarters of national emissions are currently not covered by a provincial or territorial 2050 target. This means that 95% of emissions generated in Canada are not covered by either a provincial or territorial 2030 target to meet the fast-approaching 2030 deadline. Simply put, the report finds that at present, Canada is unprepared to deliver on its climate promises.

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70 Government of Canada, *Bill C-69, An Act to Enact the Impact Assessment Act and the Canadian Energy Regulator Act, to Amend the Navigation Protection Act and to Make Consequential Amendments to Other Acts*,
1st Sess, 42nd Parl, 2018, Part 1, cl 63(e) (as passed by the House of Commons 20 June 2018) (which brings consideration of climate commitments into the assessment process).

71 IPCC Report, *supra* note 2.

72 Ian Austen, "Canada's New Leadership Reverses Course on Climate Change", *The New York Times* (26 November 2015), online: <https://www.nytimes.com/2015/11/27/world/americas/canadas-new-leadership-reverses-course-on-climate-change.html>.

73 Human Rights Watch "Canada: New Climate Law a Step in the Right Direction", online: <https://www.hrw.org/news/2021/06/29/canada-new-climate-law-step-right-direction>; Ian Austen & Christopher Flavelle, "Trudeau Was a Global Climate Hero. Now Canada Risks Falling Behind" (21 April 2021), *The New York Times,* online: https://www.nytimes.com/2021/04/21/world/canada/trudeau-climate-oil-sands.html.

74 John Paul Tasker, "Canada's Greenhouse Gas Emissions Increased Slightly in First Year of Carbon Tax: Report", *CBC News* (12 April 2021), online: <https://www.cbc.ca/news/politics/canada-greenhouse-gas-emissions-ticked-up-1.5984202>.

75 Pembina Institute, "All Hands on Deck: An Assessment of Provincial, Territorial and Federal Readiness to Deliver Safe Climate", online: <https://www.pembina.org/reports/all-hands-on-deck.pdf>.

76 *Ibid* at 9.

77 *Ibid* at 4.

However, the situation is far from hopeless. Given the nature of Canadian federalism, the nation's provinces and territories have jurisdiction over energy resources, emission reduction, and policy implementation, and therefore hold much of the power to "turn this ship around," so to speak. Climate success does not require a uniform approach across every province and territory, but it will require a strong policy framework from every province and territory. Success will require all jurisdictions in Canada to scale up commitments and act immediately to limit warming and facilitate a low-carbon economy.

According to the Pembina Institute report, along with a universal commitment to net zero by 2050, achieving Canada's climate goals will require every jurisdiction to have:

1. increasingly ambitious carbon targets and decreasing carbon budgets for every sector of the economy;
2. a climate plan based on credible modelling showing how targets will be achieved;
3. progress reports for each milestone period; and
4. a requirement to course-correct when targets are not met.[78]

Importantly, these key elements of successful climate planning should be enshrined in legislation. Further, to ensure that provinces and territories put people first, each jurisdiction should demonstrate a strong understanding of the socio-economic and demographic impacts of climate change, provide transition planning for workers and communities, and respect the rights of Indigenous peoples.

Based on the Pembina Institute's assessment, across Canada there exist glaring gaps in the policy infrastructure needed to ultimately achieve the necessary climate success. However, there is evidence that if the provinces and territories step up and collectively play their part, we may be able to achieve a safe and sustainable climate future. A comprehensive climate policy framework, coupled with targeted support for innovation, can lead to thriving carbon-neutral economies and a safer climate across Canada. In addition, the federal government should work effectively with provincial, territorial, and Indigenous governments to deliver on its climate promises by coordinating substantial emissions reductions. Thus, there remains an opportunity for Canada's provinces and territories, and therefore Canada as a whole, to take meaningful climate action.

In this way, meeting Canada's climate goals will necessitate an "all-hands-on-deck approach" from all levels of government. The report indicates that to deliver on climate promises, all provinces and territories should heed the following recommendations:

1. set higher emission reduction targets, and translate those targets into carbon budgets;
2. make governments accountable at the federal and provincial/territorial level;
3. prioritize reconciliation and equity;
4. set economy wide sectoral budgets and map net-zero pathways;

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[78] *Ibid* at 8.

5. plan for the decline in oil and gas; and
6. accelerate the push to decarbonize transportation.[79]

Considering the IPCC reports, the international conversation is now firmly (and rightly) focused on how to limit climate change and decarbonize the global economy. The IPCC reports, in conjunction with the Pembina Institute's assessment of Canada's current inability to meet climate goals, both serve as a sobering wakeup call. While the findings are no doubt alarming, they carry with them a sense of urgency, and a sense of hopefulness, for all levels of government.

The IPCC reports established five climate futures, in which humans take varying steps to reduce the emissions that cause warming.[80] Under all of them, the world will reach 1.5 °C (the limit set under the *Paris Agreement*) by 2040 or sooner. However, the report shows that aggressive, rapid, and global emissions cuts, beginning now, could limit the warming beyond 2050. In the most optimistic scenario outlined by the report, reaching net zero emissions could even bring warming back slightly under 1.5 °C in the latter half of the 21st century.[81] Therefore, there is a narrow window to keep the devastation from climate change from getting even worse if we act now.

What these findings illustrate is that we do have the capability to limit warming if, collectively (both within Canada, and across the world) all levels of government can coordinate to swiftly reduce emissions. In a way, the conclusions of these individual reports can be empowering for Canada, in the sense that we know what we need to do to prevent the worst climate change outcomes. Canada and nations around the world will have the opportunity (and the motivation) to negotiate a stronger version of the *Paris Agreement* and an international framework for global cooperation on climate action.

Within Canada, climate success will require contributions from federal, provincial, and territorial governments. Building an equitable and inclusive net zero economy requires collaborative and progressive action at all levels of government across Canada. While this has not been the story in Canada to date, there is no reason it cannot be our future. If anything, the IPCC reports should serve as a call to action for Canadians instead of a reason to give up. As it has been put by youth climate activist Alienor Rougeot, "there is a chance, there still is a window and now it's up to all of us to work toward the goals we set ourselves."[82]

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[79] *Ibid* at 7, 43-47.

[80] IPCC Report, *supra* note 2, at 15-16.

[81] *Ibid* at 36-41.

[82] Kirthana Sasitharan & Muriel Draaisma, "Toronto Summers to Get Hotter as Climate Change Intensifies, Expert Says", *CBC News* (9 August 2021), online: <https://www.cbc.ca/news/canada/toronto/toronto-reaction-un-report-climate-change-buildings-transportation-heat-1.6135574>.

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PART TWO

A Model of Canadian Climate Governance

4 The Problem, Solution, and Public Governance of Climate Change

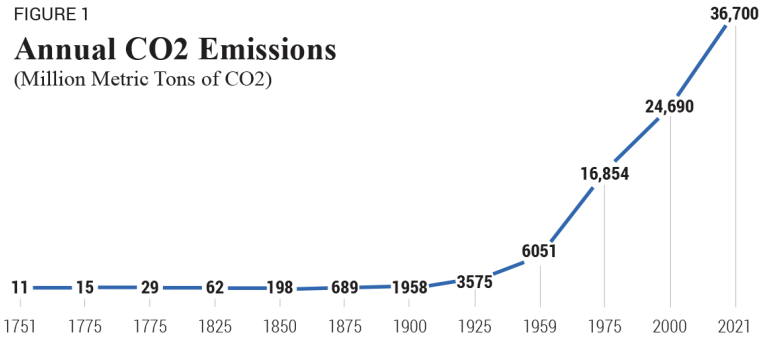
Fenner Stewart

1. Introduction

Finding workable solutions to climate change starts with a clear-sighted appreciation of the problem. Simply put, humans have emitted large quantities of greenhouse gases (GHGs) into the atmosphere, changing the climate in ways that are, and will continue to be, very costly in multiple senses.[1]

The most problematic of the GHGs is carbon dioxide, since it stays in the atmosphere for 300 to 1000 years.[2] Figure 1 charts the history of carbon dioxide emitted by human activities, spanning from just after Thomas Newcomen developed the first coal-powered commercial steam engine in 1712 (that is, the start of the Industrial Revolution) to 2021.[3] Each node in Figure 1 reflects the amount of carbon dioxide emitted in the year in question.

FIGURE 1



Sources: Global, Regional, and National Foscil-Fuel CO2 Emissions. Carbon Dioxide, Information Analysis Center, U.S. Department of Energy (2017), and Global Carbon Budget (2011).

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[1] John S Dryzek et al, "Climate Change and Society: Approaches and Responses", in John S Dryzek et al, eds, *The Oxford Handbook of Climate Change and Society* (Oxford: Oxford University Press, 2011) at 4 [Dryzek et al] ("While the effects of climate change—floods, drought, heat stress, species loss, and ecological change—can be experienced very directly, their conceptualization as connected phenomena with common causes is due to climate science, which therefore plays a very basic part when it comes to climate change and society. Natural scientists … tell us that there is now consensus in the climate science community about the reality of climate change, and near consensus on its severity and the broad range of attendant harms and risks…. Climate science does not provide certain future projections of risks and damages. The projections are entangled in assumptions about how human systems respond over time—as well as natural ones. Climate is an outcome of a complex geo—atmospheric—ecological system, and complex systems always have a capacity to surprise by behaving in unanticipated ways. Climate change, furthermore, is only one of a range of interacting phenomena of global environmental change caused or affected by human activity. We may indeed be entering the unknown territory of an 'anthropocene' era where people drive truly major changes in global systems").

[2] Alan Buis, "The Atmosphere: Getting a Handle on Carbon Dioxide", online: <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/> ("Changes to our atmosphere associated with reactive gases (gases that undergo chemical reactions) like ozone and ozone-forming chemicals like nitrous oxides, are relatively short-lived. Carbon dioxide is a different animal, however. Once it's added to the atmosphere, it hangs around, for a long time: between 300 to 1,000 years. Thus, as humans change the atmosphere by emitting carbon dioxide, those changes will endure on the timescale of many human lives").

[3] Charles R Morris, *The Dawn of Innovation: The First American Industrial Revolution* (New York: Public Affairs, 2012) at 42.

In other words, this figure does not reflect the accumulative effect of emissions. If it did, the numbers would appear far more alarming, since the carbon dioxide that Newcomen emitted into the atmosphere in 1712 might be there still.

Climate experts predict that humanity has a better chance of avoiding "unmanageable climate risks" if all its members stop increasing the concentration of GHGs in short order.[4] Such abatement will require behavioural change on a global scale. The rapid advancements needed will take stakeholder collaboration,[5] demanding international agencies, governments, for-profit actors, investors, charities, non-state organizations, philanthropists, and consumers to work together to bring about the change needed.[6]

Centralized political authorities will not be doing all the heavy lifting.[7] Their work will be largely exogenous to the range of actors working together to create carbon-neutral goods and services, while phasing out carbon-intensive ones.[8] This decarbonization process will be "messy,"[9] and calibrating

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[4] United Nations Environmental Programme, *The Closing Window: Climate Crisis Calls for Rapid Transformation of Societies* (Nairobi: United Nations Environmental Programme, 2022) [UNEP, *The Closing Window*] at 1 ("In line with the Emissions Gap Report, the IPCC reports send a reverberating message that the window of opportunity to limit global warming to well below 2 °C, preferably 1.5 °C, thereby avoiding some unmanageable climate risks, is closing rapidly. Every fraction of a degree matters") tells us that unconditional NDCs [Nationally Determined Contributions] point to a 2.6 °C increase in temperatures by 2100, falling far short of the goals of the Paris Agreement. Existing policies point to a 2.8 °C increase, highlighting a gap between national commitments and the efforts to enact those commitments. In the best-case scenario, full implementation of conditional NDCs, plus additional net zero commitments, point to a 1.8 °C rise. However, this scenario is currently not credible. To get on track to limiting global warming to 1.5 °C, we would need to cut 45% off current greenhouse gas emissions by 2030. For 2 °C, we would need to cut 30% (at XV).

[5] See, e.g., Benjamin K Sovacool et al, "Navigating the 'Paradox of Openness' in Energy and Transport Innovation: Insights from Eight Corporate Clean Technology Research and Development Case Studies" (2017) 105 Energy Pol'y 236 at 244 ("Moreover, as established in the management literature we sampled, the strategic choices of corporate firms lead to differences and similarities, yet choices are also conditioned by their resources and capabilities. Across technologies, the lifecycle stage of the technology seems to have an impact on the firms' openness versus closeness choices. Nascent technologies appear to benefit from openness and involvement of different stakeholders whereas those already commercialized may experience more closedness").

[6] Dryzek et al, *supra* note 1 at 4.

[7] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 2015) at 216 ("The models that social scientists tend to use for analyzing CPR [Common Pool Resource institution] problems have the perverse effect of supporting increased centralization of political authority. First, the individuals using CPRs are viewed as if they are capable of short-term maximization, but not of long-term reflection about joint strategies to improve joint outcomes. Second, these individuals are viewed as if they are in a trap and cannot get out without some external authority imposing a solution. Third, the institutions that individuals may have established are ignored or rejected as inefficient, without examining how these institutions may help them acquire information, reduce monitoring and enforcement costs, and equitably allocate appropriation rights and provision duties. Fourth, the solutions presented for 'the' government to impose are themselves based on models of idealized markets or idealized states").

[8] Marianne Fay et al, *Decarbonizing Development: Three Steps to a Zero-Carbon Future* (Washington: The World Bank 2015) at 1 ("But can we envisage a world in which economic activities have been made completely carbon neutral by the end of the century? Here, we should emphasize that carbon neutrality or decarbonization does not imply no emissions whatsoever. Positive emissions in some sectors and some countries can be offset, to some extent, through natural carbon sinks and negative emissions in other sectors and countries. So decarbonization means zero net emissions of CO_2 – as well as the stabilization of emissions of short-lived greenhouse gases such as methane that dissipate in the atmosphere in days, weeks, or decades").

[9] Eva Lövbrand et al, "Making Climate Governance Global: How UN Climates Summitry Comes to Matter in a Complex Climate Regime" (2017) 26 Envtl Politics 580 at 581-2 ("UN Climate Change Conferences are messy political sites, where a multitude of actors come together to exchange ideas and knowledge, benchmark climate performance, build interpersonal relationships, organize resistance and propose policy alternatives in parallel to, and in view of, the interstate negotiations. We interpret this multiplicity of meeting activities, expectations and agendas as an illustration of what anthropologist Anna Tsing (2005) has called the making of 'global connections' between local and global forces. By linking multiple, and often conflicting, knowledge claims, policy projects and actor networks across time and space, UN climate summitry has turned into an important facilitative practice that holds an increasingly complex and polycentric climate regime together").

and recalibrating the governance of this necessarily untidy process will be key to success.[10]

The problem, solution, and role of government within climate governance are the topics of this chapter. Part 2 defines the problem. Part 3 defines the solution. Part 4 sketches the role of government within climate governance. Part 5 offers a concluding thought.

2. The Climate Problem

In 1992, 154 countries signed the *United Nations Framework Convention on Climate Change* (*UNFCCC*),[11] establishing the first international treaty focused on addressing climate change.[12] These countries committed to speaking through a centralized decision-making body called the "Conference of the Parties" (COP).[13] It was agreed that a member party would host a COP meeting each year.[14] These meetings would become the sites where the member parties negotiated the advancement of global climate action.[15]

UNFCCC came into force in 1994.[16] Berlin hosted the first COP in 1995.[17] Geneva hosted COP2 in 1996.[18] Kyoto hosted COP3 in 1997.[19] In Kyoto, the member parties negotiated the *Kyoto Protocol*.[20] This agreement required member parties to limit, then reduce, GHG emissions by setting individual country targets.[21] The initial commitment was to reduce GHG emissions to 5% below 1990 emission levels by 2012.[22] Some hoped for a greater commitment from the member parties; others endorsed it

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[10] David Levi-Faur, "From 'Big Government' to 'Big Governance?'" in David Levi-Faur, ed, *The Oxford Handbook of Governance* (Oxford: Oxford University Press, 2012) 3 at 3 ("Governance is said to be many things, including a buzzword, a fad, a framing device, a bridging concept, an umbrella concept, a descriptive concept, a slippery concept, an empty signifier, a weasel word, a fetish, a field, an approach, a theory and a perspective. [For present purposes], governance is an interdisciplinary research agenda on order and disorder, efficiency and legitimacy all in the context of the hybridization of modes of control, *by* the state, *without* the state, and *beyond* the state").

[11] United Nations, *The United Nations Framework Convention on Climate Change* (1992), online: <https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf> [*UNFCCC*].

[12] United Nations Framework Convention on Climate Change, "What Is the United Nations Framework Convention on Climate Change?", online: <https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change> [UNFCCC, "What Is the United Nations Framework Convention on Climate Change?"].

[13] United Nations Framework Convention on Climate Change, "Conference of the Parties (COP)", online: <https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop> [UNFCCC, "Conference of the Parties"].

[14] *Ibid.*

[15] *Ibid.*

[16] UNFCCC, "What Is the United Nations Framework Convention on Climate Change?", *supra* note 12.

[17] UNFCCC, "Conference of the Parties", *supra* note 13.

[18] *Ibid.*

[19] *Ibid.*

[20] United Nations Framework Convention on Climate Change, *Kyoto Protocol to the United Nations Framework Convention on Climate Change* (1998), online: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> [*Kyoto Protocol*].

[21] United Nations Framework Convention on Climate Change, "What Is the Kyoto Protocol?", online: <https://unfccc.int/kyoto_protocol> [UNFCCC, "What Is the Kyoto Protocol?"].

[22] *Ibid.*

as an "impressive" first step toward climate action.[23] The *Kyoto Protocol* came into force in 2005.[24]

Copenhagen hosted COP15 in 2009.[25] The resulting agreement, the *Copenhagen Accord*, reflected anxiety over continued emissions growth.[26] It urged party members to take the "urgently" needed steps to "combat climate change."[27] It then suggested that, at minimum, collective emission abatement had to hold "the increase in global temperature below 2 degrees Celsius [using pre-industrial temperatures as a baseline]."[28]

In 2015, Paris hosted COP21,[29] resulting in the *Paris Agreement*.[30] Before the meeting, several member countries entered into a pact to ensure that the 2 °C ceiling was lowered.[31] They argued that if the global average temperature was allowed to climb by 2 °C, rising sea levels would submerge parts of low-lying coastal countries, such as Kiribati, Tuvalu, Vanuatu, and the Maldives.[32] Such an outcome would not be acceptable. In response, the *Paris Agreement* declared that the increase in the global average temperature needed to keep "well below 2 °C," setting a new benchmark of limiting "the temperature increase to 1.5 °C."[33]

Glasgow hosted COP26 in 2021.[34] Before the meeting started, the British government framed the goal

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23 See, e.g., Greg Botelho, "A Truly Global Problem: Costs, Stakes, Uncertainties High in Climate Change Debate", *CNN* (13 October 2005), online: <https://www.cnn.com/2005/TECH/science/04/08/earth.policy/index.html> ("Given such challenges, many view Kyoto as an impressive accomplishment. The protocol sets binding greenhouse gas limits on 38 industrialized nations and sets up apparatus such as 'emissions trading,' in which a country having trouble meeting its requirements can buy credits from others that exceed them. Another 106 signatories do not have mandatory requirements, but participate in the process and have incentives to curb emissions. 'The Kyoto Protocol is quite unique and innovative,' said [Joke Waller-Hunter, executive secretary of the U.N. convention on climate change that oversees Kyoto]. 'It has created a new commodity that can and will be traded: carbon. … This system can [address the problem] in the most cost-effective manner'").

24 UNFCCC, "What Is the Kyoto Protocol?", *supra* note 21.

25 UNFCCC, "Conference of the Parties", *supra* note 13.

26 United Nations Framework Convention on Climate Change, *Copenhagen Accord* (2009), online: <https://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf> [*Copenhagen Accord*]. See, e.g., Figure 1.

27 *Ibid* at paras 2-3.

28 *Ibid* at para 2.

29 UNFCCC, "Conference of the Parties", *supra* note 13.

30 United Nations Framework Convention on Climate Change, *Paris Agreement* (2015), online: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> [*Paris Agreement*].

31 The Economist, "An Inconvenient Truth: The World Is Going to Miss the Totemic 1.5 °C Climate Target", *The Economist* (5 November 2022), online: <https://www.economist.com/interactive/briefing/2022/11/05/the-world-is-going-to-miss-the-totemic-1-5c-climate-target> [The Economist, "An Inconvenient Truth"] ("There was thus immense pressure on all at [COP21] to achieve a robust outcome. And a group of politicians and policymakers representing some of the world's poorest countries had a very specific and controversial requirement for what it should contain. James Fletcher, of St Lucia, recalls that he and his fellow representatives of Caribbean states were 'very clear in our minds that 1.5 °C was a red-line item. It was one of the things that we said kind of silently: that we would be prepared to walk away from the negotiations if there was a sign we would not be getting a reference to 1.5 °C in the *Paris Agreement*.' Many island states had the same red line. Their reasoning was simple. For a country like the Maldives, with more than 80% of its land rising less than one metre above sea level, more than 1.5 °C (2.7°F) of global warming would see most of its sovereign territory disappear. Some continental countries which felt themselves at particular risk, or felt a particularly strong sense of solidarity, embraced the cause too").

32 *Ibid*.

33 *Paris Agreement*, *supra* note 30 at Article 2.

34 UNFCCC, "Conference of the Parties", *supra* note 13.

of COP26 as "keep 1.5 alive."[35] The UN Secretary-General António Guterres echoed this rallying cry in his COP26 opening speech:

> The science is clear. We know what to do. First, we must keep the goal of 1.5 °C alive. This requires greater ambition on mitigation and immediate concrete action to reduce global emissions by 45% by 2030.[36]

After day four of the meeting, the British government released – possibly prematurely – a press release, which predicted that COP26 was going to broker a deal that would keep 1.5 alive.[37] As if in response, one of the world's most credible climate actors, Climate Action Tracker, issued a report, which found:

> Now, **at the midpoint of Glasgow, it is clear there is a massive credibility, action and commitment gap** that casts a long and dark shadow of doubt over the net zero goals put forward by more than 140 countries, covering 90% of global emissions…. **Targets for 2030 remain totally inadequate**: the current 2030 targets…. put us on track for a 2.4 °C temperature increase by the end of the century.[38]

COP26 resulted in the *Glasgow Climate Pact*.[39] It called for the accelerated "phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies."[40] It also made the call to countries "to consider further actions" to reduce emissions by 2030.[41] The President of COP26, Alok Sharma, reported in his closing remarks:

> We can now say with credibility that we have kept 1.5 degrees alive. But, its pulse is weak

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35 The Economist, "An Inconvenient Truth", *supra* note 31 ("… before the COP26 climate summit it hosted in Glasgow last year, the British government framed its goals for progress in terms of an aim to 'keep 1.5 alive'"). For more, consider a speech by the UK-appointed President for COP 26 in the leadup to COP26: The Right Honourable Alok Sharma, "Speech: Cutting Global Emissions is Essential to Keeping 1.5 Degrees Alive", Government of the United Kingdom (9 September 2021), online: <https://www.gov.uk/government/speeches/cutting-global-emissions-is-essential-to-keeping-15-degrees-alive> [The Right Honourable Alok Sharma] ("And that was another clear message from the recent IPCC report that we must act immediately to keep alive the goal enshrined in the *Paris Agreement* to try and limit the rise in global temperature to 1.5 °C. So as many of you have made clear, the time for talking is behind us. What we need now is action. Action to drive down global emissions. Action to protect people and nature from the effects of climate change. And action to seize the benefits on offer from the move to green resilient economies. We must make sure that COP26 is the moment that every country and ever part of society embraces their responsibility to protect our planet so that we can indeed, keep the 1.5 degree within reach, keep 1.5 alive, as I have heard many of you say very passionately. And of course, this requires us all to act. It requires, government, business, finance and civil society. We all have a part to play").

36 United Nations Framework Convention on Climate Change, "UN Secretary-General: COP26 Must Keep 1.5 Degrees Celsius Goal Alive", online: <https://unfccc.int/news/un-secretary-general-cop26-must-keep-15-degrees-celsius-goal-alive> [UNFCCC, "UN Secretary-General"].

37 Government of the United Kingdom, "The UK Kept 1.5 Degrees Alive, A New COP26 Presidency Report Shows", online: <https://www.gov.uk/government/news/the-uk-kept-15-degrees-alive-a-new-cop26-presidency-report-show>.

38 Climate Action Tracker, "Warming Projections Global Update", online: <https://climateactiontracker.org/documents/997/CAT_2021-11-09_Briefing_Global-Update_Glasgow2030CredibilityGap.pdf>.

39 United Nations Framework Convention on Climate Change, *Glasgow Climate Pact* (2021), online: <https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf> [*Glasgow Climate Pact*].

40 *Ibid* at Part 4 ("*Calls upon* Parties to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition").

41 *Ibid* at Part 4.

> and it will only survive if we keep our promises and translate commitments into rapid action.[42]

Sharma's assessment of the *Glasgow Climate Pact* did not instill confidence: 1.5 was on life support.

The climate events following COP26 gave the global community ample incentive to answer Sharma's call to action.[43] In 2022, heatwaves and wildfires occurred in most European countries,[44] as well as in Morocco,[45] Tunisia,[46] and Turkey.[47] Another record heatwave, in China, caused droughts, which led to crop failures and power outages.[48] Hurricane Fiona destroyed Canadian coastal areas.[49] Hurricane Ian devastated parts of Cuba and Florida.[50] Floods crippled Pakistan.[51] At the end of 2022, Reuters reported that insured losses alone for natural catastrophes that year globally would exceed USD 112 billion.[52,53]

Yet these events did not inspire global action. The attention of the global community was pulled by

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[42] Massachusetts Institute of Technology's Office of the Vice President for Research, "At UN Climate Change Conference, Trying to 'Keep 1.5 Alive'", *Massachusetts Institute of Technology News* (17 November 2021), online: <https://news.mit.edu/2021/un-climate-change-conference-cop26-1117>.

[43] *Ibid*.

[44] See, e.g., Catarina Demony & Miguel Pereira, "Scorching Heat Wave Sparks Wildfires in Europe", *Reuters* (13 July 2022), online: <https://www.reuters.com/world/europe/wildfires-rage-heatwave-scorches-portugal-spain-2022-07-13/>.

[45] See, e.g., BBC News, "Morocco Wildfires: Toxic Smoke and Raging Blazes", *BBC News* (15 July 2022), online: <https://www.bbc.com/news/world-africa-62177419>.

[46] See, e.g., Tunisie Numerique, "Tunisia-Fire in Jebel Boukornine: National Army Intervenes", *Tunisie Numerique* (19 July 2022), online: <https://news-tunisia.tunisienumerique.com/tunisia-fire-in-jebel-boukornine-national-army-intervenes/>.

[47] See, e.g., Ece Toksabay, "Strong Winds Fan Forest Fire in Southwestern Turkey", *Reuters* (13 July 2022), online: <https://www.reuters.com/world/middle-east/strong-winds-fan-forest-fire-southwestern-turkey-2022-07-13/>.

[48] See, e.g., David Stanway, "China Races to Alleviate Drought, Power Cuts amid Record Heatwave", *Reuters* (17 August 2022), online: <https://www.reuters.com/world/china/china-takes-action-alleviate-drought-record-heatwave-continues-2022-08-17/>; Xiaoyu Yin & Thomas Peter, "As Harvest Time Looms, China Tells Farmers to Replant or Switch Crops", *Reuters* (25 August 2022), online: <https://www.reuters.com/world/china/chinas-chongqing-extends-power-curbs-drought-drags-2022-08-25/>.

[49] See, e.g., Eric Martyn & John Morris, "Storm Fiona Ravages Canada's East Coast Causing 'Terrifying' Destruction", *Reuters* (24 September 2022), online: <https://www.reuters.com/world/canada-braces-possibly-historic-storm-hurricane-fiona-2022-09-24/>.

[50] See, e.g., Joseph Ax, "Factbox: Hurricane Ian Damage: Death Toll and Latest Snapshot of Florida Impact", *Reuters* (3 October 2022), online: <https://www.reuters.com/world/us/hurricane-ian-damage-death-toll-latest-snapshot-florida-impact-2022-10-03/>; Andrea Rodriguez, "10 Days Later, Cubans Still Recovering from Hurricane Ian", *Associated Press News* (7 October 2022), online: <https://apnews.com/article/hurricanes-health-caribbean-covid-storms-848c52622a1e03a50b93a5013be0df72>.

[51] See, e.g., Abid Hussain, "Eight Million May Still Be Exposed to Pakistan Floodwaters: UN", *Aljazeera News* (7 December 2022), online: <https://www.aljazeera.com/news/2022/12/7/8-million-still-potentially-exposed-to-pakistan-floodwaters-un>.

[52] Carolyn Cohn, "Global Natural Catastrophe 2022 Insured Losses Seen at $112 Bln-Broker", *Reuters* (30 December 2022), online: <https://www.reuters.com/markets/global-natural-catastrophe-insurance-losses-seen-112-bln-2022-2022-12-30/>.

[53] See, e.g., Valerie Volcovici, "Reeling from Floods, Pakistan Seeks Climate Compensation, Debt Relief", *Reuters* (7 November 2022), online: <https://www.reuters.com/business/cop/reeling-floods-pakistan-seeks-climate-compensation-debt-relief-2022-11-07/> ("Pakistan's Prime Minister Said His Country Would Need Debt Relief and Would Seek Compensation for Climate Damage as It Recovers from Catastrophic Floods That Cost the Country Some $30 Billion").

other things, including: war in Europe,[54] a global food crisis,[55] a global energy crisis,[56] rapid inflation,[57] and the threat of global recession.[58] Of the 193 countries called to keep 1.5 alive, only 24 updated their national commitments to combat climate change.[59] As a result, the United Nations projected, the global community was on track to increase emissions "by 10.6% by 2030";[60] that is, it was on track to miss – by a wide margin – the goal of reducing "global emissions by 45% by 2030."[61] The Executive Secretary of *UNFCCC*, Simon Stiell, made an accurate assessment of the situation: "We are still nowhere near the scale and pace of emission reductions required to put us on track toward a 1.5 °C world."[62]

Was 1.5 dead? The World Meteorological Organization offered a partial answer in mid-2022.[63] It predicted that the annual global temperature for each year between 2022 and 2027 would be between 1.1 °C and 1.7 °C,[64] and that there was a 50-50 chance that the annual global temperature would exceed 1.5 °C in a given year.[65] It was the latter prediction that grabbed headlines.[66]

Sharm el-Sheikh hosted COP27, in 2022.[67] A key issue on the agenda was to clarify the meaning of "loss and damages" in Article 8 of the *Paris Agreement*.[68] It was clear that having the largest emitters

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54 See, e.g., Associated Press, "Explainer: How Did the Russia-Ukraine War Trigger a Global Food Crisis?", *Aljazeera* (7 December 2022), online: <https://www.aljazeera.com/economy/2022/6/18/explainer-how-did-russia-ukraine-war-trigger-a-food-crisis>.

55 See, e.g., *ibid.*

56 See, e.g., David Gaffen, "How the Russia-Ukraine War Accelerated a Global Energy Crisis", *Reuters* (15 December 2022), online: <https://www.reuters.com/business/energy/year-russia-turbocharged-global-energy-crisis-2022-12-13/>.

57 See, e.g., The Economist, "An Expensive Issue: 2022 Has Been a Year of Brutal Inflation", *The Economist* (21 December 2022), online: <https://www.economist.com/finance-and-economics/2022/12/21/2022-has-been-a-year-of-brutal-inflation>.

58 See, e.g., The World Bank, "Risk of Global Recession in 2023 Rises Amid Simultaneous Rate Hikes", *The World Bank* (15 September 2022), online: <https://www.worldbank.org/en/news/press-release/2022/09/15/risk-of-global-recession-in-2023-rises-amid-simultaneous-rate-hikes>.

59 United Nations Framework Convention on Climate Change, "Climate Plans Remain Insufficient: More Ambitious Action Needed Now", online: <https://unfccc.int/news/climate-plans-remain-insufficient-more-ambitious-action-needed-now> [UNFCCC, "Climate Plans Remain Insufficient"].

60 *Ibid*.

61 UNFCCC, "UN Secretary-General", *supra* note 36.

62 UNFCCC, "Climate Plans Remain Insufficient", *supra* note 59.

63 World Meteorological Organization, *WMO Global Annual to Decadal Climate Update: 2022–2026* (Geneva: World Meteorological Organization, 2022) at 2 [WMO, *Global Annual to Decadal Climate Update*].

64 *Ibid* at 2.

65 *Ibid* at 2.

66 See, e.g., Grahame Madge, "Temporary Breaching of 1.5C in Next Five Years?", online: <https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2022/decadal-forecast-2022>; Gloria Dickie, "World Could See 1.5c of Warming in Next Five Years, WMO Reports", *Reuters* (9 May 2022), online: <https://www.reuters.com/business/environment/world-could-see-15c-warming-next-five-years-wmo-reports-2022-05-09/>.

67 UNFCCC, "COP 27", online: <https://unfccc.int/event/cop-27>.

68 *Paris Agreement*, *supra* note 30 at Article 8 ("Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage").

accept legal liability was a nonstarter.[69] Even still, it would be an opportunity to improve mechanisms for the equitable financing of post-event reconstruction, mitigation, adaption, and resilience.[70]

In the end, the *Sharm el-Sheikh Implementation Plan* was a push in terms of mitigation commitments, echoing the language of COP26.[71] In terms of adaptation, more progress was made, setting up two funds: the "Least Developed Countries Fund" and the "Special Climate Change Fund."[72] In terms of an understanding of loss and damages, the plan welcomed the establishment of "institutional arrangements of the Santiago network for averting, minimizing and addressing loss and damage associated with the adverse effects of climate change" (that is, a loss and damages fund).[73] Yet the plan was silent as to who would be responsible to contribute to these funds and how much they would be responsible to contribute. Also, it remained undecided who would have access to such funds.

COP26 President Sharma was interviewed at the end of COP27.[74] He first noted that he was encouraged by the creation of the loss and damage fund, but then expressed concern over the pace of mitigation. Pointing to the *Sharm el-Sheikh Implementation Plan*, he declared:

> Emissions peaking before 2025…. Not in this text. Clear follow-through on the phase down

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[69] The Economist, "What Is Climate 'Loss and Damage'? Poor Countries Want Compensation for the Impacts of Climate Change. COP27, in November, Forced the Issue", *The Economist* (3 October 2022), online: <https://www.economist.com/the-economist-explains/2022/10/03/what-is-climate-loss-and-damage> ("Climate change causes costly damage…. Poor countries often feel the effects first. Providing help after a hurricane or flood might sound like fairly standard foreign aid. But when recast as a matter of liability and compensation, rather than a gift, it becomes much more controversial. Computer models allow scientists to quantify the role that greenhouse-gas emissions play in a given disaster—and therefore the enormous sums that big emitters could be on the hook for. Unsurprisingly, developed countries have pushed back against this reasoning since it emerged in the early 1990s, when the text of the UN Framework Convention on Climate Change was being drawn up. A group of island countries had proposed that an international insurance fund be created to compensate low-lying countries for the damage caused by rising sea-levels. The suggestion was not included in the final text, but the idea has persisted").

[70] See, e.g., Anurit Kanti, "Climate Change: True Success at COP27 Means Addressing Climate Justice — Here's How to Do It", *World Economic Forum* (21 October 2022), online: <https://www.weforum.org/agenda/2022/10/cop27-climate-justice-success/> ("COP27 is an opportunity to remedy that problem, but also to ensure that the issue of climate justice is tackled effectively—without climate justice, more funding and loftier promises by world leaders will be meaningless. With the previous conference in Glasgow deemed a moderate success, with some countries committing more to climate finance and raising their goals, the conference in Egypt has a unique opportunity to take a much-needed leap towards effective climate action"). See, also, *Copenhagen Accord*, *supra* note 15 at Article 8 ("Scaled up, new and additional, predictable and adequate funding as well as improved access shall be provided to developing countries, in accordance with the relevant provisions of the Convention, to enable and support enhanced action on mitigation, including substantial finance to reduce emissions from deforestation and forest degradation (REDDplus), adaptation, technology development and transfer and capacity-building, for enhanced implementation of the Convention. The collective commitment by developed countries is to provide new and additional resources, including forestry and investments through international institutions, approaching USD 30 billion for the period 2010 to 2012 with balanced allocation between adaptation and mitigation. Funding for adaptation will be prioritized for the most vulnerable developing countries, such as the least developed countries, small island developing States and Africa. In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries. This funding will come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance. New multilateral funding for adaptation will be delivered through effective and efficient fund arrangements, with a governance structure providing for equal representation of developed and developing countries. A significant portion of such funding should flow through the Copenhagen Green Climate Fund").

[71] United Nations Framework Convention on Climate Change, *Sharm el-Sheikh Implementation Plan* (2021), online <https://unfccc.int/documents/624444> at Part 4 [*Sharm el-Sheikh Implementation Plan*].

[72] *Ibid* at Part 5.

[73] *Ibid* at Part 5.

[74] The Right Honourable Alok Sharma, *supra* note 35.

of coal: not in this text. A clear commitment to phase out all fossil fuels: not in this text.[75]

What does this mean for 1.5? A change in climate discourse offers a partial answer. The language of 1.5 is being replaced with "Every Fraction of a Degree Matters."[76] This new mantra urges the global community to keep the average global temperature as low as possible.[77] The shift signals an acknowledgment that the average global temperature is likely to rise above this threshold. Optimistically, 1.5 may remain the goal; the hope still may be alive. But in a world where the average global temperature has breached 1.5 °C, the goal may instead become – with the help of negative emissions technologies – to return the average global temperature to below this threshold as soon as possible.[78]

A few observations follow from this update of the climate change problem. It is wishful thinking to deny that annual global temperatures will reach 1.5 °C.[79] This fact ought to trigger an immediate

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[75] The Economist, "Should Rich Countries Pay for Climate Damage in Poor Ones? That Question Dominated This Year's Big Climate Summit", *The Economist* (24 November 2022), online: <https://www.economist.com/international/2022/11/20/a-new-un-fund-for-loss-and-damage-emerges-from-cop27>.

[76] See, e.g., United Nations Framework Convention on Climate Change, "Voices from COP27. Jim Skea: Every Fraction of a Degree of Warming Matters", online: <https://www.un.org/en/climatechange/voices-from-cop27/jim-skea> [UNFCCC, "Voices from COP27"] ("Jim Skea: Scientifically, we don't fall over the cliff edge if we go over 1.5 °C. It's more of a case that every fraction of a degree of warming matters. So, in terms of the guidance for action, which is where I think it really matters, even if we were not to hit 1.5 °C, more mitigation just makes more and more sense because of the avoided impacts, and the co-benefits in terms of sustainable development, and we'll avoid bigger costs in the longer-term. Obviously, if we go over 1.5 °C, it really emphasizes the importance of adaptation. So, on all fronts, every fraction of a degree matters which just leads you to the conclusion we need to up the action on mitigation and up the action on adaptation"); Nina Chestney, "Every Fraction of a Degree Counts, UN Says, as 2.8C Warming Looms", *Reuters* (27 October 2022), online: <https://www.reuters.com/business/environment/cop27-world-faces-28c-rise-after-woefully-inadequate-climate-pledges-un-says-2022-10-27/> ("As countries seek to improve on that, some have offered further action provided it is contingent on international financial and technical support. These 'conditional' pledges, if implemented fully, could reduce expected warming to a 2.4 °C rise, while unconditional pledges could lead to a 2.6 °C rise, the report said. 'We still aren't anywhere near enough to cut greenhouse gas emissions (to the levels required),' UNEP executive director Inger Andersen told reporters at a briefing. 'But we must try. Every fraction of a degree matters,' she said"); UNEP, *The Closing Window*, *supra* note 4 at XV ("Is it a tall order to transform our systems in just eight years? Yes. Can we reduce greenhouse gas emissions by so much in that timeframe? Perhaps not. But we must try. Every fraction of a degree matters: to vulnerable communities, to species and ecosystems, and to every one of us. Most importantly, we will still be setting up a carbon-neutral future: one that will allow us to bring down temperature overshoots and deliver other benefits, like clean air").

[77] See, e.g., UNEP, *The Closing Window*, *ibid* at 30, 45, 54-55.

[78] See, e.g., National Academies of Sciences, Engineering, and Medicine, *Negative Emissions Technologies and Reliable Sequestration: A Research Agenda* (Washington: The National Academies Press, 2019) at 1 ("Fossil fuel consumption, agriculture, land-use change, and cement production are the dominant anthropogenic sources of CO_2 to the atmosphere. The focus of climate mitigation is to reduce energy sector emissions by 80-100%, requiring massive deployment of low-carbon technologies between now and 2050. Progress toward these targets could be made by deploying negative emissions technologies (NETs), which remove carbon from the atmosphere and sequester it. Under the present conditions, where fossil CO_2 is continuously added to the atmosphere, removing CO_2 from the atmosphere and storing it has exactly the same impact on the atmosphere and climate as simultaneously preventing emission of an equal amount of CO_2. NETs have been part of the portfolio to achieve net emissions reductions, at least since reforestation, afforestation, and soil sequestration were brought into the United Nations Framework Convention on Climate Change, albeit as mitigation options, more than two decades ago. Recent analyses found that deploying NETs may be less expensive and less disruptive than reducing some emissions, such as a substantial portion of agricultural and land-use emissions and some transportation emissions").

[79] See, e.g., UNFCCC, "Voices from COP27", *supra* note 76.

response inolving the investment of trillions in mitigation, adaptation, and resilience.[80] By investing trillions today, the global commmunity can avoid investing many more trillions tomorrow.[81] Moreover, whether this investment is made or not, poor countries have suffered, and will continue to suffer, disproportionately from climate change, and they will need significant financing to weather the coming storm.[82]

3. Solutions to the Climate Problem

William Nordhaus won the Nobel Prize in Economics for his work on the social cost of climate change.[83] He identifies three options to solve the climate change problem.[84] Plan A is to reduce emissions, that is, mitigation or abatement.[85] Plan B is to remove GHGs from the atmosphere, for instance, carbon sequestration or other such negative emissions technologies.[86] Plan C is to manipulate the atmosphere to reflect heat from the sun to reduce the annual global temperature, that is, employing more invasive

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[80] See, e.g., United Nations Framework Convention on Climate Change, "COP27 Reaches Breakthrough Agreement on New 'Loss and Damage' Fund for Vulnerable Countries", *United Nations Climate News* (20 November 2022), online: <https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries> [UNFCCC, "COP27 Reaches Breakthrough Agreement"] ("The cover decision, known as the *Sharm el-Sheikh Implementation Plan*, highlights that a global transformation to a low-carbon economy is expected to require investments of at least USD 4-6 trillion a year. Delivering such funding will require a swift and comprehensive transformation of the financial system and its structures and processes, engaging governments, central banks, commercial banks, institutional investors and other financial actors"); Torsten Ehlers et al, "How to Scale Up Private Climate Finance in Emerging Economies: Scaling Up Private Capital is Crucial to Finance Vital Low-Carbon Infrastructure Projects, Particularly in Less Developed Economies", *International Monetary Fund Blog* (7 October 2022), online: <https://www.imf.org/en/Blogs/Articles/2022/10/07/how-to-scale-up-private-climate-finance-in-emerging-economies> ("Estimates vary, but these economies must collectively invest at least $1 trillion in energy infrastructure by 2030 and $3 trillion to $6 trillion across all sectors per year by 2050 to mitigate climate change by substantially reducing greenhouse gas emissions. In addition, a further $140 billion to $300 billion a year by 2030 is needed to adapt to the physical consequences of climate change, such as rising seas and intensifying droughts. This could sharply rise to between $520 billion and $1.75 trillion annually after 2050 depending on how effective climate mitigation measures have been").

[81] See, e.g., William D Nordhaus, "Prize Lecture: Climate Change: The Ultimate Challenge for Economics", online: <https://www.nobelprize.org/uploads/2018/10/nordhaus-lecture.pdf> [Nordhaus, "Nobel Prize Lecture"] ("Early studies (EPA 1989) of the economics of different sectors indicated that the first 1 or 2 °C of warming are unlikely to have major disruptive effects on agriculture and most other economic sectors, particularly if warming is gradual and farmers and other participants can adapt their technologies. More recent evidence, for example in the 2018 IPCC report on 1.5 °C (IPCC 2014, 2018), suggests that even 2 °C warming can be highly disruptive to human and particularly natural systems. In the DICE model [Dynamic Integrated Model of Climate and the Economy], the concept of damages includes non-market as well as market, and it has a correction for an insurance premium for high-consequence, low-probability events. In the 2016 model, damages are estimated to be 2% of output at a 3 °C global warming and 8% of output with 6 °C warming. But other summaries are all over the map. A recent meta-analysis by Howard and Sterner (2017) finds high estimates, with their preferred damage estimate being approximately 3½ times the damages underlying the DICE model.")

[82] UNFCCC, "COP27 Reaches Breakthrough Agreement", *supra* note 80 ("Governments took the ground-breaking decision to establish new funding arrangements, as well as a dedicated fund, to assist developing countries in responding to loss and damage. Governments also agreed to establish a 'transitional committee' to make recommendations on how to operationalize both the new funding arrangements and the fund at COP28 next year. The first meeting of the transitional committee is expected to take place before the end of March 2023. Parties also agreed on the institutional arrangements to operationalize the Santiago Network for Loss and Damage, to catalyze technical assistance to developing countries that are particularly vulnerable to the adverse effects of climate change").

[83] Nordhaus, "Nobel Prize Lecture", *supra* note 81.

[84] *Ibid* at 446.

[85] *Ibid*.

[86] *Ibid*.

forms of geoengineering than negative emissions technologies.[87]

Nordhaus warns that the more invasive forms of geoengineering are "dangerous," could have catastrophic effects, and should only be considered as a last-resort option when all else fails.[88] In other words, they should not be considered "the first line of defense against global warming."[89] In terms of Plan B, he acknowledges that "running combustion in reverse" is "highly attractive" in principle, but no existing technology can do this on the scale required, so banking on negative emissions technologies being invented before it is too late is "unwise."[90] Thus, by the process of elimination, Nordhaus argues that mitigating emissions or abating them is "the only realistic option to deal with climate change."[91] That said, he does add that "it is essentially infeasible to attain the stringent temperature target of 1.5 °C, and the 2 °C path requires negative emissions in the near term."[92] In sum, Nordhaus believes that ultimately emissions mitigation is the only solution, which will demand some forms of negative emissions technology, since the global community will not be able to decarbonize fast enough to keep the annual global temperature below 2 °C without them.

Bill Gates may be more optimistic than Nordhaus, but he largely agrees with his assessment of the problem and the solution.[93] Admittedly Gates is not a climate expert, but when the fourth-wealthiest person in the world puts their mind to writing a book on climate change, they can buy the very best of research and editorial support.[94] Moreover, Gates is an insider with access to the top echelons of global climate finance and policy.[95] So, it should come as no surprise that Gates's 2021 book is a well-researched,

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87 *Ibid*.

88 *Ibid* at 446-47 ("… geoengineering is dangerous. It is untested, will not offset climate change equally in all regions, will not deal with ocean carbonization, and will have major complications for international cooperation. To me, geoengineering resembles what doctors call "salvage therapy" – a potentially dangerous treatment to be used when all else fails. Doctors prescribe salvage therapy for people who are very ill and when less dangerous treatments are not available. No responsible doctor would prescribe salvage therapy for a patient who has just been diagnosed with the early stage of a treatable illness. Similarly, no responsible country should undertake geoengineering as the first line of defense against global warming").

89 *Ibid* at 447.

90 *Ibid* at 447 ("Plan B, carbon removal, is in principle a highly attractive option. It is running combustion in reverse. While it is conceptually useful, we have no technologies that can remove 200 or 400 or 1,000 billion tons of CO2 from the atmosphere at a reasonable cost. This might happen, but it has not happened yet, and it seems unwise to bank on it").

91 *Ibid* at 447.

92 *Ibid* at 452.

93 See, generally, Bill Gates, *How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need*, Kindle ed. (New York: Random House, 2021) [Gates].

94 Bloomberg Billionaires Index, "#4 Bill Gates: $126B", *Bloomberg* (11 May 2023), online: <https://www.bloomberg.com/billionaires/profiles/william-h-gates/>.

95 Consider Christina Binkley, "Bill Gates Has a Master Plan for Battling Climate Change", *Wall Street Journal* (15 February 2021), online: <https://www.wsj.com/articles/bill-gates-interview-climate-change-book-11613173337> [Binkley] ("In the fall of 2015, Gates emailed a global cadre of billionaires who could afford to lose tens of millions investing in Breakthrough Energy Ventures. They included Jack Ma, Jeff Bezos, Vinod Khosla and Prince al-Waleed bin Talal. It turned out to be an appealing club to join … just five months…. Gates stood sandwiched between U.S. President Barack Obama and Canadian Prime Minister Justin Trudeau, the only private citizen onstage at the launch event for Mission Innovation at the Paris climate summit").

accessible, and seasoned account of how to mitigate the effects of climate change.[96]

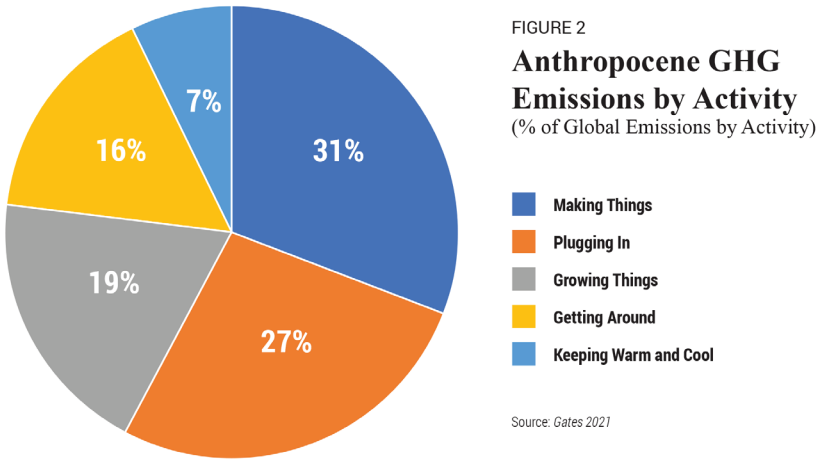

FIGURE 2
Anthropocene GHG Emissions by Activity
(% of Global Emissions by Activity)

Source: *Gates 2021*

Comparing Gates's climate plan to that of Nordhaus, we find that they see Plan A in a similar way. Gates argues that the only long-term solution to climate change is abatement,[97] and that even if Plan B's technological and political hurdles did not exist, it would only buy more time to decarbonize global activities.[98] In terms of Plan C, Gates notes that these geoengineering technologies are "unproven" and "raise thorny ethical issues."[99] He categorizes Plan C as a "Break Glass in Case of Emergency" option.[100] Thus, they agree – broadly speaking – on the solution to climate change: mitigation, meaning abatement, plus negative emissions technologies over the short and medium term, until the global community can achieve full decarbonization of global activities.

In terms of Plan A, Gates frames the abatement challenge effectively.[101] Human activities produce over

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[96] Gates, *supra* note 93. That said, others do have concerns that Gates's book avoids the messier issues of climate politics, which might prove to be the biggest hurdle to mitigation see, e.g., Leah C Stokes, "Climate Solutionism: Focusing on Technological Solutions to Climate Change Feels Like an Attempt to Dodge the Harder Political Obstacles" (2021) 124 MIT Tech Rev 85 at 85 ("These various endeavors are the through line for Gates's latest book, written from a techno-optimist's perspective. 'Everything I've learned about climate and technology makes me optimistic … if we act fast enough, [we can] avoid a climate catastrophe,' he writes in the opening pages. As many others have pointed out, a lot of the necessary technology already exists; much can be done now. Though Gates doesn't dispute this, his book focuses on the technological challenges that he believes must still be overcome to achieve greater decarbonization. He spends less time on the political obstacles, writing that he thinks 'more like an engineer than a political scientist.' Yet politics, in all its messiness, is the key barrier to progress on climate change. And engineers ought to understand how complex systems can have feedback loops that go awry").

[97] Gates, *ibid* at 8 ("The case for zero was, and is, rock solid. Unless we stop adding greenhouse gases to the atmosphere, the temperature will keep going up. Here's an analogy that's especially helpful: The climate is like a bathtub that's slowly filling up with water. Even if we slow the flow of water to a trickle, the tub will eventually fill up and water will come spilling out onto the floor. That's the disaster we have to prevent. Setting a goal to only reduce our emissions—but not eliminate them—won't do it. The only sensible goal is zero").

[98] *Ibid* at 64 ("In reality, the technology behind DAC [Direct Air Capture] isn't ready for global deployment, and even if it were, DAC would be an extremely inefficient method for solving the world's carbon problem. It's not clear that we could store hundreds of billions of tons of carbon safely. There's no practical way to collect $5.1 trillion a year or make sure everyone pays their fair share (and even defining everyone's fair share would be a major political fight). We'd need to build more than 50,000 DAC plants around the world just to manage the emissions we're producing right now. In addition, DAC doesn't work on methane or other greenhouse gases, just carbon dioxide. And it's probably the most expensive solution. In addition, DAC doesn't work on methane or other greenhouse gases, just carbon dioxide. And it's probably the most expensive solution; in many cases, it will be cheaper not to emit greenhouse gases in the first place. Even if DAC can eventually be made to work on a global scale—and remember that I'm an optimist when it comes to technology—it almost certainly can't be developed and deployed quickly enough to prevent dire harm to the environment. Unfortunately, we can't just wait for a future technology like DAC to save us. We have to start saving ourselves today").

[99] *Ibid* at 176.

[100] *Ibid.*

[101] *Ibid* at 54.

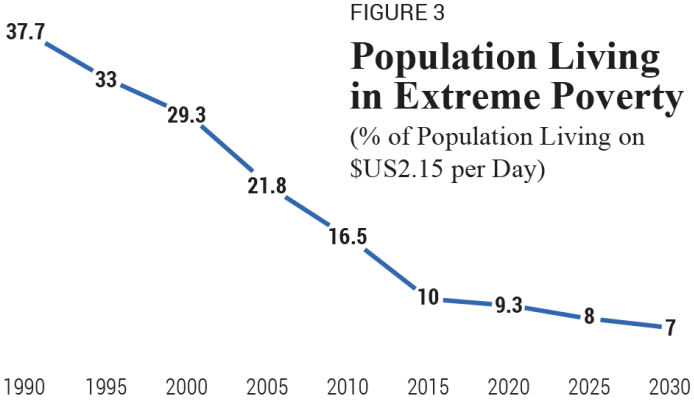
50 billion tonnes of GHG emissions each year.[102] As Figure 2 shows, 31% of these emissions come from making things; 27% come from plugging things in; 19% come from growing things; 16% come from getting around; and the final 7% come from keeping warm and cold.[103] Gates argues that to meet the *Paris Agreement* target, the global community will need to get the emissions from all these sources to net zero emissions in less than 30 years, that is, by 2050.[104] Net zero is defined by the United Nations as "cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere."[105] Thus, net zero by 2050 means that everyone will be required to do things much differently than they do today.

Further complicating matters, the human population is climbing out of poverty. In one sense, this is very good news, but in another sense, it makes net zero by 2050 more difficult to achieve, since as more people escape poverty, more are also consuming the conveniences of modern life.[106]

FIGURE 3

Population Living in Extreme Poverty

(% of Population Living on $US2.15 per Day)



Sources: World Bank 2022

The World Bank reports that a person is suffering from extreme poverty when they live on less than USD 2.15 per day (using 2017 prices).[107] In 1990, 37.7% of the global population lived in extreme poverty.[108] By 2020, that number had fallen to 9.3%.[109] The World

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102 United Nations Environmental Programme, *Emissions Gap Report 2020* (Nairobi: United Nations Environmental Programme, 2022) at XIV ("Global GHG emissions continued to grow for the third consecutive year in 2019, reaching a record high of 52.4 Gt-CO_2e (range: ±5.2) without land-use change (LUC) emissions and 59.1 GtCO2e (range: ±5.9) when including LUC").

103 Gates *supra* note 93 at 54.

104 *Ibid* at 35. See, also, United Nations Framework Convention on Climate Change, "For a Livable Climate: Net-Zero Commitments Must Be Backed by Credible Action", online: <https://www.un.org/en/climatechange/net-zero-coalition> [UNFCCC, "For a Liveable Climate"].

105 UNFCCC, "For a Livable Climate", *ibid*.

106 Gates *supra* note 93 at 40.

107 The World Bank, "Fact Sheet: An Adjustment to Global Poverty Lines", online: <https://www.worldbank.org/en/news/fact-sheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines#1> ("The World Bank updated the global poverty lines in September 2022. The decision, announced in May, follows the release in 2020 of new purchasing power parities (PPPs)—the main data used to convert different currencies into a common, comparable unit and account for price differences across countries. The new extreme poverty line of $2.15 per person per day, which replaces the $1.90 poverty line, is based on 2017 PPPs"). See, also, Dean Jolliffe Daniel et al, "Assessing the Impact of the 2017 PPPs on the International Poverty Line and Global Poverty" (2022) World Bank Policy Research Working Paper 9941, online: <https://documents1.worldbank.org/curated/en/353811645450974574/pdf/Assessing-the-Impact-of-the-2017-PPPs-on-the-International-Poverty-Line-and-Global-Poverty.pdf>.

108 Samuel Kofi Tetteh Baah et al, "Updating the World Bank's Societal Poverty Line with the 2017 Purchasing Power Parities", *World Bank Blogs* (12 September 2022), online: <https://blogs.worldbank.org/opendata/updating-world-banks-societal-poverty-line-2017-purchasing-power-parities>.

109 The World Bank, "Understanding Poverty", *The World Bank* (30 November 2022), online: <https://www.worldbank.org/en/topic/poverty/overview> ("For three decades, the number of people living in extreme poverty—defined as those who live on less than $2.15 per person per day at 2017 purchasing power parity—was declining. But the trend was interrupted in 2020, when poverty rose due to the disruption caused by the COVID-19 crisis. The number of people in extreme poverty rose by 70 million to more than 700 million people. The global extreme poverty rate reached 9.3%, up from 8.4% in 2019").

Bank projects extreme poverty at approximately 7% in 2030.[110] To be clear, the fact that only 9.3% are living in extreme poverty does not mean 90.7% of the global population enjoy the conveniences of modern life. About a quarter of the world's population live on less than USD 3.65 per day; and about half live on less than USD 6.85 per day.[111] So, only a rare few enjoy the relative affluence of Western societies, at about 16%, but things are improving.[112]

Not only are more people enjoying modern prosperity, but the global population is dramatically increasing.[113] The United Nations estimates that the global population was about 300 million in the year 1 CE, and it took about 1600 years to double.[114] Global population started to rapidly increase in the 17th century, jumping from 600 million in 1600 to about 1 billion in 1800.[115] By 1900, the population had jumped to 1.65 billion.[116] In 2000, it was about 6 billion.[117] In the following 20 years, it jumped by 2 billion more, that is, to almost 8 billion in 2021.[118] In 2050, it is projected that the population will be about 10 billion.[119]

Some have argued that the human population will plateau after 2050 based on current trends in industrialized countries.[120] But such projections become less reliable – and more controversial – the

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110 The World Bank, *Poverty and Shared Prosperity 2022: Correcting Course* (Washington: The World Bank, 2022) at xxi ("In the five years leading up to the pandemic, poverty reduction had slowed to 0.6 percentage point per year. Before 2020, the world was already significantly off course on the global goal of ending extreme poverty by 2030. This report projects that 7 percent of the world's population—roughly 574 million people—will still struggle in extreme poverty in 2030. That is far short of the global goal of 3 percent in 2030").

111 *Ibid* at 41 ("In 2019, almost a quarter of the global population, 23 percent, lived below the US$3.65 [per day global] poverty line and almost a half, 47 percent, lived below the US$6.85 poverty line").

112 Gates *supra* note 93 at 41.

113 United Nations Department of Economic and Social Affairs, *The World at Six Billion* (New York: United Nations, 1999) at 4 ("The rapid growth of the world population is a recent phenomenon in the history of the world. It is estimated that 2000 years ago the population of the world was about 300 million. For a very long time the world population did not grow significantly, with periods of growth followed by periods of decline. It took more than 1600 years for the world population to double to 600 million").

114 *Ibid.*

115 *Ibid* at 6.

116 *Ibid*.

117 The World Bank, "Population, Total", online: <https://data.worldbank.org/indicator/SP.POP.TOTL>.

118 *Ibid.*

119 United Nations Department of Economic and Social Affairs, "World Population Projected to Reach 9.8 Billion in 2050, and 11.2 Billion in 2100", UNDESA (21 June 2017), online: <https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html> ("The current world population of 7.6 billion is expected to reach 8.6 billion in 2030, 9.8 billion in 2050 and 11.2 billion in 2100, according to a new United Nations report being launched today. With roughly 83 million people being added to the world's population every year, the upward trend in population size is expected to continue, even assuming that fertility levels will continue to decline").

120 Stein Emil Vollset et al, "Fertility, Mortality, Migration, and Population Scenarios for 195 Countries and Territories from 2017 to 2100: A Forecasting Analysis for the Global Burden of Disease Study" (2022) 396 Lancet 1285 at 1304 ("Global population is likely to peak well before the end of the century. Given that we forecasted that societies tend towards a TFR (total fertility rate) lower than 1·5, once global population decline begins, it will probably continue inexorably. Within the declining total world population some countries will sustain their populations through liberal immigration policies and social policies more supportive of females working and achieving their desired family size").

further one ventures from the present.[121] Regardless, while the largely uncontroversial projection that the population will reach 10 billion by 2050 – give or take a few years – may be an advantage in some senses, for instance for economic growth,[122] in terms of achieving net zero by 2050, it adds to the challenge.[123]

Dramatic population growth combined with a significant decrease in poverty will result in a spike in consumer demand within the critical timeframe for achieving net zero, that is, from now to 2050.[124] More people with more money will demand more things, more plugs, more food, more transport, and more refuge from the heat and cold.[125]

So, if the global community does not take seriously the call to decarbonize, when demand grows, the emissions from this growth will dwarf current annual global totals. Applying this assumption, even if the global community were to reduce total net emissions per activity to 50% of 2023 levels by 2050, the total increase in those activities could result in similar global total emissions. That is, the global community could achieve lower emissions per activity, but the greater frequency of activities could still cancel the advancement in mitigation, resulting in no meaningful reduction in global GHG emissions by 2050. This scenario invites sober consideration of the significant challenge that growth

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121 David Adam, "How Far Will Global Population Rise? Researchers Can't Agree", *Nature* (21 September 2021), online: <https://www.nature.com/articles/d41586-021-02522-6> ("Some demographers stay on the sidelines. 'I steered well clear of getting involved in any of that because it got quite nasty and it's very difficult to really say what's the better approach,' says Tom Wilson, a demographer at the University of Melbourne, Australia. 'The one thing unfortunately about population projections is they will always turn out to be wrong.' That's why some in the field prefer to leave the future alone and focus instead on improving the accuracy of data used immediately to set policy: counting people alive right now").

122 E Wesley F Peterson, "The Role of Population in Economic Growth" (2017) 7 SAGE Open 1 at 12 ("Most of the work reviewed in this article supports the idea that population growth is an important factor in overall economic growth and may even contribute to increased growth in per capita output in some cases. In low-income countries, rapid population growth is likely to be detrimental in the short and medium term because it leads to large numbers of dependent children. In the longer run, there is likely to be a demographic dividend in these countries as these young people become productive adults. It has also been argued that population growth induced by high levels of fertility, as is often the case in low-income countries, can reduce general well-being in contrast to growth resulting from declines in mortality rates generally believed to have more benign impacts on savings and economic growth").

123 Consider United Nations Department of Economic and Social Affairs, "Population Growth, Environmental Degradation and Climate Change", online: <https://www.un.org/development/desa/un-desa-voice/feature/2022/02/3388.html> ("More than a third of 50 recently surveyed Nobel laureates cited 'population rise /environmental degradation' as the biggest threat to humankind").

124 UNFCCC, "For a Livable Climate", *supra* note 104 ("The science shows clearly that in order to avert the worst impacts of climate change and preserve a livable planet, global temperature increase needs to be limited to 1.5 °C above pre-industrial levels. Currently, the Earth is already about 1.1 °C warmer than it was in the late 1800s, and emissions continue to rise. To keep global warming to no more than 1.5 °C – as called for in the *Paris Agreement* – emissions need to be reduced by 45% by 2030 and reach net zero by 2050").

125 Gates *supra* note 93 ("Remember that emissions come from five different activities [making things, plugging in, growing things, getting around, keeping warm and cool] and we need solutions in all of them" at 56); ("What will happen as more people live like the richest 16 percent? Global energy demand will go up 50 percent by 2050, and if nothing else changes, carbon emissions will go up by nearly as much. Even if the rich world could magically get to zero today, the rest of the world would still be emitting more and more" at 41); ("Most experts agree that as we electrify other carbon-intensive processes like making steel and running cars, the world's electricity supply will need to double or even triple by 2050. And that doesn't even account for population growth, or the fact that people will get richer and use more electricity. So the world will need much more than three times the electricity we generate now" at 79); ("These days, nearly all the growth in transport-related carbon is coming from developing countries as their populations grow, get richer, and buy more cars. As usual, China is the best example—its transportation emissions have doubled over the past decade and gone up by a factor of 10 since 1990" at 133); ("By 2050, there will be more than 5 billion A/C units in operation around the world" at 150); ("To accommodate a growing urban population, we'll add 2.5 trillion square feet of buildings by 2060—the equivalent, as I mentioned in chapter 2, of putting up another New York City every month for 40 years" at 157); ("With population growth, the demand for food will likely double or triple in regions where most of the world's poor live" at 165).

in the size of both the global economy and population present to the goal of net zero by 2050.

Alive to this issue, Gates asserts that the only way forward is to produce net zero alternatives for all human activities as quickly as possible.[126] To do so, the cost of these alternatives needs to approximate the cost of the existing carbon intensive options used today, that is, the global community not only needs to create these alternatives, but they must make them cost competitive as well.[127] The difference in price between the current carbon-intensive things and the future carbon-zero things is what Gates calls "the Green Premium."[128] Unless Green Premiums are very low, over 80% of the global population will not be able to decarbonize their activities.[129]

To achieve decarbonization will require trillions in public and private capital.[130] Governments will need to use their regulatory and spending powers to hasten the process.[131] Regulatory incentives (for instance, favourable tax treatment) and disincentives (for instance, GHG pricing which provide strong price signals) will be needed to ensure that those who develop these essential technologies are rewarded, while those who hinder progress are not.[132]

A criticism of Gates's plan is that he "wears blinders," avoiding the tough political questions as to why climate action is not occurring faster,[133] but other reviewers of his thought appreciate the subtleties of his position as a doer on the world stage with full view of what-is-workable within and across the multiple scales of climate politics.[134] Gates's avoidance of the tough political questions is probably wise if the goal of his book is to inspire action, though it does make it tougher to believe that he genuinely is as optimistic as he appears[135] … all things considered.

4. Climate Solutions: Government Action

It is commonly understood that government is only one centre of "polities, politics, and policy-

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126 *Ibid.*

127 *Ibid* at 59.

128 *Ibid* at 59 ("Most of these zero-carbon solutions are more expensive than their fossil-fuel counterparts. In part, that's because the prices of fossil fuels don't reflect the environmental damage they inflict, so they seem cheaper than the alternative…. These additional costs are what I call Green Premiums").

129 *Ibid.*

130 UNFCCC, "COP27 Reaches Breakthrough Agreement", *supra* note 80 ("… a global transformation to a low-carbon economy is expected to require investments of at least USD 4-6 trillion a year").

131 Gates *supra* note 93 at 103-04.

132 *Ibid.*

133 Bill McKibben, "How Does Bill Gates Plan to Solve the Climate Crisis? Nonfiction", *New York Times* (15 February 2021), online: <https://www.nytimes.com/2021/02/15/books/review/bill-gates-how-to-avoid-a-climate-disaster.html> ("So why aren't we moving much faster than we are? That's because of politics, and this is where Gates really wears blinders. 'I think more like an engineer than a political scientist,' he says proudly — but that means he can write an entire book about the 'climate disaster' without discussing the role that the fossil fuel industry played, and continues to play, in preventing action").

134 Binkley, *supra* note 94.

135 See, e.g., Gates *supra* note 93 at 230 ("The year 2020 was a huge and tragic setback. But I am optimistic that we will get COVID-19 under control in 2021. And I'm optimistic that we'll make real progress on climate change—because the world is more committed to solving this problem than it has ever been").

making,"[136] and that others compete or cooperate with the state to coordinate social relations.[137] The more a problem crosses "territories, places, scales, and networks," it stands to reason, the more centres of social control will be needed to address that problem.[138] Climate change is a problem that touches all aspects of human activities, so it makes sense that it requires multiple states, multiple governments within those states, multiple international agencies, multiple regional agencies, multiple for-profit actors, multiple non-profit actors, and multiple other actors to get to net zero by 2050.[139]

This is not to say that government actors have diminished importance within this vast global climate network. A properly functioning, legitimate national government has no rivals for rulemaking within its authority.[140] Moreover, the consent granted by such national governments is foundational to jurisdiction within the international sphere.[141] Thus, the collective effort of national governments – both domestically and internationally – is at the core of meaningful climate action.

As outlined in Part 2, *UNFCCC* (again, the *United Nations Framework Convention on Climate Change*) provides the structure for organizing state action on climate change.[142] Its members, which are government actors, speak through annual meetings called COPs (again, Conference of the Parties).[143]

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136 Levi-Fair, *supra* note 10 at 4.

137 Bob Jessop, "From Governance to Governance Failure and from Multi-level Governance to Multi-scalar Meta-governance" in Bas Arts et al, eds, *The Disoriented State: Shifts In Governmentality, Territoriality and Governance* (New York: Springer, 2009) 79 at 80 [Jessop] ("Governance involves the coordination of natural and social relations characterised by complex, reciprocal interdependence. Four main forms are generally identified for the social world: market exchange, hierarchical coordination, deliberative networking, and unconditional solidarity. There are also sub-types within each and hybrid forms that combine two or more of the main mechanisms. A sound analysis of governance should cover five crucial issues: modes of governance, agents of governance, subjects of governance, objects of governance, and aims of governance. Yet theoretical studies of governance tend to neglect the subjectivities of the direct agents of governance (the governors) and their subjects (the governed) in favour of concern with the mechanisms of coordination").

138 *Ibid* at 95-96 ("… I have argued that the resulting problems posed are best resolved through 'multi-scalar meta-governance' that recognises the limits of action on any one scale, given the multiple and tangled nature of relevant scales of action, and the limits of relying on any one mode of governance. This new concept reflects the fact that governance arrangements that are concerned to govern problems that have a hyper-complex sociospatial positioning in and across territories, places, scales, and networks must themselves exhibit complex forms of spatiality, capacities to address de- and re-territorialisation and border-crossing, place-binding and disembedding rescaling and scale switching, and network creation, stabilisation, and dissolution").

139 *Ibid* at 85 ("It is further argued that social work will be more effective if, first, it is refocused on places (e.g., multi-agency co-ordination focused on specific quarters, etc.) and, second, if there is a new spatial division of labour (differentiated micro-management of social problems rather than nationally scaled uniform approaches)").

140 Andrei Marmor, "Exclusive Legal Positivism" in Jules Coleman & Scott Shapiro, eds, *The Oxford Handbook of Jurisprudence & Philosophy of Law* (Oxford: Oxford University Press, 2002) 104 at 106 ("I have argued elsewhere at some length that it is an essential element of such a social practice like law, that it is founded on constitutive conventions, namely, on a set of conventions which determine what the practise is, and how one goes about engaging in it. The rules of recognition of modern legal systems define the ways in which law is to be created, and they define them in ways which tie the creation of law to certain conventionally established sources").

141 Stephen Hall, *Principles of International Law* (New York: LexisNexis Butterworths, 2022) at para 1.1-1.3 ("Until relatively recent times, international law was regarded as a system of legally binding rules and principles that regulated relations exclusively among sovereign States. These States were held to be the only subjects of international law and the only entities possession legal personality on the international plane. This meant that only States could enjoy legal rights and be under legal obligations at the international level…. Since World War I, the concept of international law has broadened to include among its subjects public international organisations and individuals. Thus, international organizations established by agreement among States, such as the United Nations (UN) may also have certain rights, obligations and capacities under international law. Individuals have increasingly becomes subjects of international law in certain fields, as States have concluded agreements codifying and conferring human rights and establishing direct individual responsibility for international crimes").

142 UNFCCC, "What Is the United Nations Framework Convention on Climate Change?", *supra* note 12.

143 UNFCCC, "Conference of the Parties", *supra* note 13.

At COP21, held in Paris,[144] the members negotiated the *Paris Agreement*.[145] Article 4 of the *Paris Agreement* requires its parties to establish successive Nationally Determined Contributions (NDCs) to meet rolling climate targets.[146] Each party then, in theory, follows through with its given NDC commitment through the execution of domestic climate policies tailored to that end.[147] Taken together, the NDCs of all members equal the sum of state-level mitigation efforts globally. The NDC Registry provides the official record of these mitigation efforts.[148]

Such domestic climate policies can be divided into three basic categories of regulatory action: command and control, financial, and market based. Command and control regulation amounts to establishing and enforcing bright-line rules, which have little room for interpretation or discretion.[149] For instance, government could restrict the technologies used by regulated actors, like banning on new fossil fuel-powered land vehicles, to speed up the transition to electric ones.[150]

Three common criticisms of command-and-control regulation exist. First, they can have unintended and harmful results.[151] Modern societies have complex economies, and dramatic regulatory change in a closed system like an economy can have unforeseeable ripple effects.[152] It follows that such a regulatory

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144 *Ibid.*

145 *Paris Agreement*, *supra* note 30.

146 *Ibid* at Article 4.

147 UNFCCC, "Nationally Determined Contributions (NDCs)", online: <https://unfccc.int/ndc-information/nationally-determined-contributions-ndcs>.

148 UNFCCC, "NDC Registry", online: <https://unfccc.int/NDCREG>.

149 Suzanne Kingston & Colin Scott, "Re-Inventing Regulation for the Challenge of Climate Change" (2008) UCD Earth Systems Institute: Meeting the Challenge of Climate Change Seminar Series Paper #1, online: <https://www.ucd.ie/t4cms/cc1_05dec08_cssk_paper.pdf> at 3 ("Historically, the next 'wave' of environmental regulation comprised the use of state-set standards (commands), to be enforced by public bodies, for instance environmental agencies or the courts (control). Much of what we now consider as 'environmental law' falls into this category, from laws on minimum bathing and drinking water quality, to laws regulating the labelling of dangerous chemicals, to laws requiring waste disposal operators to have a permit for their activities…. Command-and-control techniques have, over time, proven to be highly effective in tackling certain types of environmental damage – for instance, in limiting environmental damage arising from the activities of large single-source polluters, such as power stations and other large industrial installations").

150 See, e.g., The Economist, "How Revolutionary Is California's Ban on Petrol-Powered Cars? It Could Prompt Up to a Third of American States to Embrace Electric Ones More Quickly", *The Economist* (17 August 2022), online: <https://www.economist.com/the-economist-explains/2022/08/27/how-revolutionary-is-californias-ban-on-petrol-powered-cars> ("Gavin Newsom, the Democratic governor, boasted early this year that California "has no peers" on climate policy. On August 25th he welcomed the latest addition to its environmental credentials. The California Air Resources Board (carb), the state's air-pollution regulator, voted to ban the sale of petrol-powered cars by 2035. The decision wasn't a surprise. Mr. Newsom issued an executive order in 2020 directing the agency to create the rule, and regulators officially proposed the ban back in April").

151 Darren Sinclair, "Self-Regulation versus Command and Control - Beyond False Dichotomies" (1997) 19 Law & Pol'y 529 at 529-30 ("Yet despite [command and control regulation's] position as the dominant policy response to environmental pollution, command and control is now routinely subjected to a barrage of criticism, not just from free market economists, but also from a variety of other sources…. Command and control regulation is accused of being costly and inefficient, of stifling innovation, inviting enforcement difficulties' and focusing on 'end-of-pipe' solutions").

152 Consider Alfred E Kahn, *The Economics of Regulation: Principles and Institutions, Volumes I and II* (Cambridge: Massachusetts Institute of Technology Press, 1988) at 8-9 ("In principle … many of these [government] interventions are not intended to constitute economic regulation. The avowed purpose of licencing doctors, barbers, prize fighters and drugs is not usually to have the government substitute its judgment for that of the market in determining, on economic grounds, how many or who should be permitted to enter the market, but only to assure that those who do enter are qualified – on professional, scientific, or technical grounds. But in point of fact, as we shall see, the licensure *is* often economic, in motivation or effect, and does effectively limit the force of the competitive market. Even in principle, it is clear that many of other instances of governmental intervention just mentioned represent policies of direct economic regulation, no more and no less, whatever their public rationalizations").

intervention may negatively impact the lives of citizens without the regulator ever knowing.[153]

Second, command and control regulations tend to provide no incentive to do more than abide by the rules.[154] Put differently, regulated actors have little incentive to exceed expectations set by the regulation in question.[155] Third, command and control regulations tend to be inflexible, providing little incentive for regulated and regulating actors to engage with each other.[156] Few feedback loops other than enforcement may exist, and accordingly, opportunities to learn from experiences within the regulatory space may be lost.[157]

On the other hand, intelligently designed and implemented command and control regulation (possibly in combination with other forms of regulation) can safeguard against unintended effects, offer incentives to encourage excellence, and build open channels for communication throughout the regulated space.[158] It is incorrect to suggest that the form of the regulation dictates its level of intelligent design.[159] Second, command and control regulation is the most direct way to achieve a

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153 Daniel Yergin & Joseph Stanislaw, *The Commanding Heights: The Battle for the World Economy* (New York: Touchstone, 2002) at 357 ("The problem with so much regulation, said Hahn, was that it did not reflect the realities of the marketplace, and prevented price from doing its essential job. He explained, 'The only economic function or price is to influence behavior – to elicit supply and to regulate demand.' But much regulation seemed to do just the opposite – it sent signals quite at variance with the realities of supply and demand. Regulations often did not seem to understand the economics of the industries they were regulating – or the economic consequences of their own decisions").

154 Joseph E Aldy & Robert N Stavins, "The Promise and Problems of Pricing Carbon: Theory and Experience" (2012) 21 J Envtl Dev 152 at 152 [Aldy & Stavins].

155 United States Environmental Protection Agency, "Economic Incentives", online: <https://www.epa.gov/environmental-economics/economic-incentives> ("Market-based approaches or incentives provide continuous inducements, monetary and near-monetary, to encourage polluting entities to reduce releases of harmful pollutants. As a result, market-based approaches create an incentive for the private sector to incorporate pollution abatement into production or consumption decisions and to innovate in such a way as to continually search for the least costly method of abatement. A criticism of command-and-control policies is that firms are only encouraged to reduce to a regulated level. With market incentives, firms will reduce their emissions as long as it is financially valuable for them to do so, and this generally happens at a point where marginal abatement costs are equated across all regulated firms. Cost savings to firms also often translate into cost savings to customers who purchase products from regulated firms, resulting in lower overall social costs").

156 Robert Baldwin et al, *Understanding Regulation: Theory, Strategy, and Practice* (Oxford: Oxford University Press, 2012) at 108 [Robert Baldwin et al] ("A second major concern with [Command and Control] regulation has been its alleged propensity to produce unnecessarily complex and inflexible rules, and indeed, a proliferation of rules that leads to over-regulation, legalism, delay intrusion on managerial freedoms, and the strangling of competition and enterprise").

157 Charles Sabel et al, "Regulation under Uncertainty: The Coevolution of Industry and Regulation" (2018) 12 Regul & Gov 371 at 372 [Charles Sabel et al] ("Traditionally, regulation assumed that firms knew the risks they faced and the costs of mitigation, but the public regulator did not. Firms had strategic incentives to use this information asymmetry problem to frustrate costly supervision. The regulator's task was to elicit from firms the information necessary to establish public-regarding but economically feasible standards and rules, while avoiding "capture" or ceding regulatory control to its addressee. Under uncertainty, however, neither the regulator nor the regulated firms know what needs to be done. The initial regulatory problem is to supervise firms' investigation of risks … the second regulatory task is to foster the institutionalization of incident or event reporting procedures").

158 *Ibid.*

159 Neil Gunningham & Darren Sinclair, "Designing Smart Regulation", online: <https://www.oecd.org/env/outreach/33947759.pdf> at 3 ("Command and control regulation has the virtues of high dependability and predictability (if adequately enforced), but commonly proves to be inflexible and inefficient. In contrast, economic instruments tend to be efficient but, in most cases, not dependable. Information-based strategies, voluntarism and self-regulation have the virtues of being non-coercive, unintrusive and (in most cases) cost-effective, but also have low reliability when used in isolation. Their success also depends heavily on the extent of the gap between the public and private interest. Our general conclusion is that the best means of overcoming the deficiencies of individual instruments, while taking advantage of their strengths, is through the design of combinations of instruments").

targeted end.[160] Finally, many voters will regard political leaders, who employ command and control regulation against uncooperative regulated actors, as possessing the political will to stand up for the public interest.[161]

The next two types of government action are less direct than command and control regulation. The first is financial in nature. The governments of wealthy countries can use some of their largesse to reward those who help them achieve their policy goals.[162] A government can create assistance programs that help targeted businesses get off the ground; it can grant subsidies; it can offer direct investment into areas in which innovation is desired; or it can give tax breaks.[163] Any one of these actions, or a combination of several, can create effective incentive structures to inspire businesses and citizens to reduce their emissions.[164]

The last option for government is market-based regulation.[165] A properly functioning market cannot

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160 Robert Baldwin et al, *supra* note 156 at 107 ("The strengths of C & C regulation (as compared to techniques based, say, on the use of economic incentives such as taxes or subsidies) are that the force of law can be used to impose fixed standards with immediacy and to prohibit activity not conforming to such standards").

161 *Ibid* at 107 ("In political terms, the regulator or government is seen to be acting forcefully and to be taking a clear stand: by designating some forms of behaviour as unacceptable; by excluding dangerous parties from relevant areas; by protecting the public; and establishing penalties for those engaging in offensive conduct. Some forms of behaviour can thus be outlawed completely and the ill-qualified can be stopped from practising activities likely to produce harms. The public, as a result, can be assured that the might of the law is being used both practically and symbolically in their aid").

162 Nicholas Stern et al, "The Economics of Immense Risk, Urgent Action and Radical Change: Towards New Approaches to the Economics of Climate Change" (2022) 29 J Econ Methodol 181 at 207 ("So too, given the key role of market failures as impediments to a fast green transition, we will need models that focus, for instance, on tackling pervasive market failures in the financial sector, e.g. imperfections in information, through disclosure requirements and central banks analysing carbon risk in all of its dimensions; imperfections in risk markets, e.g. by governments taking a role in de-risking climate investments; and imperfections in financial institutions, e.g. by the creation of green development banks. Tackling these market failures can substantially lower the cost of bringing about the transition").

163 See, e.g., Natural Resources Canada, "Current Investments: Canada's Investment in Energy Innovation is an Important Part of Building Our Clean Economy", online: <https://www.nrcan.gc.ca/science-and-data/funding-partnerships/funding-opportunities/current-investments/21146>.

164 International Energy Agency, "Global Government Spending on Clean Energy Transitions Rises to USD 1.2 Trillion Since the Start of the Pandemic, Spurred by Energy Security Concerns", online: <https://www.iea.org/news/global-government-spending-on-clean-energy-transitions-rises-to-usd-1-2-trillion-since-the-start-of-the-pandemic-spurred-by-energy-security-concerns> ("Global government spending to support clean energy has increased by over USD 500 billion since March as the global energy crisis spurs new policies aimed at cutting reliance on fossil fuels, the IEA's tracking of measures around the world shows").

165 Richard B Stewart, "Models for Environmental Regulation: Central Planning Versus Market-Based Approaches" (1992) 19 BC Envtl Aff L Rev 547 at 552 [Stewart] ("Recently, United States environmental policy increasingly has employed market-based incentives. Because the underlying problem is that private markets are operating imperfectly, the better approach for government action often will be to 'reconstitute' the market. Rather than overriding the market with central planning, the government reorients the market by providing incentives that promote environmental protection. Revising the market's system of pricing or consumer demand to include environmental considerations can turn the indefatigable creativity of diverse and flexible responses by market actors to environmental advantage. It reduces overall social costs because those who can prevent degradation most cheaply are encouraged to do so most. Finally, it advances environmental protection as the incentives spur innovation in environmentally benign technologies and processes, and as efficient use of resources, such as conservation of fuels, is put on equal footing with installation of control technology").

be sustained without law protecting property and contract rights.[166] So, traditionally, when people called for freer markets, they meant markets in which government enforced property and contract rights and little else, allowing competition for scarce resources to do the rest.[167] Adding extra layers of rules will change the risks involved in the pursuit of profit; the ways that actors will respond to these changes can be difficult to predict.[168] One cannot assume that all actors will make decisions based on a complete understanding of any given situation; nor can it be assumed that their choices will be free of power asymmetries within a given contracting process; nor can it be assumed that their choices will be rational choices or even self-interested ones.[169] Thus, employing a regulatory intervention to a given market to achieve a targeted behaviour is a difficult calculation at best.[170] To do so without also causing some other unintended results within the economy is exceedingly difficult. One needs to look no further than the 2008 Credit Crisis to see the damage that such regulation can cause, when it is designed and implemented poorly.[171] That said, when regulators succeed in properly *reconstituting*

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166 Robert L Hale, "Bargaining, Duress, and Economic Liberty" (1943) 43 Colum L Rev 603 at 606 ("In the complex bargains made in the course of production, some parties who deal with the manufacturer surrender a portion of their property, others their liberty not to work for him, in order to avert his threat to withhold his money, while he, in turn, surrenders some part of the money he now owns, or some part of his right to keep from them money he may obtain in the future, to avert their threats of withholding from him their raw materials or their labor. And he may have surrendered property in the past, and the freedom to abstain from labor, in order to attain his position as owner of the plant and its products, and so to obtain the money with which to avert the threats of owners of the things he wishes to consume, to withhold those things from him. In consenting to enter into any bargain, each party yields to the threats of the other. In the absence of corrective legislation, each party, in order to induce the other to enter into a transaction, may generally threaten to exercise any of his legal rights and privileges, no matter how disadvantageous that exercise may be to the other party").

167 See, e.g., Milton Friedman, *Capitalism and Freedom*, 40th anniversary edition (Chicago: University of Chicago Press, 2002) at 15 ("The existence of a free market does not of course eliminate the need for government. On the contrary, government is essential both as a forum for determining the 'rules of the game' and as an umpire to interpret and enforce the rules decided on. What the market does is to reduce greatly the range of issues that must be decided through political means, and thereby to minimize the extent to which government need participate directly in the game").

168 Robert Stavins, "Market-Based Environmental Policies: What Can We Learn from U.S. Experience and Related Research?" (2003) John F Kennedy School of Government Harvard University Faculty Research Working Paper No. RWP03-031 at 8 [Stavins] ("While some problematic program design elements [of market-based environmental regulation] reflect miscalculations of market reactions, others were known to be problematic at the time the programs were enacted, but nevertheless were incorporated into programs to ensure adoption by the political process. One striking example is the '20% rule' under EPA's Emission Trading Program. This rule, adopted at the insistence of the environmental advocacy community, stipulates that each time a permit is traded, the amount of pollution authorized thereunder must be reduced by 20%. Since permits that are not traded retain their full quantity value, this regulation discourages permit trading and thereby increases regulatory costs").

169 Mihai-Vladimir Topan, "Austrian Economics and Transaction Cost Economics: Notes on a Doubtful Compatibility" in Matthew McCaffrey, ed, *The Economic Theory of Costs: Foundations and New Directions* (London: Routledge, 2018) 207 at 211 ("later interpreters and commentators are left with the task of figuring out for themselves what to consider "transactions" and/or "transaction costs." In fact, almost anything can be interpreted as a transaction cost: asymmetric information, incomplete contracts, bounded rationality, opportunism and shirking, team organization, frequency of interaction, asset specificity, bargaining and searching, contract enforcement, administration or management, monitoring and inspecting, [etc.]".)

170 Stavins, *supra* note 168 at 8.

171 John C Coffee Jr, "What Went Wrong? An Initial Inquiry into the Causes of the 2008 Financial Crisis" (2009) 9 J Corp Law Stud 1 at 3 [Coffee] ("A final precondition to a major financial crisis is a significant regulatory failure. This is virtually definitional, because if regulators had performed adequately the crisis would have been averted or contained. In the case of the current crisis, a critical deregulatory step was taken in 2004 when the Securities and Exchange Commission (SEC) relaxed its rules, possibly unintentionally, so as to largely eliminate the ceiling on the maximum leverage that major investment banks could utilize. This relaxation was quickly exploited by the subject firms, who had lobbied for this change and who uniformly increased their leverage in its wake. As a direct result, three of the largest US investment banks—Bear Stearns, Merrill Lynch & Co, and Lehman Brothers—became effectively insolvent in 2008").

a market, market-based regulation can be a powerful and cost-effective regulatory option.[172] Again, this proves the point: the form of the regulation does not always determine its intelligent design, nor its likelihood of succeeding.

Carbon pricing mechanisms provide the obvious example of market-based regulation within the context of climate action.[173] Imposing a price on carbon above what actors would normally agree to in the marketplace creates an incentive to buy carbon-neutral alternatives.[174] If demand shifts to carbon-neutral products and services, supply will soon follow.[175] If the market is indifferent to the price signal, a regulator can increase the price pressure until consumers and producers cannot ignore it; that said, such bold action might attract a political cost.[176] By raising the price slowly, while providing certainty that the price will increase, business and citizens are afforded time to adjust their behaviour to avoid higher costs in the future.[177] Of course, carbon-neutral alternatives must exist for adjustments to be made and the mechanism to work.[178] It is here that the Green Premium plays an important role in ensuring fairness, in multiple senses.[179]

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172 Stewart, *supra* note 165 at 552 ("Recently, United States environmental policy increasingly has employed market-based incentives. Because the underlying problem is that private markets are operating imperfectly, the better approach for government action often will be to 'reconstitute' the market. Rather than overriding the market with central planning, the government reorients the market by providing incentives that promote environmental protection. Revising the market's system of pricing or consumer demand to include environmental considerations can turn the indefatigable creativity of diverse and flexible responses by market actors to environmental advantage. It reduces overall social costs because those who can prevent degradation most cheaply are encouraged to do so most. Finally, it advances environmental protection as the incentives spur innovation in environmentally benign technologies and processes, and as efficient use of resources, such as conservation of fuels, is put on equal footing with installation of control technology").

173 *Ibid* at 558 ("Options for addressing GHG emissions [through market-based regulation] include tradeable allowances and fees. Either of these mechanisms could be employed domestically or internationally, although the considerations may differ in each context. To the extent feasible, an allowance or fee should be comprehensive, including all GHGs … and all sinks or reservoirs of GHGs, such as forests").

174 Jesse Good, *Carbon Pricing Policy in Canada* (Ottawa: Library of Parliament, 2018) at 1 ("Simply put, carbon pricing charges those who emit GHGs for their emissions. In theory, carbon pricing is an effective tool for mitigating GHG emissions, because it changes consumer behaviour by changing the prices of products and services based on their GHG content. This creates an economy where things that are more GHG-intensive are relatively more expensive, while things that are less GHG-intensive are relatively less expensive").

175 Irena Asmundson, "Supply and Demand: Why Markets Tick", online: <https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Supply-and-Demand> ("In perfect competition, no one has the ability to affect prices. Both sides take the market price as a given, and the market-clearing price is the one at which there is neither excess supply nor excess demand. Suppliers will keep producing as long as they can sell the good for a price that exceeds their cost of making one more (the marginal cost of production). Buyers will go on purchasing as long as the satisfaction they derive from consuming is greater than the price they pay (the marginal utility of consumption). If prices rise, additional suppliers will be enticed to enter the market. Supply will increase until a market-clearing price is reached again. If prices fall, suppliers who are unable to cover their costs will drop out").

176 Canada's Ecofiscal Commission, *Bridging the Gap: Real Options for Meeting Canada's 2030 GHG targets* (Ottawa: Canada's Ecofiscal Commission, 2019) at 41 ("Ecofiscal has long argued for cost-effective policy to achieve environmental objectives. Cost-effectiveness may also prove critical to a politically viable climate policy approach. The costs of climate policy are not an abstract concept. They have real implications for jobs, standards of living, and the country's economic prospects. Careful policy design may make households and businesses less resistant to meaningful, increasingly stringent climate policy. Policies with higher costs but lower visibility may be easier to implement in the short-term, but they represent a false promise. By ultimately costing households and businesses more, they risk causing a backlash that undermines their own long-term political viability").

177 See, e.g., Government of Canada, "Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030", online <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html> ("Canada's minimum national price on carbon pollution for explicit price-based systems (i.e., systems that directly set a price on emissions) is $65 per tonne of GHG emissions calculated in carbon dioxide equivalent (CO2e) in 2023, and increases by $15 per year to $170 per tonne CO2e in 2030").

178 Gates, *supra* note 93 at 59.

179 *Ibid.*

The three categories of command and control, financial, and market-based actions do not create watertight compartments. For instance, de-risking of private investment can incentivize projects aligned with climate policy ends by combining all three forms of regulation, such as public loan guarantees (financial), public subsidies (financial), public direct investment (financial), carbon pricing mechanisms (market-based), and banning of carbon-intensive competitors (command and control).[180] By taking such dynamic action, a government can dramatically reduce the risk of investing in decarbonization efforts, a benefit that can be passed down, facilitating mitigation efforts throughout society.[181]

As a concluding thought, complexity of regulatory design does not always prove superior to simplicity.[182] The list of regulatory failures in each of the three categories of regulation is long.[183] Such failures usually are one of two kinds: failure of design or failure of implementation.[184] Complexity is often at the root cause of both.[185] Unfortunately, complexity of regulation cannot always be avoided when market function is impacted.[186] Markets represent a complex array of state and non-state rules, and introducing new rules that impact market behaviour will have both intended and unintended effects.[187] It follows that government actors must act with precision, diligence, and integrity at both the design and implementation stages when introducing incentives to decarbonize their domestic economies.[188]

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[180] See, e.g., Organisation for Economic Co-operation and Development, "De-risking Institutional Investment in Green Infrastructure: 2021 Progress Update" (2021) OECD Environment Policy Paper No 28, online: <https://www.oecd-ilibrary.org/docserver/357c027e-en.pdf?expires=1675462042&id=id&accname=guest&checksum=191375DDFBD68DE7DC8748C6D9944BC7> at 16 ("Across the 328 projects, the dataset reports 398 uses of de-risking instruments. Public de-risking strengthens the financial viability of projects by transferring extra risk to the public sector. Depending on the specifics of the project, de-risking instruments can address a range of risks including credit, counterparty, merchant and political risks. This creates a risk profile more acceptable to private investors, including institutional investors. Almost all observed projects benefitted from at least one de-risking instrument (very few benefitted from transaction enablers only) while more than half of the projects involved the use of more than one").

[181] *Ibid* at 18 ("Targeted de-risking by the public sector can capitalise on the current momentum towards green infrastructure and direct money towards green assets critical for sustained socioeconomic growth. This action could support delivering the global commitments under the Paris Accord and the SDGs [Sustainable Development Goals]").

[182] Coffee, *supra* note 171 at 22 ("in actual operation, simple rules often work better than complex ones").

[183] For instance, the 1984 Dow Chemical Bhopal Disaster (failure of regulators to properly oversee the operations of Dow Chemical's subsidiary, Union Carbide India, leading to the release of toxic gas in Bhopal, India, killing thousands); Purdue Pharma's role in the opioid crisis starting during the 1990s (failure of regulators to prevent the pharmaceutical industry from contributing to the opioid epidemic); the 2001 Enron scandal (failure of regulators to detect and prevent a massive US securities fraud); the 2008 financial crisis (failure of regulators to properly oversee the mortgage industry); the 2010 Deepwater Horizon oil spill (failure of regulators to ensure proper safety measures in offshore drilling); the 2016 Volkswagen emissions scandal (failure of regulators to prevent fraudulent reporting of GHG emissions); the 2017 Equifax data breach (failure of regulators to ensure proper security for customer information).

[184] Consider Joseph E Aldy, "Learning from Experience: An Assessment of the Retrospective Reviews of Agency Rules and the Evidence for Improving the Design and Implementation of Regulatory Policy", online: <https://scholar.harvard.edu/files/jaldy/files/aldy_retrospective.pdf> [Aldy].

[185] See, e.g., Coffee, *supra* note 171 at 21-22 ("Asking the regulated institution to design its own model for capital adequacy (as Basel II standards did) invited the regulated to seek to co-opt and overreach the regulator. At the least, such an approach relies excessively on the prospect of enlightened self-regulation and in practice shifts the balance of advantage in negotiations to the regulated firm, as the regulator must demonstrate in response that the regulated firm's model is faulty. Even if a complex rule may be optimal in theory, it is useless if it is beyond the effective implementation of a bureaucratic agency. In designing rules, one must therefore recognize the practical limits on the capacity of those expected to enforce them").

[186] Chester S Spatt, "Complexity of Regulation" (2012) 3 Harv Bus L Rev Online 1 at 1 ("While I recognize that to some degree complexity in financial structure breeds complexity in regulation, often the causality is reversed. Complexity in regulation leads to complexity in financial structures and systems, particularly in light of the efforts of market participants to mitigate the costs and complications induced by regulation, including attempts to engage in regulatory arbitrage. Consequently, much of the costs of regulation in my view are associated with its intricacies. It also is useful to recognize that complexity in regulation leads to huge entry barriers associated with the cost of regulatory compliance").

[187] *Ibid.*

[188] Aldy, supra note 184; Coffee, *supra* note 171.

5. Conclusion

Humanity is at a critical stage of the climate crisis. Actions today will shape lives tomorrow. Governments play an important role in mitigating GHG emissions, but they are not the only player. A presumption that government actors such as lawmakers can singlehandedly effect the change needed paints an oversimplified and misleading picture of how climate governance works. A more accurate presumption is that government actors have a crucial role in steering the work that society must accomplish if the international community is to achieve its climate goals.[189] That is, government actors will not be able to achieve the needed changes without the co-operation and concerted effort of citizens, industries, and civil society. The distribution of governance between government and these actors as well as among these actors, separate from government involvement, are the topics of Professor Onifade and of Ms. Woo in the next chapters.

[189] Joana Setzer & Michal Nachmany, "National Governance: The State's Role in Steering Polycentric Governance" in Andrew Jordan et al, eds, *Governing Climate Change: Polycentricity in Action?* (Cambridge: Cambridge University Press, 2018) 47.

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5 A Model of Climate Governance: Canada's Interorganizational Complex

Temitope Tunbi Onifade

1. Introduction

How should we think about Canada's climate governance? My claim is that we should think about it as an interorganizational complex of state and non-state governance. State and non-state governance are broad labels for making sense of the concept of governance from the perspective of the role government plays, but the lack of consensus on what governance means makes their boundaries debatable.[1] Nonetheless, we can frame these labels within the theoretical regulation and governance discourse. Building on the taxonomy of Baldwin et al,[2] I frame state and non-state governance as a matter of degrees in a continuum with pure command-and-control (CAC), involving not only administrative regulation but also market regulation and litigation, at one extreme and the broader concept of social control, which infers the self-governance capacity of a social group,[3] at the other. I introduce CAC and social control below, then apply them to Canada to answer my central question and build my claim.

CAC is the best-known concept and practice related to state governance. Now the point of departure for most theories of social control, it became popular in the 1970s and 1980s. CAC is more of a legal term, but there are other expressions that have similar meanings across other disciplines, for instance hierarchical or top-down governance, as often distinguished from market regulation and network governance, in political science.[4] While channels of state governance, market regulation and litigation may be conceptually separated from CAC because, for the most part, they operate at arm's length from the legislative and executive branches of government that instrumentalize CAC. However, in practice, they are state processes constituted and regulated by CAC instruments.

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1 See Nikolas Rose & Peter Miller, "Political Power beyond the State: Problematics of Government" (1992) 43 Br J Sociol 173 [Rose & Miller]; RAW Rhodes, "The New Governance: Governing without Government" (1996) 44 Pol Stud 652 [Rhodes]; Jan Kooiman, ed, *Modern Governance* (London: Sage, 1993) [Kooiman].

2 Robert Baldwin et al, *A Reader on Regulation* (Oxford: Oxford University Press, 1998) [Baldwin et al].

3 Morris Janowitz, "Sociological Theory and Social Control" (1975) 81 Am J Sociol 82.

4 Oliver E Williamson, "Markets and Hierarchies: Analysis and Antitrust Implications" (New York: Free Press, 1975); Keith G Provan & Patrick Kenis, "Modes of Network Governance: Structure, Management, and Effectiveness" (2008) 18 J Pub Admin Res Theory 229 [Provan & Kenis]; Mark Bevir, *Governance: A Very Short Introduction* (Oxford: Oxford University, 2012); Louis Meuleman, *Public Management and the Metagovernance of Hierarchies, Networks and Markets: The Feasibility of Designing and Managing Governance Style Combinations* (Heidelberg: Physica-Verlag: A Springer Company, 2008); Reinhard Steurer, "Disentangling Governance: A Synoptic View of Regulation by Government, Business, and Civil Society" (2013) 46 Pol'y Sci 387; Oliver Treib et al, "Modes of Governance: Towards a Conceptual Clarification" (2007) 14 J Eur Pub Pol'y 1.

A key distinguishing feature of CAC is that governments are a constant, playing varying roles across the stages of policymaking. They regulate society in two main ways.[5] First, they set targeted rules using legislation, for instance laws and regulations monitored and enforced by government departments and administrative and enforcement agencies for compliance. Essentially, they set legislative frameworks of rules and enforce how society complies to them. Second, they use their authority to frame economic forces, for instance taxation, markets, contracts, and disclosure, through law and non-legal policy instruments, to regulate the economy. Unlike targeted rules that apply to the entire society, their framing of economic forces mainly targets the economy. Comparing these approaches, the first involves setting and enforcing every detail of rules, while the second mainly involves setting frameworks while giving economic actors more flexible options on how to comply.

Social control is a broader concept[6] that has transformed much more than CAC. Some of the documented foundational ideas that have shaped it, for instance social solidarity, can be traced to philosophers as far back as Plato and Aristotle,[7] but sociologists have had the most influence on it since the late 19th century. Earlier sociologists used social control to mean any institutional framework of social ordering, but their successors have understood it as, among other things, a term for the control of norm violations, whether informal or formal, across scales.[8] Roucek identifies the governance aspect of social control and cites its leading definition, credited to Brearley. Roucek is of the view that social control may involve "those processes and agencies, planned or unplanned, by which individuals are taught, persuaded, or compelled to conform to the usages and life values of the groups to which they belong."[9] Going by this definition, law is part of this governance dimension of social control and has been acknowledged as such from the beginning of the sociological conception of social control.[10] However, there are other forms of social control beyond law, for instance informal social control.[11]

A line of inquiry into this governance dimension of social control distinguishes it from CAC by denying government autonomy over some regulatory functions. Influential theoretical contributions that have shaped several policies and practices, especially those from the fields of political economy as well as law and society, have envisioned models that suggest governments are not necessarily involved in the setting and enforcement of rules and/or direct intervention in the economy. For instance, Ostrom denies that governments are necessary for social organization and economic intervention,[12] while

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5 See Baldwin et al, *supra* note 2.

6 For a foundational discussion of the concept of social control, see Karl Mannheim, *Man and Society in an Age of Reconstruction* (London: Routledge, 2013 [1940]) at 265; AB Hollingshead, "The Concept of Social Control" (1941) 6 Am Sociol Rev 217; HC Brearley, "The Nature of Social Control" (1943) 28 Sociol Soc Res 95; Joseph S Roucek, "The Development and Status of Social Control in American Sociology" (1959) 20 Am Catholic Sociol Rev 107 [Roucek].

7 Joseph S Roucek, "The Concept of 'Social Control' in American Sociology" (1962) 20 Revista Internacional de Sociología 159.

8 Mathieu Deflem, "Introduction: Social Control Today" In Mathieu Deflem, ed, *The Handbook of Social Control* (Oxford: Wiley-Blackwell, 2018) 1.

9 Roucek, *supra* note 6 at 108.

10 A Javier Treviño, "Law as Social Control" in Mathieu Deflem, ed, *The Handbook of Social Control* (Oxford: Wiley-Blackwell, 2018) 36.

11 James J Chriss, "Social Control: History of the Concept" in Mathieu Deflem, ed, *The Handbook of Social Control* (Oxford: Wiley-Blackwell, 2018) 9 [Chriss].

12 Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge, 1990) [Ostrom].

Ellickson suggests that, although governments may enforce law, rules do not always come in the form of law and governments are not the only enforcer of rules.[13] Regardless of the form social control thus takes, some perspectives argue that governments are not constant across the stages of policymaking or essential for governance. This view does not mean that governments do not participate in governance, for instance as facilitators and partners. Rather, the point is that not all governance arrangements rely on them to work.

Given the foregoing distinctions, CAC regulation and the governance dimension of social control are suitable starting points to think about who does what and why in Canada's governance, but they appear to be too broad to frame our thinking on specific substantive areas, including climate change. There are too many ways to look at or apply either, making them ubiquitous, so I look for how to make them more specific. As a solution to this challenge, theories of CAC and social control have produced manageable, applicable models. For instance, responsive law,[14] responsive regulation,[15] meta-regulation,[16] and experimentalist governance[17] approaches work well for applying CAC, while collective action,[18] world civic politics,[19] and post-regulatory state[20] approaches could work for social control. However, there are many other models that fall along the CAC–social control spectrum.

These models and others exhibit different levels of maturity and degrees of applicability in policy and practice. For instance, while many CAC models (for instance responsive law, responsive regulation, and meta-regulation) were informed by and/or have informed numerous policy programmes, some social control models (for instance the model of the post-regulatory state) are, comparatively, at the early stages of development and have less applicability in their current form. Given that CAC and social control are too wide to be applied as theoretical frameworks for explaining how we should think about Canada's climate governance, I rely on some of the most applicable models to narrow them. Responsive regulation[21] helps to narrow CAC, while network governance[22] helps to narrow social control. Specifically, the elements of these models constitute the building blocks for thinking about

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13 Robert Ellickson, *Order without Law* (Cambridge: Harvard, 1991).

14 Philippe Nonet & Philip Selznick, *Law and Society in Transition: Toward Responsive Law* (New York: Transaction Publishers, 2001 [1978]) [Nonet & Selznick].

15 Ian Ayres & John Braithwaite, *Responsive Regulation: Transcending the Deregulation Debate* (New York: Oxford, 1992) [Ayres & Braithwaite].

16 Bronwen Morgan, *Social Citizenship in the Shadow of Competition: The Bureaucratic Politics of Regulatory Justification* (Aldershot: Ashgate Publishing Ltd, 2003); Cary Coglianese & Evan Mendelson, "Meta-Regulation and Self-Regulation" in Robert Baldwin et al, eds, *The Oxford Handbook of Regulation* (Oxford University Press, 2010).

17 Charles F Sabel & Jonathan Zeitlin, "Experimentalist Governance" in David Levi-Faur, ed, *The Oxford Handbook of Governance* (Oxford: Oxford, 2011) [Sabel & Zeitlin].

18 Ostrom, *supra* note 12.

19 Paul Wapner, *Environmental Activism and World Civic Politics* (Albany: State University of New York Press, 1996) [Wapner].

20 Julia Black, "Decentring Regulation: Understanding the Role of Regulation and Self-regulation in a 'Post-regulatory' World" (2001) 54 Curr Leg Probl 103 [Black]; Colin Scott, "Regulation in the Age of Governance: The Rise of the Post-regulatory State" in Jacint Jordana & David Levi-Faur, eds, *The Politics of Regulation: Institutions and Regulatory Reforms for the Age of Governance* (Cheltenham & Northampton: Edward Elgar, 2004) 145 [Scott].

21 Ayres & Braithwaite, *supra* note 15.

22 Candace Jones et al, "A General Theory of Network Governance: Exchange Conditions and Social Mechanisms" (1997) 22 Academy of Mgmt Rev 911 [Jones et al].

Canada's state (public) and non-state (private) climate governance. I apply key elements of responsive regulation—hierarchy of enforcement, tit-for-tat mechanisms, and the principle of tripartism— to help think more about public governance and then adapt three elements for network governance—polycentrism, plurality, and multilateralism— to think more about private governance. Contrasting these elements reveals the gaps in Canada's public and private climate governance and how to fill them.

Based on a review of the bodies of literature on responsive regulation and network governance and a doctrinal analysis of Canada's environmental and climate laws, the overall analysis shows that responsive regulation provides an enhanced lens for thinking about public climate governance while network governance provides a more complete lens to think about aspects of both public and private climate governance. Building on network governance, I then suggest that an interorganizational complex lens that takes account of various actors, norms, processes, interactions, and other aspects of both public and private governance paints a more complete picture of Canada's climate governance than either responsive regulation or classic network governance alone.

My contribution develops in three sections. Section 2 discusses responsive regulation as a CAC model and examines its elements in Canada's climate governance. Section 3 discusses network governance as a model that has emerged from social control theory, conceptualizes it as an interorganizational complex, and contrasts this conception with responsive regulation in Canada's climate governance. Section 4 concludes with why, based on the responsive regulation versus network governance analysis, the interorganizational complex model of state and non-state governance that this paper develops paints a more complete picture of Canada's climate governance.

2. Command-And-Control in Canada's Climate Governance: Contextualizing Responsive Regulation

My analysis starts from what most people are familiar with: CAC regulation. Governments control our lives using various mechanisms and instruments, but we are most familiar with formal rules (for instance in constitutions and statutes) and formal institutions (for instance administrative agencies, police, and courts). These rules and institutions are part of the CAC system. Not everyone describes them as CAC, a term adopted from military procedure, but there are often overlaps in what they mean. For instance, a legal scholar would be more familiar with the term "CAC," while a political scientist is likely to use "hierarchical governance," but they would agree that what they mean is the model where government is central to rule-making and implementation.

Of the diverse disciplinary attempts to explain what CAC means, I rely on its conception in law and society. Perhaps the most widely acceptable perspective is that CAC involves rule-making or direct intervention in the economy[23] to enforce standards in society.[24] Having been shaped by several

[23] Baldwin et al, *supra* note 2.

[24] Bronwen Morgan & Karen Yeung, *An Introduction to Law and Regulation* (Cambridge: Cambridge University Press, 2007).

historical events,[25] the conception of what is now known as CAC is often associated with the rules governments deployed to support public reforms in the United States and around the world for post–world war and postcolonial reconstruction and development from the 1930s to the 1960s. These rules have changed, but they formed the context for most of the subsequent critique in favour of markets in the 1970s and 1980s.

Today, this law and society conception of CAC is the most universally understood sense in which government executives and agencies regulate, for instance as seen in the legal agenda that supported the New Deal in the US, and governments in the Global North have deployed CAC using what Nonet and Selznick call autonomous law.[26] Autonomous law reacts to the unpredictability of repressive law (for instance, laws made by authoritarian governments, to manage world wars, and across colonies) by emphasizing the preservation of institutional integrity (for instance making law enforcement and courts predictable). However, as explained by the concept of autonomous law, CAC had features of blind formalism, making it less able to respond to a fast-changing post–world war and post-colonial society and subjecting it to widespread criticisms.

Despite the criticisms, CAC remains today. For instance: even countries in the Global North that have carried out several regulatory experiments, such as Australia, the United Kingdom (UK), and the US still have CAC, best seen in recent COVID-19 policies, although they have made enforcement more flexible, for instance integrating state and non-state mechanisms; and countries in the Global South, for instance in Asia, Africa and South America, have experimented less with regulation and have stronger CAC policies and practices, even if they face more implementation challenges.

To create a framework for thinking about responsive regulation in Canada, I start by discussing what responsive regulation contributes to the policy thinking about CAC. Afterward, I look at why and how it applies to Canada's climate governance.

2(a) Making Command-and-Control Responsive

Offering a lens to rethink the role of the administrative state in CAC as being largely to enhance enforced self-regulation, understood as entailing subcontracting public functions to private actors,[27] responsive regulation is one of the most progressive CAC models addressing blind formalism and the demands of post–world war and post-colonial social change, but there are others. For instance, responsive law,[28]

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[25] See Eugene Bardach & Robert A Kagan, *Going by the Book: The Problem of Regulatory Unreasonableness* (New York: Transaction Publishers, 2002 [1982]) [Bardach & Kagan]; Ulrich Beck, *Risk Society* (London: Sage, 1992 [1986]) [Beck].

[26] Nonet & Selznick, *supra* note 14.

[27] Ayres & Braithwaite, *supra* note 15.

[28] Nonet & Selznick, *supra* note 14.

reflexive law,[29] regulatory state,[30] open corporation,[31] renew deal,[32] and experimentalist governance[33] approaches all variously tackle the challenges of blind formalism and social change. Nonetheless, responsive regulation incorporates different types of flexibility to address two key developments in the recent history of CAC: creating a middle ground between the calls for more regulation and less regulation; and responding to the demands of even further social change in a global society subject to increasing risks.[34] These developments are important for understanding how responsive regulation serves as a context for the evolution of the concept of governance.

2(a)(i) Middle Ground in Regulation Versus Deregulation

Responsive regulation enhances the ability of CAC regulation to address some sentiments arising during the transition away from the welfare state, best depicted by the regulation (more government regulation) versus deregulation (less government regulation) debate[35] that pervaded the 1970s and 1980s.[36] Powered by the pre-existing administrative agencies in the US and similar systems in other countries, the welfare state underwent more regulation responding to the post–world war and post-colonial demands for reconstruction and development through "big government" (government employing large human and financial resources to intervene in all aspects of citizens' life, including the economy), for instance to manage the provision of significant public services through public corporations and enormous public spending. However, the welfare state led to government inefficiencies, corruption, and other problems.[37] Partly because of public pressure for change, the regulatory state emerged with less state intervention, to address the challenges experienced by the welfare state. This was perhaps best seen in the governments of Margaret Thatcher in the UK and Ronald Reagan in the US, who designed and implemented the classic arms-length model of regulation,[38] for instance reforms reducing the size of governments and relying more on the private sector to maintain order. Responsive regulation looks for a middle ground between the more-regulation stance of the welfare state relying on big governments and the less-regulation stance of the regulatory state relying on self-governing markets.

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29 Gunther Teubner, "Substantive and Reflexive Elements in Modern Law" (1983) 17 L & Soc'y Rev 239 [Teubner].

30 Giandomenico Majone, "From the Positive to the Regulatory State: Causes and Consequences of Change in the Mode of Governance" (1997) 17 J Pub Pol'y 139 [Majone]; Michael Moran, "Understanding the Regulatory State" (2002) 32 Br J Pol Sci 391 [Moran].

31 Christine Parker, *The Open Corporation: Effective Self-Regulation and Democracy* (Cambridge: Cambridge, 2002).

32 Orly Lobel, "The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought" (2004) 89 Minn L Rev 342 [Lobel].

33 Sabel & Zeitlin, *supra* note 17.

34 Beck, *supra* note 25.

35 Majone, *supra* note 30; Moran, *supra* note 30.

36 Majone, *ibid*; Moran, *ibid*; Lobel, *supra* note 32.

37 See also Majone, *ibid*; Moran, *ibid*.

38 Stephen Breyer, *Regulation and Its Reform* (Cambridge: Harvard University Press, 1984 [1982]); Moran, *ibid*; Rose & Miller, *supra* note 1; Sabel & Zeitlin, *supra* note 17.

2(a)(ii) Adapting to Social Change

Responsive regulation guides CAC to adapt, in its transition from the welfare state to the regulatory state, to social change arising from new realities in politics, economics, technology, and other social spheres, which led to more risks from the 1970s. Because it was built to address largely different problems, for instance the Great Depression, the world wars, post-colonial reconstruction and development, and the need to protect the public from certain hazards of science and technology[39] mainly characteristic of the Second[40] and Third[41] Industrial Revolutions, the welfare state model is not able to deal with the new challenges that the regulatory state addresses in the context of the Fourth Industrial Revolution. For instance, the welfare state in practice relied heavily on administrative agency officials who were not close enough to the grassroots to understand the pluralities, diversity, and complexities that should shape policymaking, lacked access to industry insider information that should impact economic planning, and did not have the expertise to address highly technical (for instance economic and technological) problems arising from industry innovation. Responsive regulation comes with ideas that the welfare state lacks. For instance, it responds to the demands of liberalism[42] and postmodernism[43] (best evidenced by the plurality of identities[44]), complexity and greater diversity,[45] fragmentation of knowledge and power,[46] globalization and economic integration,[47] and the risks of science and technology,[48] mostly those arising from the Second[49] and Third[50] Industrial Revolutions but also some from the Fourth.[51]

2(b) Responsiveness and Responsive Regulation in Canada

Responsive regulation appeals to industrial economies largely because it supports industries and encourages innovation. The basic idea that governments should be responsive to how their regulated industries behave in deciding whether to use coercive enforcement methods[52] leads to more freedom for industries and encourages them to innovate. Mostly for this reason, few studies on regulation are as influential across industrial economies as responsive regulation, both in theory and practice: it has

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39 See also Bardach & Kagan, *supra* note 25; Beck, *supra* note 25.

40 Joel Mokyr, "The Second Industrial Revolution, 1870-1914", online: <https://faculty.wcas.northwestern.edu/~jmokyr/castronovo.pdf> [Mokyr]; James Hull, "The Second Industrial Revolution: The History of a Concept" (1999) 36 Storia Della Storiografia 81.

41 Jeremy Rifkin, *The Third Industrial Revolution: How Lateral Power Is Transforming Energy, & the World* (New York: Palgrave Macmillan, 2011) [Rifkin]; Paul Markelle, "A Third Industrial Revolution", *The Economist* (21 April 2012), online: <> [Markillie].

42 Rose & Miller, *supra* note 1.

43 Roger Cotterel, "Social Theory" in Austin Sarat, ed, *The Blackwell Companion to Law and Society* (Malden: Blackwell, 2004).

44 Joel F Handler, "Postmodernism, Protest, and the New Social Movements" (1992) 26 L & Soc'y Rev 697.

45 Kooiman, *supra* note 1; Black, *supra* note 20.

46 Black, *ibid*.

47 Majone, *supra* note 30; Lobel, *supra* note 32; Sabel & Zeitlin, *supra* note 17.

48 See also Beck, *supra* note 25; Rose & Miller, *supra* note 1; Lobel, *ibid*; Sabel & Zeitlin, *ibid*.

49 Mokyr, *supra* note 40; Hull, *supra* note 40.

50 Rifkin, *supra* note 41; Markillie, *supra* note 41.

51 Klaus Schwab, *The Fourth Industrial Revolution* (London: Portfolio Penguin, 2017).

52 John Braithwaite, *Restorative Justice and Responsive Regulation* (Oxford: Oxford University Press, 2002).

informed several concepts of state governance,[53] non-state governance,[54] and those bridging the two,[55] and has shaped the design of regulatory structures across industrial economies, including Canada, China, Great Britain, the Netherlands, New Zealand, and elsewhere.[56] Being an industrial economy, Canada is thus a suitable destination for responsive regulation.

The far-reaching influence of responsive regulation makes it a tested CAC model to use for framing Canada's state climate governance. However, I use it for two other broad reasons. First is its clarity and practicability; second is its ability to bridge the gap between CAC and non-state governance.

Being clear and practicable makes responsive regulation helpful for the reform of Canadian governance. For these reasons, it has already informed ideas for Canadian regulatory reforms.[57] Unlike most contributions before it, the basic theoretical reasoning, as depicted by Ayres and Braithwaite in their 1992 classic,[58] is easy to understand. There are three key theoretical elements – tripartism, tit-for-tat, and hierarchy of enforcement, discussed in detail below – that tell thinkers what regulation should look like at an abstract level. Perhaps its most central CAC feature is that the state is essential to all stages of regulation, although its degree of coercion varies across them. Based on the strategy of tit-for-tat and the support of tripartism, governments move up or down the regulatory pyramid for enforcement.

Also, responsive regulation is an enhanced model of state governance that bridges the gap between CAC and social control, making it a pragmatic model for Canada, where state and non-state actors (notably, industries and non-governmental organizations) and Indigenous peoples move along the regulatory continuum in their policy interactions. While some people may romanticize ideal types of governance, no pragmatic expert would believe there is an ideal form of either CAC or social control in real life. Finding a realistic point on the regulatory continuum is essential if we want to make the best of the model. Accordingly, responsive regulation helps governments that have historically relied on CAC to engage social control processes along the regulatory continuum, for instance in their interactions with social groups, through the regulatory pyramid and the idea of tripartism. The regulatory pyramid provides a framework for how governments and regulated industries interact across hierarchical enforcement stages, and tripartism suggests that governments should leverage the self-regulatory capacity of regulated industries and the support of public interest groups in deciding whether to move up or down these stages.

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53 For example, Robert Baldwin & Julia Black, "Really Responsive Regulation" (2008) 71 Mod L Rev 59 [Baldwin & Black].

54 For example, Peter N Grabosky, "Beyond Responsive Regulation: The Expanding Role of Non-state Actors in the Regulatory Process" (2013) 7 Regul & Gov 114 [Grabosky].

55 For example, Neil Gunningham & Peter Grabosky, *Smart Regulation: Designing Environmental Policy* (New York: Oxford, 1998) [Gunningham & Grabosky].

56 Jeroen van der Heijen, *Responsive Regulation in Practice: A Review of the International Academic Literature* (Kelburn: Victoria University of Wellington & Government Regulatory Practice Initiative, 2020).

57 See, for example, Treasury Board of Canada, *Responsive Regulation in Canada, Highlights: The Government Reply to the Sub-committee on Regulations and Competitiveness* (Ottawa: Treasury Board of Canada Secretariat, 1993); Treasury Board of Canada, "Cabinet Directive on Regulation", online: <https://www.canada.ca/en/government/system/laws/developing-improving-federal-regulations/requirements-developing-managing-reviewing-regulations/guidelines-tools/cabinet-directive-regulation.html> [Treasury Board of Canada, "Cabinet Directive on Regulation"].

58 Ayres & Braithwaite, *supra* in general.

Again, in bridging the CAC–social control gap, responsive regulation has opened the door to other conceptions of how governments work with social groups outside the shadows of the state. For instance, building on responsive regulation, Gunningham and Grabosky[59] suggest that state and non-state actors could combine complementary instruments to produce better regulation, when compared to CAC, to meet specific environmental challenges. Subsequent contributions have used the regulatory pyramid and tripartism ideas to expand the role of civic and other non-state actors beyond merely taking rules from governments. For instance, Grabosky[60] extends them to account for the regulatory roles of non-state actors beyond the clutches of the state.[61]

2(b)(i) Elements

Canada's climate governance incorporates the three key elements of responsive regulation given above: hierarchy of enforcement, tit-for-tat, and tripartism. These elements are grounded in empirical evidence and serve as guiding principles for regulation. This approach outlines the steps that state regulators, such as federal, provincial, and territorial administrative departments and agencies, can take to effectively regulate industries that contribute to emissions and intensify climate change. The regulatory pyramid depicting responsive regulation guides action on the essential role of the state in all stages of regulation, with the degree of coercion varying across them. Through the use of the tit-for-tat strategy and support from tripartism, governments can escalate enforcement measures across the hierarchy of enforcement sanctions on the regulatory pyramid to achieve targeted behaviour from regulated actors.

Canada does not adopt responsive regulation as an overarching framework for climate governance, but we can find its features and specific elements in the trajectory of Canada's climate governance and across regulatory instruments. Generally, Canada's climate policy embraces the idea of flexibility in responsive regulation. Filling the gaps in the *Canadian Environmental Protection Act (CEPA)* 1999[62] and other pre-existing environmental policy instruments, the Pan-Canadian Framework on Clean Growth and Climate Change 2016, the central national climate policy blueprint, operates on the recognition of "the diversity of provincial and territorial economies and the need for fair and flexible approaches to ensure international competitiveness and a business environment that enables firms to capitalize on opportunities,"[63] and engages the market to drive Canada's climate policy. Specifically, the Pan-Canadian Framework's carbon pricing and accountability (target setting, reporting and assessment) mechanisms have elements of responsive regulation: the carbon pricing mechanism responds to

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59 Gunningham & Grabosky, *supra* note 55.

60 Grabosky, *supra* note 54.

61 *Ibid*.

62 The *Canadian Environmental Protection Act* is the central legislation on environmental protection in the country and has provisions that are relevant to climate change, for instance those on the precautionary principle and pollution control. However, it does not focus on climate change.

63 Government of Canada, "Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy", online: <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html> [Government of Canada].

economic behaviour, and the climate accountability mechanism responds to the need to drive industry with the latest science through target setting and reporting. Based on the policy framework set out in the Pan-Canadian Approach to Pricing Carbon Pollution 2016 (Pan-Canadian Approach), the *Greenhouse Gas Pollution Pricing Act (GGPPA)* implements the carbon pricing mechanism while the *Canadian Net-Zero Emissions Accountability Act (CNEAA)* implements the accountability mechanism. Altogether, even without directly incorporating a hierarchy of enforcement, tit-for-tat mechanisms, or the principle of tripartism, Canada's climate governance shares some of these three elements.

Next, I illustrate their application using a micro- and meso-level analysis: the micro level looks at the individual instruments and actors, while the meso level looks at climate policy within the context of other public policies and actions, for instance those in real property, agriculture, fisheries, or trade, in Canada. Therefore, rather than limit the analysis to specific policy programmes that highlight elements of responsive regulation, as most applications of responsive regulation tend to do, I take a broader view of climate policy within Canada's public policy.

Hierarchy of enforcement: The first element of responsive regulation, hierarchy of enforcement, is essentially about having different levels in the severity of enforcement, measured in terms of coerciveness of regulatory standards. Based on the regulatory pyramid, enforcement may move from the least serious response, persuasion, at the bottom to the most coercive, license revocation, at the top, or vice versa. For instance, a regulatory agency could persuade a regulated industry to meet emissions mitigation standards, failing which it issues a warning letter and, as a last resort, apply criminal sanctions where carbon taxation is inadequate. However, the stages of the regulatory pyramid are not set in stone. They merely tell us that enforcement could happen across levels of enforcement severity. For instance, there are numerous alternative regulatory pyramids with different types of enforcement approaches across the hierarchy.

Although Canada's climate governance does not have a specific national programme that ideally illustrates the hierarchy of enforcement, we can see the basic idea of hierarchical enforcement in the history of Canada's climate governance. A high-level assessment reveals that Canadian governments, especially at the federal level but also across some provinces, have recently moved the country towards a more coercive enforcement. Largely influenced by consultations with Canada's energy sector, which has produced the most emissions, especially consultations with oil companies, Canada's governments have been traditionally hesitant to regulate the fossil fuel sector with CAC. Hence, Canada's CAC regulation has been limited, subjected to administrative discretion, and weak,[64] leading to a diagnosis of

[64] See Kathryn Harrison, *Passing the Buck: Federalism and Canadian Environmental Policy* (Vancouver: UBC Press, 1996) [Harrison]; David Boyd, *Unnatural Law: Rethinking Canadian Environmental Law and Policy* (Vancouver: UBC Press, 2003) [Boyd]; Stepan Wood et al, "What Ever Happened to Canadian Environmental Law?" (2010) 37 Ecology LQ 981 [Wood et al].

regulatory capture[65] and other types of regulatory failure.[66] While using CAC, Canadian governments have historically integrated it with more self-regulation, for instance self-monitoring and voluntarism.[67] However, while the federal government still closely consults with industry,[68] the increasing climate emergency awareness in the last decade, backed by an overwhelmingly convincing body of scientific evidence; the realization that many provinces and industries have been lagging; and pressure from civil society (defined as members of society, however organized, as opposed to government and business organizations and actors), among other factors, have moved Canadian governments towards more coercive enforcement. The initial result was the Pan-Canadian Framework, creating the foundation for carbon pricing, particularly the federal carbon pollution pricing backstop: Responding to inadequate provincial and territorial regulation of industries and compliance, this federal backstop system applies to provinces and territories that had requested it or lacked pollution pricing system meeting the federal benchmark in the Pan-Canadian Approach.[69] Moving even higher on the enforcement pyramid, creating an opportunity to apply stronger regulatory systems, the federal government has enacted the *GGPPA* and *CNEAA* to implement the Pan-Canadian Framework.

The *GGPPA* and the *CNEAA* are now the principal responsive regulatory statutes of the federal government and represent a progression of enforcement of climate governance beyond the CEPA and previous instruments. These statutes are also subject to the problem of regulatory capture, like previous instruments, but recent developments, for instance the scientific consensus on the anthropogenic sources and urgency of climate action,[70] appear to make them more promising. Litigation on the *GGPPA* illustrates this point. In the reference case of *Saskatchewan et al v. Canada*,[71] Saskatchewan challenged the authority of the federal government to enact the *GGPPA*, claiming it intrudes into provincial jurisdiction. The Supreme Court of Canada found the federal government's action to be constitutionally valid, holding that climate change is of sufficient national concern to warrant federal intervention.[72] The *CNEAA* is an attempt of the federal government to create an even stronger enforcement system. It compels the federal government to set national science-based targets and report

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65 Jason MacLean, "Striking at the Root Problem of Canadian Environmental Law: Identifying and Escaping Regulatory Capture" (2016) 29 J Envtl L & Prac 111. For a discussion of regulatory capture, see George J Stigler, "The Theory of Economic Regulation" (1971) 2 Bell J Econ & Mgmt Sci 3; Cameron Hepburn, "Environmental Policy, Government, and the Market" (2010) 26 Oxford Rev Econ Pol'y 117. For other regulatory failures, see Frank W Geels, "Regime Resistance against Low-Carbon Transitions: Introducing Politics and Power into Multi-level Perspective" (2014) 31 Theory Cult & Soc 21.

66 Harrison, *supra* note 64; Boyd, *supra* note 64; Wood et al, *supra* note 64; Nigel Bankes et al, "Can Environmental Laws Fulfill Their Promise? Stories from Canada" (2014) 6 Sustainability 6024 [Bankes et al]; Jason MacLean et al, "The Past, Present, and Future of Canadian Environmental Law: A Critical Dialogue" (2015) 1 Lakehead LJ 79 [MacLean et al]; Sustainable Canada Dialogues, *Acting on Climate Change: Solutions from Canadian Scholars* (Montréal: Sustainable Canada Dialogues, 2015) [Sustainable Canada Dialogues].

67 Wood et al, *supra* note 64.

68 Treasury Board of Canada, "Cabinet Directive on Regulation", *supra* note 57; Treasury Board of Canada, "What We Heard Report on Regulatory Reviews and Modernization: Stakeholder Consultations", online: <https://www.canada.ca/en/government/system/laws/developing-improving-federal-regulations/regulatory-evaluation-results/targeted-reg-review/wwh-reg-rvw-mod-cnsltation.html>.

69 Environment & Climate Change Canada, *Greenhouse Gas Pollution Pricing Act: Annual Report for 2019* (Ottawa: Her Majesty the Queen in Right of Canada, 2020).

70 Intergovernmental Panel on Climate Change, "Summary for Policy Makers" in Valérie Masson-Delmotte et al, eds, *Climate Change 2021: The Physical Science Basis* (Cambridge: Cambridge University Press, 2021).

71 *Saskatchewan et al v. Canada*, [2019[SKCA 40, [2021] SCC 11.

72 *Ibid*.

to the Parliament with respect to the targets. Although directed at governments, these requirements would eventually force them to raise the standards for regulated industries.

Tit-for-tat: While the idea of the hierarchy of enforcement tells us there are levels of severity of enforcement, it does not answer why or when a regulator would move across them. The concept of tit-for-tat answers this question. Tit-for-tat transcends the need to choose between provocative and forgiving approaches, which have been the key attitudes of many governments to climate policy enforcement, by combining both along the hierarchy: Regulators can move up the hierarchy of enforcement when provoked, and then down the hierarchy when appeased. Backed by a "benign big gun" (roughly meaning the power to impose stronger punishment that may not be used) that may go off when necessary, but preceded by soft persuasion, the severity of enforcement along the hierarchy should depend on the behaviour of the regulated industry. For a well-behaved regulated industry or firm in the habit of complying, enforcement should stay at the bottom of the pyramid, for instance using persuasion, where the largest group of regulated entities might comply. Alternatively, where a regulated industry or firm is not well behaved, enforcement could move up the pyramid, and then down when that industry or firm starts to behave well.

Canada's climate governance has clearer elements of tit-for-tat than hierarchy of enforcement. The carbon pricing system, outlined in the Pan-Canadian Approach,[73] illustrates this position. The Pan-Canadian Approach sets out a benchmark that provincial and territorial carbon pricing systems should meet in their regulation of industries, other stakeholders, and Indigenous peoples.[74] Based on this benchmark, the federal government reviewed how provinces and territories were doing in their regulation of industry emissions in 2018, and then announced that it would create a federal carbon pollution pricing backstop system from 2019, applicable to provinces and territories that lack a pollution pricing system, meeting the federal benchmark for adequacy. The *GGPPA* implements this federal carbon pollution pricing backstop with two systems: a fuel charge system and an output-based pricing system (OBPS). Both systems have features of tit-for-tat, because they put a price on emissions based on industry behaviour: The more the emissions, the higher the price.

Under part 1 of the *GGPPA*, the fuel charge, administered by CRA,[75] applies in Ontario, Manitoba, Saskatchewan, Alberta, Yukon, and Nunavut[76] as of 9 August 2021. The system responds to industry behaviour by fixing charges for fuels based on their emissions, including a consideration of their renewable content. This means that charges are determined by the emissions profile of industry fuel outputs.

Part 2 focuses on the OBPS, a regulatory trading system administered by Environment and Climate

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[73] Environment & Climate Change Canada, "Pan-Canadian Approach to Pricing Carbon Pollution", online: <https://www.canada.ca/en/environment-climate-change/news/2016/10/canadian-approach-pricing-carbon-pollution.html>.

[74] I distinguish "Indigenous peoples" from general "stakeholders" because many of the former do not characterize themselves as merely holding stakes in Canada's nation-state system. Indigenous peoples are "right holders" in that they have some special participation rights grounded in the Canadian constitution and case law.

[75] Canada Revenue Agency, "Fuel Charge Relief", online: <https://www.canada.ca/en/ revenue-agency/services/tax/excise-taxes-duties-levies/fuel-charge/relief.html>.

[76] Part 1, Schedule 1, *Greenhouse Gas Pollution Pricing Act* 2018.

Change Canada. OBPS applies in Ontario, New Brunswick, Manitoba, Prince Edward Island, Saskatchewan, Yukon, and Nunavut as of 9 August 2021.[77] The system puts a price on carbon pollution from industrial facilities emitting 50,000 tonnes of carbon dioxide equivalent (CO_2e) or more per year, meaning it responds with pricing based on the behaviour of the industrial emitter.[78]

Tripartism: The third element of responsive regulation, tripartism, stems from the idea that government regulators cannot do a thorough job of regulation on their own, without the help of the broader society. Public interest entities such as citizens, activists, scholars and university groups, and non-governmental organizations (NGOs) could help regulatory agencies across the hierarchy of enforcement to overcome regulatory capture and other regulatory failures. For instance, if a regulator wants to move up the hierarchy of enforcement, it can use the pressure mounted by public interest groups as a motivation or an excuse. Tripartism also informs ideas about how public interest actors can help with compliance. Although it does not develop this point in detail – for instance, its perspective on public interest groups is limited to their involvement in state enforcement – several ideas expand on how such groups could enhance compliance within and beyond the state. For instance, they could enhance compliance through climate policy participation[79] and litigation.[80]

There are at least two ways to think about tripartism in Canada's climate governance; one is broad while the other is narrow. The broad view looks at the activism of public interest groups in enhancing CAC. Given the tardiness of Canadian governments and industry to act on climate change, activists and others at the grassroots demanded more action by using various civil society strategies and pressurizing Canada's governments. For instance, place-based movements have organized resistance to delay oil pipeline projects, sometimes leading to cancellation.[81] The narrow view looks at the role of public interest groups in creating Canada's climate policy blueprint, the Pan-Canadian Framework. Canadian governments developed the Pan-Canadian Framework with inputs from Canadians.[82] Based on the Vancouver Declaration, first ministers requested four federal-provincial-territorial working groups to engage Indigenous Peoples and consult businesses, the public, and public interest groups. The working groups used an interactive website, in-person engagement sessions and independent town halls, asking Canadians for options to act on climate change and enable clean growth. Representatives of Indigenous groups also gave feedback to the working group or ministers,[83] but there are allegations that they were not adequately involved in the policymaking process.[84]

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77 Part 2, Schedule 1, *Greenhouse Gas Pollution Pricing Act* 2018.

78 Environment & Climate Change Canada, *Overview: Output-Based Pricing System Regulations under the Greenhouse Gas Pollution Pricing Act* (Ottawa: Her Majesty the Queen in Right of Canada, 2019).

79 Wapner, *supra* note 19; Kal Raustiala, "States, NGOs, and International Environmental Institutions" (1997) 41 Intl Stud Q 719 at 719 [Raustiala].

80 Jacqueline Peel et al, "Climate Change Law in an Era of Multi-level Governance" (2012) 1 Transnatl Envtl L 245.

81 George Hoberg, *The Resistance Dilemma: Place-Based Movements and the Climate Crisis* (Cambridge & London: Massachusetts Institute of Technology Press, 2021) [Hoberg].

82 Government of Canada, *supra* note 63.

83 *Ibid*.

84 Graeme Reed et al, "Indigenizing Climate Policy in Canada: A Critical Examination of the Pan-Canadian Framework and the ZéN Roadmap" (2021) 3 Frontiers in Sust Cities 1 [Reed et al].

2(b)(ii) Limitations

Responsive regulation stretches the limits of CAC to find a middle ground between regulation and deregulation and to accommodate social transformation. However, even in its most progressive forms, such as "really responsive regulation"[85] and "really responsive risk-based regulation,"[86] responsive regulation faces challenges. I illustrate the nature of these challenges with two examples: the limits of the state and internal conflicts of law.

Teubner's reflexive law is perhaps the most influential contribution to understanding the limits of the state in the regulation and governance literature.[87] Reflexive law discredits the central idea behind responsive regulation: regulatory agencies enforce law and other policy instruments. Aligning with the tradition of autopoietic systems theory and the field of law and society, Teubner's contribution suggests that law, as a foundational social subsystem the state uses to regulate other social subsystems, cannot directly govern other social sub-systems, for instance industries and public interest groups, which have their own internal rationalities. Instead, the state should use law, with greater awareness as to the law's function and limits, to facilitate how other subsystems engage in critical self-management, including installation of such systems, correction of their errors, and redefinition of their structures. For instance, the state should create more of framework laws (laws setting broad guidelines and principles for making detailed rules of implementation but leaving the job of detailing those rules to other actors), than substantive rules enforced by regulatory agencies, to facilitate the self-regulation of non-state actors, who then make detailed rules for implementation.

Drawing on the reasoning of Santos,[88] another challenge of responsive regulation is the internal conflicts of law. His contribution suggests that the state and its laws marginalize public interest groups and public knowledge. He understands the internal conflicts of law using sociology and epistemology. Sociologically, law reveals the conflict between modern science and common-sense or prudent knowledge that many of us have. For instance, law conventionally attaches more value to the evidence and opinion of scientists than to those of ordinary people affected by climate change. Epistemologically, law also features in a conflict between global capitalism and alternatives to capitalist reasoning. For instance, at least in industrial societies, law is often used to promote economic and technological solutions that industries often embrace, as opposed to deep ethical and behavioural solutions that citizens and public interest groups may propose. That is, law tends to favour technical (bureaucratic, economic, and technological) solutions over ethical ones. For instance, Canadian governments rely more on scientific evidence than the traditional views of Indigenous peoples and other minorities in making and implementing climate policy, but we need lived experiences of communities to be able to arrive at the best science.

Despite these limitations, responsive regulation provides a suitable place to start thinking about Canada's climate governance, especially how it works, its challenges, and how to address them. Given

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85 Baldwin & Black, *supra* note 53.

86 Julia Black & Robert Baldwin, "Really Responsive Risk-Based Regulation" (2010) 32 L & Pol'y 181.

87 Teubner, *supra* note 29.

88 Boaventura de Sousa Santos, *Toward a New Legal Common Sense*, 2nd ed (London: Butterworths, 2005).

that Canada's climate governance has largely been based on CAC, albeit integrating markets and self-regulation, responsive regulation adequately reflects its features. Also, unlike alternative CAC models that are largely silent about the regulatory function of public interest groups, responsive regulation acknowledges that citizens and non-state actors in Canada play a significant regulatory function, albeit restricting them to the limited and marginalizing state framework, making it a conceptual bridge that can lead us from CAC to social control.

3. Social Control in Canada's Climate Governance: Advancing Network Governance

Having discussed the CAC baseline, something most people know relatively well, my analysis now moves to what many of us take part in but may not fully appreciate: social control. Families, friends, communities, and other non-state individuals and groups impact our lives, but most people associate governance more with governments than these social networks. Foucault, perhaps the most influential proponent of the governance dimension of social control in the 20th century, addresses this oversight, using the framework of government regulation that we are more familiar with to explain how our social networks govern us. He sheds light on a new kind of government mentality or rationality called "governmentality,"[89] defined as a "broad sense of techniques and procedures for directing human behavior."[90] A philosopher and historian, Foucault's contribution accommodates most of what sociologists call informal social control.[91]Law, in his view, is also an instrument of governmentality for social ordering, but it is marginal to several others.[92]

The field of law and society now pays sharp attention to this governance dimension of social control. Having built on law and society contributions to discuss how responsive regulation has reformed CAC, now I use this reform as the context for discussing the concept of governance, to make my analysis consistent. I contrast responsive regulation with network governance. To provide an overview of how network governance has evolved within this CAC context, I look at what some of the leading works have to say in their reaction to the social challenges and change that have appeared in the regulatory state, which leads me to their idea of the interorganizational network. Building on this idea, I conceptualize interorganizational complexity and explain some key reasons justifying it as a model for looking at climate governance. Subsequently, I apply this conception to Canada's climate governance, identify the elements of Canada's interorganizational complex, and consider how to coordinate it.

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89 Steven Hutchinson & Pat O'Malley, "Discipline and Governmentality" in Mathieu Deflem, ed, *The Handbook of Social Control* (Oxford: Wiley-Blackwell, 2018) 63.

90 Michael Foucault, *Ethics: Subjectivity and Truth. Essential Works of Michel Foucault, 1954–1984,* vol. 1 (New York: New Press, 1997) 82; Nikolas Rose et al, "Governmentality" (2006) 2 Ann Rev L Soc Sci 83.

91 Chriss, *supra* note 11.

92 Scott, *supra* note 20.

3(a) Locating Network Governance in the Regulatory State

During the transition from the welfare state to the regulatory state, and in response to the regulation versus deregulation debate in the 1980s, thinkers started using the concept of governance to describe the intervention of non-state actors in the efforts to enhance the regulatory state, especially to enable it to address the two key shortcomings of CAC discussed in section 2: its failure to create a middle ground between more regulation and less regulation, and its limited response to the continuing demands for intensified social change. Scholars have mostly used the governance concept within the context of the challenges that come with increasing risks in our global society;[93] most of the significant contributions appeared from the early 1990s.

Kooiman,[94] Rhodes,[95] Jones et al,[96] and Kapucu and Hu[97] collectively provide a framework for understanding the key aspects of network governance. Kooiman does not focus specifically on network governance, but rather explores the concept of governance per se; nonetheless, this concept lays the foundation that others have built on to conceptualize network governance.

Kooiman distinguishes governance from governing and governability. He uses these concepts in specific ways: "governance" is an outcome of the interactions within a socio-political system as an outcome of multi-actor efforts; "governing" is a process involving the public in such interactions to address complexity, dynamics, and diversity, hence a process of coordination, steering, influencing and balancing; and "governability" is the overall quality of a socio-political system, often revolving around "governance" interactions, to deploy "governing" within itself, as part of a broader social subsystem. Therefore, governability draws on the features of "governance" and "governing." By carefully distinguishing these linguistically similar concepts, Kooiman thus lays the foundation for understanding network governance, especially from a public governance perspective.

The three other perspectives add some key building blocks of network governance to conceptualize interorganizational networks. Rhodes[98] explores both public and private governance. His most important contribution includes an overview of the various meanings of governance and the prescription that governance should be understood as self-organizing interorganizational networks. Jones et al[99] focus on private network governance, prescribing its definition and conditions. Kapucu and Hu[100] build on the concept of interorganizational network to explore private and public network governance. Although these contributions approach governance from different angles, for instance using varying theoretical building blocks and addressing degrees of public versus private interests, Kapucu and Hu share and illuminate the idea that network governance involves interorganizational networking.

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93 Beck, *supra* note 25.

94 Kooiman, *supra* note 1.

95 Rhodes, *supra* note 1.

96 Jones et al, *supra* note 22.

97 Naim Kapucu & Qian Hu, *Network Governance: Concepts, Theories, and Applications* (Oxfordshire: Routledge, 2020) [Kapucu & Hu].

98 Rhodes, *supra* note 1.

99 Jones et al, *supra* note 22

100 Kapucu & Hu, *supra* note 97.

3(a)(i) Kooiman's Modern Governance

Explaining why and how the regulatory state operates through public governance, Kooiman tells us that governments are not adequately aware of what to do to address the changing dynamics, higher complexity, and greater diversity of society. His theory of "socio-political governance" offers a perspective on how non-state actors could help governments enhance this awareness, for instance learning about the deeper nature of the problems faced at the grassroots, and about how to close governance gaps. New societal arrangements in socio-political governance should facilitate the cooperation of social and political actors to address the said governance gaps. Failure of governments and the pressing demands of society make this cooperation desirable.

However, for sociopolitical governance to work, government should not have the monopoly of moulding what governance looks like as we have in CAC. Instead, governments and other non-state collaborators should mould their interests, bring new ideas and methods to the table based on their interactions, and eventually create stable forms of governance, enabling socio-political interactions and creating and sustaining co-arrangements to tackle collective problems. Governments could play important roles in this socio-political co-arrangement, for instance facilitating external actors and interactive relationships, taking diverse points of views into consideration, sharing macro responsibilities among actors, and encouraging them to participate, and retaining some innate power to neutralize participating organizations that may want to take advantage of others. Ultimately, sociopolitical governance is less fixed than that of governments and neo-corporate organizations.

3(a)(ii) Rhodes's New Governance

Exploring why and how the regulatory state engages both public and private governance, Rhodes identifies six uses of the concept of governance: minimal state, corporate governance, new public management, good governance, socio-cybernetic system, and self-organizing networks. This list draws on concepts and/or programmes that emerged from the regulatory state in addressing the challenges of the welfare state. For instance: the minimal state, new public management, and good governance approaches advocate reducing the size of government and its direct intervention in the economy (instead relying on markets and self-regulation) and reducing waste and corruption, while enhancing efficiency; corporate governance is largely about ensuring that the private sector is accountable as government relies more on it in the governance transformation; socio-cybernetic governance recognizes the plurality and interdependence of actors, removing government from its place of privilege in a sort of "centreless"[101] society; and the idea of self-organizing networks suggests that any permutations of state and non-state actors could work together, for instance by exchanging resources, to achieve shared objectives, maximize the influence of actors, and reduce reliance on the state. Drawing on these uses of governance, Rhodes proposes that governance in the UK, his geographical focus, takes the form of "self-organizing, interorganizational networks." However, beyond the UK, his contribution suggests that non-state actors have increasingly played governance roles in areas previously dominated by governments.

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[101] Niklas Luhmann, *The Differentiation of Society* (New York: Columbia University Press, 1982).

3(a)(iii) Jones et al's Network Governance

These scholars focus on private governance within the regulatory state. Their theory of network governance defines what it looks like and explains under what conditions it is likely to emerge and thrive. Starting with the definition, they see network governance as "a select, persistent, and structured set of autonomous firms (as well as non-profit agencies) engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges. These contracts are socially – not legally – binding."[102] Moving to the explanation, they find that network governance emerges to address problems of adapting, coordinating, and safeguarding exchanges efficiently, specifically where there are: demand uncertainty despite stable supply (for instance of goods or labour); high customized or asset-specific exchanges between network members; complex tasks that have to be performed under intense pressure; and frequent exchanges among parties within the network.

3(a)(iv) Kapucu and Hu's Network Governance

Kapucu and Hu make the most recent significant contribution on network governance, also transcending the public–private divide, like Rhodes. Building on the work of Provan and Kenis,[103] they define network governance as "the use of formal and informal institutions to allocate resources and coordinate joint action in a network of organizations."[104] They also distinguish it from collaborative governance, which they see as the closest concept sometimes used in place of network governance, drawing attention to the most important distinction: unlike collaborative governance, network governance does not require governments to be involved. For their theoretical framing, they mainly adopt the lens of interorganizational networks, emphasizing the role of governance actors. They look at the nodes of state and non-state organizations serving as actors and the relations that connect them, along with social network analysis, which recognizes the role of individuals making up networks. These interorganizational networks could be structured through formal arrangements, including using binding legal instruments and institutions, or informal arrangements, using interpersonal interactions that are not binding. The interorganizational networks could also take the form of collaborative arrangements for production and provision of services, policy collaborations, and governance networks for coordinating and working for a common objective. Participants in interorganizational networks could share information and knowledge, exchange resources, help with capacity building, and/or provide services. Nonetheless, interorganizational networks are often more informal than formal. Also, they could have high or low density of participating organizations, centralized or decentralized structures, and core or peripheral participants.

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102 Jones et al, *supra* note 22 at 914.

103 Provan & Kenis, *supra* note 4.

104 Kapucu & Hu, *supra* note 97 at 5.

3(b) From Network Governance to Interorganizational Complexity

The four perspectives above provide a better framework for thinking about the public and private aspects of network governance than responsive regulation: Kooiman gives us a lens to look at public governance; Rhodes and Kapucu and Hu transcend public and private governance; and Jones et al mainly help us understand private governance. However, they all share the idea that network governance involves interorganizational connections. Advancing this line of thinking, Rhodes and Kapucu and Hu specifically explore interorganizational networks. This interorganizational network lens draws attention to the connections within and between nodes of state and non-state actors.

Building on this concept of interorganizational networks, I draw on the general idea of "complexity," which has been used in theories such as regime complex theory, to suggest that network governance could take the form of an interorganizational complex. I must clarify why I use "interorganizational complexity" rather than "interorganizational network," and the normativity of this choice. As for the choice itself, while interorganizational network is a term most of the governance literature uses to emphasize the connections of multiple private and public actors, I use interorganizational complex instead to emphasize not only the actors but also their diverse sources of norm-making and other processes, which I collectively call pathways (broadly defined to mean forms, channels, procedures, and other ways through which things spread), including enforcement authority and interactions seen from their actions and reactions. Seeing network governance as an interorganizational complex rather than an interorganizational network prompts us to seek a more complete picture of what else the public and private elements entail beyond the actors making up the network. Regarding the normativity, I use interorganizational complex as a more positive than normative label. That is, it is a label that depicts how networks work rather than prescribing how they should work. Nonetheless, I make a normative proposal for coordinating it.

3(b)(i) Why Use the Interorganizational Complex Model for Climate Governance?

The interorganizational complex model is better than not only responsive regulation but also classic network governance in creating a more complete picture of climate governance. There are two key reasons I consider it to be superior.

First, it helps us to think about the private side of climate governance that responsive regulation pays little attention to, such as identifying greater regulatory authority and opportunities of non-state actors, while also accounting for the public side. While responsive regulation emerged to reform the regulatory state and meet the demands of social change from the 1970s, it is inherently built around governments and subject to the limits of the state and the internal conflicts of law. Meanwhile, the idea of interorganizational complexity suggests that non-state actors could deploy private climate governance independently of state actors to address these challenges of the state.

Second, although network governance theory takes the credit for producing the concept of interorganizational network that the interorganizational complex model builds on, it faces limitations in its original form, most notably regarding how to coordinate diverse network organizations in climate

governance. Serving as the broader context for the contributions of Rhodes and Kapucu and Hu[105] on interorganizational network, the idea of interorganizational complexity seen in the foundation laid by the broader scholarship on governance enhances our understanding of how public governance could support private governance to address this problem, looking at not only the network of actors but also other elements such as plural norms and decentralized enforcement and interactions. For instance, although Kooiman does not focus on the concept of network governance, his leading contribution on sociopolitical governance,[106] advancing the idea of interorganizational complexity without using this term, tells us how governments could help with the challenge of coordination that we find in interorganizational networks.

3(b)(ii) Interorganizational Climate Governance Complex Beyond the Regulatory State

Grabosky does not claim to focus on network governance, but he gives us a lens to look at why an interorganizational complex model could address the challenges of responsive regulation in the regulatory state.[107] He identifies three trends that have arrived or intensified since the introduction of the theory of responsive regulation: weakening or withdrawal of the state in regulation; increase in non-state contribution to regulation; and the growth of digital technology, which has enhanced communication. There are also other significant factors that should inform any approach to governance reform going forward, for instance intensified globalization contributing to risks such as COVID-19 and the rise of populism, but Grabosky's three reasons provide a baseline to illustrate why network governance could address the weaknesses of responsive regulation in our bourgeoning global society faced with the climate emergency.

I use the contributions of socio-political governance, new governance, and network governance to broaden the trends Grabosky observes, justifying the need to look at climate governance as an interorganizational complex beyond the regulatory state rather than through his enhanced but inadequate lens seeking to tweak the regulatory state. Through this exercise, I adapt Grabosky's three factors shaping governance to create three justifications for adopting an interorganizational complex model looking beyond the regulatory state: the intermittent fall and rise of the state, the plurality of non-state pathways, and the Fourth Industrial Revolution. Consistent with the interorganizational complex more than the interorganizational network model, these factors are not merely about rulemaking by the state and rule taking by non-state actors but rather about the overall norm-making, enforcement, and other governance processes performed by either.

Fall and Rise of the State: While Grabosky focuses on the weakening of the state, what is more obvious in our current global society is that the state waxes and wanes. His observation opens our minds to the weakness of responsive regulation as a CAC model, but it does not paint a picture as complete as what an interorganizational complex model would portray.

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105 Kapucu & Hu, *ibid*.

106 Kooiman, *supra* note 1.

107 Grabosky, *supra* note 54.

The interorganizational complex lens shows that state regulation has risen and fallen multiple times over the last three decades. During the public reforms of the 1990s, for instance under the National Programme Review in the in the US and the New Public Management in Australia, Canada, New Zealand, and the UK, the state seems to have retreated beyond what we saw during the regulation versus deregulation debate in the 1970s and 1980s. Largely constituting what Tony Blair described as the Third Way, these reforms kept strategic priorities, for instance constitution-making, with governments, but then decentralized numerous other policy norms, agendas and tasks, adopted private business's ways within government, and contracted services out to the private sector.[108] Meanwhile, other factors, most notably significant global risks, have called for the intervention of the state in the economy from time to time. These risks, and the reactions largely triggered by postmodern realities such as the recognition and acknowledgment of plural values, identities, and interests, have brought back the state over and over since the 1990s, most notably during the global 2008 financial crisis and COVID-19. A notable explanation of why the state comes back is the narrative on the transition to a risk regulatory state aptly summarized by Ford:

> The awareness that risks can be dynamic and radically unpredictable was another catalyst for change in the nature of the state…. The regulatory state is perhaps more accurately called the "risk regulatory state," in which risk not only defines the mandate of regulation but also has changed the procedure, organization, and evaluative processes for regulation itself.[109]

Based on this narrative, we can argue that emerging risks and societal values should inform whether the state rises or falls. For instance, like the 2007 global financial crisis, the COVID-19 pandemic has led to more state intervention, but the state should ordinarily withdraw once it declines, at least in industrial societies that value more market freedom.

Applying this reasoning, climate change justifies state intervention across all societies. Essentially, climate change impacts cut across boundaries, making it important for governments to intervene. Additionally, climate change has justice implications[110] impacting several stakeholders and Indigenous peoples, making it necessary for the state to step in to reconcile interests. For instance, governments should intervene to address the adaptation and financial needs of Indigenous peoples and other vulnerable groups in the low-carbon transition.[111]

Plurality of Non-State Pathways: According to Grabosky, responsive regulation acknowledges but does not adequately consider the potential role of non-state actors. He offers a solution: while responsive regulation's two-dimensional pyramid may be useful for shaping state regulation, a more sophisticated three-dimensional pyramid that covers state regulators, regulated industries, and public interest groups is needed to accommodate non-state regulation. However, Grabosky's three-dimensional pyramid

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[108] Cristie Ford, *Innovation and the State: Finance, Regulation and Justice* (New York: Cambridge University Press, 2017).

[109] *Ibid* at 71.

[110] Temitope Tunbi Onifade, "Climate Justice under the Paris Agreement: Framework and Substance" (2021) 15 Carbon & Clim L Rev 233 [Onifade].

[111] Temitope Tunbi Onifade, *Fossil Fuel Subsidies in Canada: Governance Implications in the Net Zero* Transition (Vancouver: Canada Climate Law Initiative, 2021) [Onifade 2021].

does not create much nuance within the three actor categories, where there may be diverse values, processes, and other plural pathways. For instance, there is much diversity of pathways within state regulators, regulated industries, and public interest groups. The interorganizational complex model addresses this problem, for example by extending our thinking beyond the regulatory state and the industry to not only the multiple intersecting non-state actors and values but also their specific players, processes, and other aspects that may contribute to governance independently of governments.

Looking at climate governance through the interorganizational complex model, one will notice that the most important characteristic of postmodernity, plurality,[112] is a strong feature. By incorporating the plurality of actors and their values and other pathways, the idea of interorganizational complexity has the potential to address the two illustrated fundamental challenges of responsive regulation in Canada's climate governance: the limitations of the state and internal conflicts of law. Plurality puts public interest groups and other civil society actors in a position to leverage their comparative strengths to complement state regulatory objectives and address the internal conflicts of law. Activists, NGOs, Indigenous peoples, academic organizations, and other civil society groups have their own independent processes that have effectively regulated climate change where governments have been limited. These processes have influenced government and private decisions, for instance government decisions on Canada's oil pipeline,[113] university decisions on divestment, and the international climate justice movement.[114]

Adopting plurality as a central feature of interorganizational complexity and using it to view the three elements of responsive regulation, I arrive at three key ideas: the plurality of centres, which necessitates taking a polycentric view; the plurality of actions and reactions, giving rise to multiple interactions; and the plurality of actors, which calls for multilateralism. I propose these ideas as the basic elements of the interorganizational complex model. Hence, in thinking about climate governance, we should embrace polycentrism in place of hierarchies, interactions in place of tit-for-tat, and multilateralism in place of tripartism. These features are the basic distinguishing elements that I look for within Canada's climate governance.

The two other factors shaping network governance, the fall and rise of the state and the Fourth Industrial Revolution, give rise to other relevant features that appear in Canada's climate governance, for instance government flexibility and technological barriers, respectively. However, I do not propose these as among the basic theoretical elements of interorganizational complexity in this paper.

Fourth Industrial Revolution: According to Grabosky,[115] the growth of digital technologies has enhanced the regulatory capacity of state actors. For instance, regulatory agencies make use of tracking and imaging in pursuit of regulatory enforcement and monitoring. Likewise, non-state actors have also benefited from digital technologies, for connecting and mobilizing across jurisdictions, gathering, storing, and retrieving information, and monitoring actions. Leveraging these technologies makes

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112 William Twining, "Normative and Legal Pluralism: A Global Perspective" (2010) 20 Duke J Comp & Intl L 473.

113 Hoberg, *supra* note 81.

114 Onifade, *supra* note 110.

115 Grabosky, *supra* note 54.

some of the functions that governments previously performed easier for them to do as well, albeit taking varied forms. Of the digital technologies, social media has become one of the giants in non-state regulation. For instance, non-state actors use it to build social capital and to shame recalcitrant actors.

Beyond Grabosky's focus on digital technologies, interorganizational complex thinking reveals that several emerging technologies covered by the Fourth Industrial Revolution framework create significant regulatory opportunities for plural state and non-state actors, allowing them to leverage their values, processes, and interactions. Governments, regulatory agencies, regulated industries, civil society members, and numerous other actors could take advantage of these opportunities. For instance, they could use innovations such as artificial intelligence, robotics, genetic engineering, quantum computing, and the Internet of Things to engage, implement, enforce, monitor, and perform other regulatory tasks in infinite ways beyond comparatively simpler digital technologies.

Nonetheless, these opportunities lead to some well-known challenges of technological innovation. We can illustrate with governments, but other actors face challenges as well. Technologies such as those mentioned above are too sophisticated for most governments and their agencies, in at least two ways. First, they develop faster than state regulatory innovation. Second, they require operational expertise that government officials and regulatory agencies might not have and may speak a language they do not know, given the relatively limited training and resources available to them. Therefore, to adequately regulate such technological innovations, the state is left with very little choice other than leveraging the regulatory capacity and resources of the private sector.

Meanwhile, leveraging the private sector for governance functions also comes with risks and opportunities. Some of the risks are real, but others are merely foreseeable. Regulatory capture is among the best-known risks that governments would face. For instance, regulated industries have enough influence to make government actions favour their members. Also, there are risks to societies and economies. For instance, the increased use of artificial intelligence, robotics, and other similar technologies enhancing efficiency reduces the number of workers needed, meaning that they limit employment opportunities.[116] Despite these risks, the state might also be able to achieve more with less. For instance, relying on regulated industries might reduce the resources and personnel regulators need. Additionally, regulators are likely to learn from the private sector. For instance, through their oversight of industries and interactions with private experts, regulators could learn more to increase their level of expertise.

Everything considered, the governance risks of the Fourth Industrial Revolution justify the intervention of governments and citizens. For instance, government oversight and litigation by citizens stand a chance in addressing some of the risks. However, such intervention should always happen with a mindset of mitigating the fears of the private sector. While government should protect itself and the public, it should also look for ways to ensure it does not stifle desirable technological innovation in the private sector.

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[116] See Temitope Tunbi Onifade, "Alberta, Canada, Royalty Review and Its Lessons for Resource Economies" (2017) 35 J Energy Nat Resources L 171 [Onifade 2017].

3(c) Interorganizational Networks and Complexity in Canada

The interorganizational complex model illuminates the key features of Canada's climate governance that responsive regulation does not account for, giving us a lens that is not obstructed by the state. Unlike responsive regulation that prompts us to look at actors, enforcement, and other processes, and interactions in Canada's climate governance from the perspective of state regulators, interorganizational complexity helps us to see things across a range of state and non-state governance pathways,[117] including plural actors, values, authorities, and interactions within and across governments, Indigenous groups, pressure groups, NGOs, think tanks, university organizations, and other players in Canada's climate governance.

3(c)(i) Elements

To discuss interorganizational complexity in Canada's climate governance, I use actors within interorganizational networks as the baseline on which to frame other pathways such as values, processes, and interactions. These networks are diverse, making it unrealistic to exhaustively identify their distinctive values, interactions, and other processes in this short contribution. Nonetheless, a snapshot reveals that state actors (such as federal, provincial, territorial, municipal governments, their administrative departments, and agencies), non-state actors (such as environmental NGOs, think tanks, youth movements, university organizations, and others) and Indigenous peoples have diverse values, processes, interactions, and other pathways, in line with theoretical explanations and predictions.[118]

Since I cannot discuss all observed and foreseeable elements of interorganizational complexity, and to keep my discussion consistent with the responsive regulation framework, I contrast the three key elements of responsive regulation and the three proposed basic elements of Canada's interorganizational climate governance complex: polycentrism (plural centres of norm-making and enforcement authorities), interactions (plural actions and reactions) and multilateralism (plural organizations within actor categories). First, the hierarchy of enforcement in responsive regulation is state-centred, but the interorganizational governance complex model relies on polycentric norm-making and enforcement by plural actors. Second, unlike responsive regulation, which relies on tit-for-tat to decide the severity of enforcement, an interorganizational complex leverages plural interactions of actors and processes for enforcement. Third, tripartism in responsive regulation assigns a limited supportive role to public interest groups in enforcing state regulation, but an interorganizational governance complex relies on plural state and non-state actors and their pathways for enforcement. Figure 1 below depicts the model.

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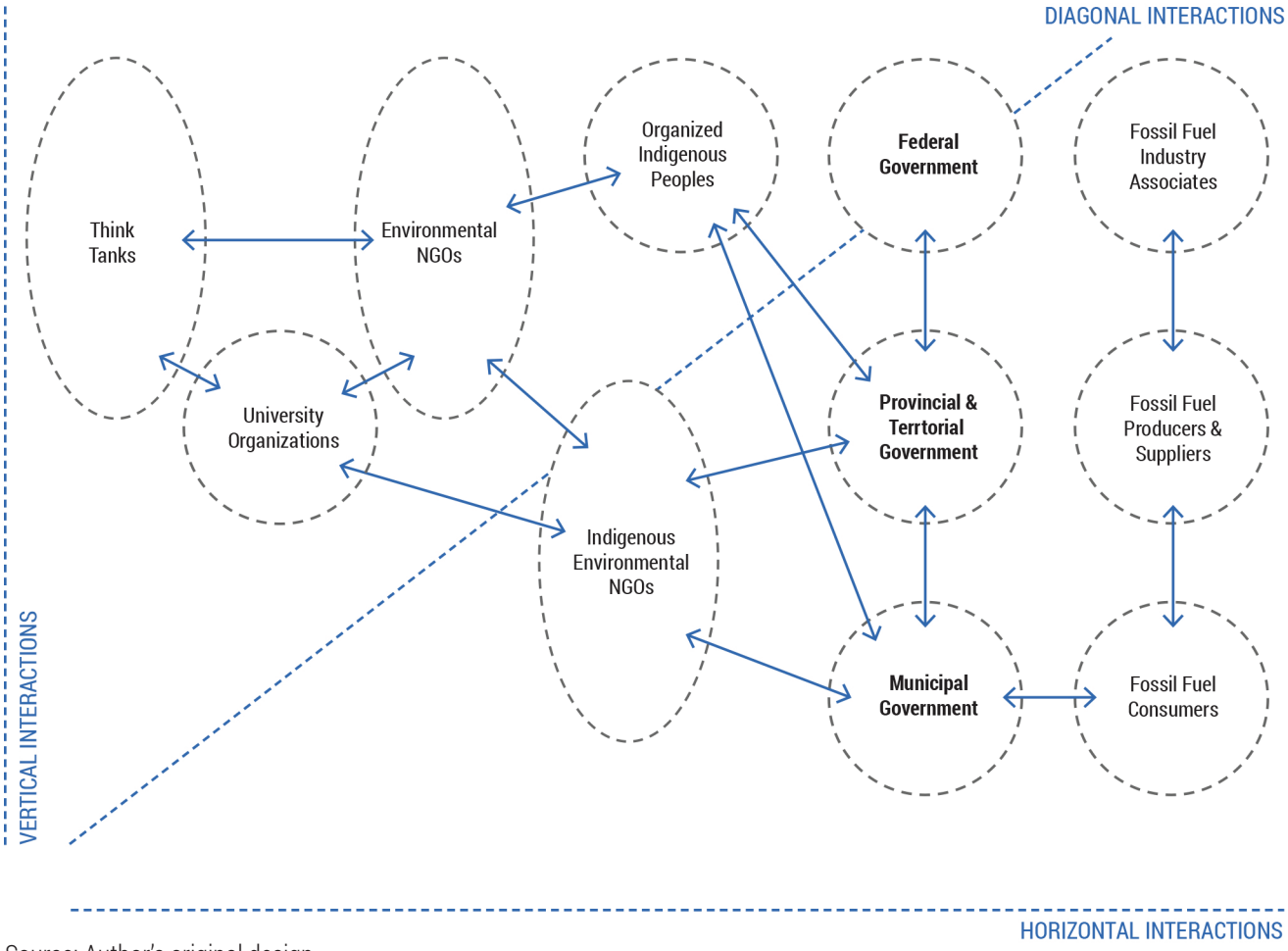
[117] See also Kapucu & Hu, *supra* note 97.

[118] See, for example, ibid.

FIGURE 1:

Canada's Interorganizational Climate Governance Complex



Source: Author's original design.

Figure 1 depicts an emerging model of Canada's interorganizational climate governance complex, with nodes representing sample actors across the directional arrows indicating some of the interactions. The actors and interactions are illustrative, largely based on my experience in climate governance research and policy engagement, rather than exhaustive. Each node is polycentric (plural rulemaking and enforcement centres), interactive (plural actions and reactions) and multilateral (plural actor categories and organizations within them). All nodes interact, including within international climate policy and action pathways, but the figure does not show all the interactions, since it is not meant to be exhaustive. Actor categories and specific organizations within the nodes have mutual interactions across all directions, vertically, horizontally, and diagonally.

Vertical interactions are clearest for the nodes for governments, followed by those for the fossil fuel industry, among other industries, but are not as clear across other nodes. Federal, provincial, territorial, and municipal governments maintain a vertical hierarchical structure, although they interact up and down this hierarchy. Fossil fuel producers, suppliers, and consumers also interact with one another across a vertical hierarchy, albeit also having internal interactions within the industry. Indigenous peoples, think tanks, environmental NGOs, Indigenous environmental NGOs, university organizations, and other non-state actors are too diverse to pigeonhole them into vertical hierarchies. Although many of them have such hierarchies, they interact in infinite ways, including with international climate policy and action pathways.

Horizontal interactions traverse the set of vertical nodes. For instance, federal, provincial, territorial, and municipal governments variously interact with fossil fuel producers, suppliers, and consumers, and fossil fuel producers and consumers interact with all government levels. Likewise, Indigenous peoples interact with all government levels, for instance through policy engagement, although they might do so more across provinces and territories that depend on certain natural resources.[119] Think tanks, environmental NGOs, Indigenous environmental NGOs, university organizations, and other non-state actors interact in infinite ways with governments and industry actors across levels.

While depicted by the line that runs through from the bottom left to the top right, an alternate line that runs from the bottom right to the top left could also portray diagonal interactions. Regardless of how diagonal interactions are portrayed, they have no fixed or predictable patterns across the nodes. For instance, environmental NGOs and Indigenous peoples interact with Indigenous environmental NGOs across federal, provincial, and municipal levels; Indigenous peoples interact with federal, provincial, and municipal governments; and university organizations interact with Indigenous peoples and all government levels.

Polycentrism: Canada's federal, provincial, territorial, and municipal governments have central constitutional and statutory authority to make and enforce rules that bind regulated entities under their jurisdiction. Canada's constitution and provincial statutes give provinces and territories significant powers to regulate lands, natural resources, and regulated industries that use and have impacts on them, for instance the power of the Alberta government under the *Alberta Natural Resources Ac 1930*[120] to regulate upstream oil industry activities, such as public land leases, exploration, and production.[121] Also, the federal government has the constitutional powers to make statutes that bind provinces, where there is sufficient national concern under the Peace, Order, and Good Government doctrine of the Constitution. [122] For instance, where provinces and territories lack carbon pricing mechanisms, the federal government's fuel charge and OBPS rules would apply to them under the *GGPPA*.

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[119] Onifade 2017, *supra* note 116; Temitope Tunbi Onifade, "Regulating Natural Resource Funds: Alaska Permanent Fund, Alberta Heritage Trust Fund and Government Pension Fund of Norway" (2017) 6 Global J Comp L 138.

[120] Alberta Natural Resources Act 1930 (S.C. 1930, c.3). See Andrew R Thompson, "Resource Rights", online: <https://www.thecanadianencyclopedia.ca/en/article/resource-rights>; Let's Talk Royalties, "Ownership of Alberta's Mineral Resources", online: <letstalkroyalties.ca/did-you-know/ownership-of-albertas- mineral…>

[121] Onifade 2017, *supra* note 116.

[122] *Saskatchewan et al v. Canada*, 2019 SKCA 40, 2021 SCC 11.

However, although governments retain considerable authority, plural non-state actors disrupt this government–government and government–industry binaries and hierarchies through polycentric norm-making, enforcement, and other processes. What these actors do in this disruption vary, but they generally contribute to norm-making and enforcement within,[123] and beyond,[124] Canada's state climate policy framework, and some of them have recorded more success in specific areas than governments (for instance in pipeline regulation[125] or divestment[126]).

The theoretical literature advances ideas about what their polycentric norm-making, enforcement and processes look like. Newell,[127] Nulman,[128] Ayling and Gunningham,[129] Hoff and Quentin,[130] and Caniglia et al[131] explore some decentralized methods of norm-making and enforcement, many of which have appeared in Canada's climate governance. For instance, among other contributions, Indigenous peoples, public interest civil society stakeholders, environmental NGOs, and activists mobilize resources to influence Canada's governments to make stronger commitments, legitimize state agendas and actions. Such mobilization drives broader social change that in turn will ultimately impact climate policy, for instance through governance, economic, and technological innovations.[132]

Looking through this polycentric lens, it appears that non-state norm-making and enforcement have potential in Canada's climate governance. Most of the current evidence points to two of the most effective mechanisms: civic activism and litigation. For instance, Hoberg reports on place-based movements that have organized resistance and effectively delayed oil pipeline projects,[133] and cases filed by citizens and civil society organizations such as *ENVironnement JEUnesse v. Canada,*[134] *La Rose v. Her Majesty the Queen,*[135] *Lho'imggin et al v. Her Majesty the Queen in Canada,*[136] and *Ecology Action et al v. Minister of Environment and Climate Change*[137] seem to hold promise for

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123 Raustiala, *supra* note 79

124 See Wapner, *supra* note 19.

125 Hoberg, *supra* note 81.

126 Canadian Association of University Teachers, "Canada's Campuses Emerge as Latest Battleground in Fast-Growing Divestment Movement", online: <https://bulletin-archives.caut.ca/bulletin/articles/2015/12/canada-s-campuses-emerge-as-latest-battleground-in-fast-growing-divestment-movement>.

127 See Peter Newell, "Civil Society, Corporate Accountability and the Politics of Climate Change" (2008) 8 Global Envtl Politics 122.

128 Eugene Nulman, *Climate Change and Social Movements* (Hampshire: Palgrave, 2015).

129 Julie Ayling & Neil Gunningham, "Non-state Governance and Climate Policy: The Fossil Fuel Divestment Movement" (2017) 17 Clim Policy 131.

130 Jens Hoff & Quentin Gausset, eds, *Community Governance and Citizen-Driven Initiatives in Climate Change Mitigation* (Abingdon: Routledge, 2016).

131 Beth Schaefer Caniglia et al, "Civil Society, Social Movements, and Climate Change" in Riley E Dunlap & Robert J Brulle, eds, *Climate Change and Society: Sociological Perspectives* (New York: Oxford, 2015) 235.

132 See generally UNEP, *Bridging the Emissions Gap—The Role of Non-state and Subnational Actors* (Nairobi: UNEP, 2018); Thomas Hale, *The Role of Sub-state and Non-state Actors in International Climate Processes* (London: Chatham House, 2018).

133 Hoberg, *supra* note 81.

134 (2018) 500-06-000955-183.

135 (2019) T-1750-19.

136 Columbia University "Climate Case Chart (2020)", online: <http://climatecasechart.com/climate-change-litigation/non-us-case/gagnon-et-al-v-her-majesty-the-queen/>.

137 (2020) FC 663.

tackling climate inaction and enhancing climate action.[138]

Canada's civic climate activism and litigation have two key relationships whose knowledge should enhance polycentric action. First, the Charter of Rights and Freedom empowers activists and litigants. For instance, constitutional rights and freedoms under the charter form the basis of civic activism, and most court cases allege that government actions and inactions violate the constitutional rights of activists and litigants under the charter. Second, activism and litigation may fuel each other. For instance, activism may create an environment that boosts the chances of litigation, such as where it creates media awareness that enhances the knowledge and drives the passion of litigants, witnesses, and judges; and even if litigants do not win, their cases may lead to judgments and other outcomes that strengthen activism. Learning these commonalities could enhance how state and nonstate actors take polycentric actions.

Altogether, given the promise of polycentric climate governance, we should pay more attention to the plurality of norm-making, enforcement and other processes. Understanding the sources of norm-making and enforcement authority would inform how to enhance them beyond what state regulators and non-state actors could do alone. However, we still know very little about polycentric climate governance in Canada, suggesting there are questions that future studies should address. For instance, what are the implications of multiple sources of norm-making, enforcement and other processes in polycentric governance for state sovereignty and Indigenous self-determination?

Interactions: As we have seen from the Pan-Canadian Framework, *GGPPA* and *CNEAA*, Canada's federal government tends to react to regulated entities in climate governance based on a tit-for-tat strategy. However, tit-for-tat is only one strategy, and there are other state and non-state actors, actions, values, and processes interacting in infinite ways, disrupting this sense of a bilateral government–industry tit-for-tat.

Several theoretical contributions look for trends across such interactions and how they could enhance governance. For instance, Gunningham and Grabosky,[139] Black[140], Eberlein et al,[141] Jordan et al,[142] and Wood et al[143] explore diverse interactions and whether and/or how they could create complementary governance. These contributions give us clues on how to identify and harness interactions in Canada's climate governance.

Therefore, rather than focusing on a bilateral tit-for-tat strategy, we should seek to learn wide-ranging interactions among actors to figure out how to harness them to enhance Canada's climate governance. To start, I propose that a general driving objective should be to maximize complementary interactions

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138 Onifade 2021, *supra* note 111.

139 Gunningham & Grabosky, *supra* note 55.

140 Black, *supra* note 20.

141 Burkard Eberlein et al, "Transnational Business Governance Interactions: Conceptualization and Framework for Analysis" (2014) 8 Regul & Gov 1

142 Andrew J Jordan et al, "Emergence of Polycentric Climate Governance and Its Future Prospects" (2015) 5 Nat Clim Change 977.

143 Stepan Wood et al, *Transnational Business Governance Interactions: Advancing Marginalized Actors and Enhancing Regulatory Quality* (Cheltenham & Northampton: Edward Elgar, 2019).

and minimize counterproductive interactions. However, making the best of interactions would ultimately require taking a closer look on a case-by-case basis.

Canada's climate governance has evidence of both counterproductive and complementary interactions. Counterproductive interactions are clear from the history of Canada's climate governance. For instance, Canada's governments, especially within some provinces, have historically *facilitated* the fossil fuel industry's self-regulation, including self-monitoring and voluntarism,[144] largely fuelling regulatory failure.[145] While there are still counterproductive interactions, complementary interactions are increasing. For instance: Indigenous peoples and civil society actors have variously *interacted in diverse ways* with governments in the development of the Pan-Canadian Framework,[146] in creating delays and cancellation of some oil pipeline projects,[147] and in moving towards other stronger climate actions especially at the federal level; federal and provincial governments and industries are increasingly *collaborating* to lower emissions and address climate change, for instance under the Pan-Canadian framework, federal programmes such as the federal government's Energy Innovation Programme Strategic Innovation Fund's Net Zero Accelerator, and provincial programmes such as Emission Reduction Alberta; environmental NGOs are *cooperating* with Indigenous peoples, community groups and citizens to sue governments for climate-related causes; and industries are increasingly moving beyond engagement by *collaborating* with Indigenous and civil society groups in diverse ways to address climate change, including through impact benefit agreements and joint projects. Unlike the facilitation of self-regulation previously dominating Canada's climate governance, many of these interactions, largely taking the form of collaboration and cooperation, are more complementary than counterproductive.

Given these interactions, I recognize two key challenges for future work on Canada's interorganizational climate governance complex. First, we need to learn the range of interactions. Although I have used complementary and counterproductive interactions as the key categories to illustrate Canada's climate governance, there are several other potential interactions explored in the theoretical literature. Understanding these interactions would enhance our knowledge of how to harness them to power Canada's climate governance. Second, we should look for ways to maximize complementary interactions and minimize the counterproductive interactions. For instance, we should ask: How best should think tanks support governments in neutralizing regulatory capture? What are the most promising ways governments should work with Indigenous peoples to address climate vulnerabilities while respecting self-determination on Indigenous lands? These are illustrative rather than exhaustive questions.

Multilateralism: Canada's climate governance has the three broad actor categories recognized by tripartism: government regulator, regulated industries, and third-party public interest groups. However, these broad categories are not nuanced enough to fully allow for understanding what is going on within

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144 Wood et al, *supra* note 64.

145 See Harrison, *supra* note 64; Boyd, *supra* note 64; Wood et al, *ibid*; Bankes et al, *supra* note 66; MacLean et al, *supra* note 66; Sustainable Canada Dialogues, *supra* note 66.

146 See Government of Canada, *supra* note 63. Compare Reed et al, *supra* note 84.

147 Hoberg, *supra* note 81.

Canada's interorganizational climate governance complex. Addressing this problem, multilateralism draws our attention to the two key challenges of tripartism.

First, tripartism does not fully cover the rich diversity of pathways within each of the three actor categories. For instance, it does not account for the significant differences that may appear across and within federal, provincial, territorial, and municipal state levels, let alone those of regulated industries and public interest groups. Federal, provincial, and territorial governments may not have the same values or treat climate change or climate action the same way. Even within each government level, ministries, departments, agencies and/or officials may disagree. First Nations, Inuit, and Métis are diverse in their Indigenous ways. Although there are areas of overlap, they have distinct knowledge systems that shape their approaches to climate governance. Civil society groups do not have a single voice or agree on approaches to climate governance, even if they share certain features, such as undertaking research, litigating, and/or lobbying governments where appropriate. For instance: Ecojustice focuses on litigation, while Ecology Action Centre mobilizes action through various projects; and, although working as university organizations, Dalhousie University's Marine & Environmental Law Institute focuses on teaching and consultancy, the University of Victoria's Environmental Law Centre offers free legal services to local communities and conservation groups, and the University of British Columbia's Canada Climate Law Initiative emphasizes mobilizing expert knowledge for companies, investors, and their fiduciaries. These actors and their pathways illustrate significant diversity; however, I do not attempt to create an exhaustive list of the differences among them since this goes beyond the focus of my contribution.

Second, tripartism does not recognize that actors contribute to climate governance independently of governments in Canada. For instance, Indigenous peoples, technical experts, and other civil society groups have pathways that influence Canada's climate governance independently of the state, such as through Indigenous knowledge systems,[148] standardization systems such as the Canada Green Building Council Zero Carbon Building Standard, and several other mechanisms. However, tripartism mainly sees these non-state actors as supporters of the state, for instance as providing legitimacy to governments and public pressure for regulatory agencies to move up the enforcement hierarchy. Confining non-state actors to the state framework, among other issues, underrates their potential to enhance climate governance. We would not fully understand their potential if we do not, at least through our imagination, remove them from the shadows of the state.

The concept of multilateralism addresses these problems of tripartism by recognizing there are plural state and non-state actors within the three broad actor categories, and that they have plural normative systems that could contribute to Canada's climate governance in collaboration with or independently of government regulators. Hence, multilateralism enhances our knowledge of Canada's climate governance in at least two ways. One is that it forces us to disaggregate the actor categories. There is significant diversity within each of them, so we should be as specific as possible when thinking about their identity and potential. The other is that it raises the potential of leveraging the values and other

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[148] Deborah McGregor, "Indigenous Knowledge Systems in Environmental Governance in Canada" (2021) 5 Knowledge Creation, Dissemination, & Preservation Studies 1.

contributions of these plural actors for regulatory interactions that address the problems of state and non-state governance. For instance, since we know public interest groups pressure Canadian governments to take some actions on climate change (such as moving towards more coercive enforcement and cancelling oil pipeline projects), we should look at which groups are doing what and how, to be able to then harness their regulatory interactions to support climate action.

3(c)(ii) Limitations

How should interorganizational networks operate in a hierarchical state-centred world? Many criticisms of network governance and interorganizational complexity revolve around this fundamental question. For instance, there are concerns about who coordinates what; the diversity of and conflicts between the network's organizations and interests, inability, or reduced ability to enforce decisions; slow decision-making arising from network interactions; shift of legitimacy away from elected officials; and potential power play among network members, with the potential for the domination and subjugation of some actors by others.[149] These are valid concerns, many of which future work should address. Nonetheless, most of them have to do with reconciling diversity of network members within the realities of a hierarchical state-centred world. I address this crucial issue as a starting point for thinking about solutions to the problems of the interorganizational complex governance model.

Having effective coordination that drives policy targets in an interorganizational climate governance complex would solve or at least mitigate some of these problems in Canada. Kooiman lays the foundation for thinking about the coordination of network governance, but what coordination looks like would vary from one interorganizational complex to another.[150] For instance, coordination may take the form of orchestration,[151] mediation, facilitation, or process management.[152] Provan and Kenis provide generalizable ideas that I adapt to inform how coordination might work in Canada's interorganizational climate governance complex.[153] They offer options and network conditions for coordinating three forms of network governance: participant-governed networks, lead organization-governed networks, and network administrative organization.

Participant-governed networks have member organizations that could coordinate them. For instance, an elected lead network member may facilitate them. For this form of coordination to work, the chances would be higher when there is high majority consensus among few participating organizations,

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149 See also Daniel J Bedner, *The Governance of Climate Change Adaptation in Canada: Two Multilevel Case Studies* (PhD Dissertation, University of Western Ontario, 2018); Kapucu & Hu, *supra* note 97.

150 See Jens Newig et al, "Synapses in the Network: Learning in Governance Networks in the Context of Environmental Management" (2010) 15:4 Ecology & Soc'y 24; Kapucu & Hu, *supra* note 97.

151 Kenneth W Abbott & Duncan Snidal, "Strengthening International Regulation through Transnational New Governance: Overcoming the Orchestration Deficit" (2009) 42 Vand J Transnatl L 501; Kenneth W Abbott, "The Transnational Regime Complex for Climate Change" (2012) 30:4 Environ & Planning C: Government & Pol'y 571; Kenneth W Abbott, "Strengthening the Transnational Regime Complex for Climate Change" (2014) 3 Transnatl Envtl L 57.

152 Jurian Edelenbos et al, "Managers in Governance Networks: How to Reach Good Outcomes" (2011) 14 Intl Pub Mgmt J 420.

153 Provan & Kenis, *supra* note 4.

high density of trust, and minimal need for network-level competencies. For instance, participant-governed networks should work for networks of small university organizations, think tanks, and Indigenous environmental NGOs, which may have only a few members who trust one another and who do not require much expertise to function; but this coordination system is unlikely to work for interorganizational complexes with medium and big organizations that may have alternate features.

Lead organization-governed networks involve a powerful broker among the participants within an interorganizational complex (for instance a large buyer among several smaller buyers and sellers) or a powerful province in a network of several comparatively weak provinces and non-state organizations. The lead organization coordinates most of the major activities of the complex. This form of coordination might work better when the number of participants is somewhat larger than in the above example of participant-governed networks but not as much as entities needing a network administrative organization, they have moderately low consensus and low density of trust, and their need for network-level competencies is moderate. For instance, delegates of the Ontario government could coordinate an interorganizational network that has medium-size governments, fossil fuel industry producers and suppliers, environmental NGOs, and universities across Canada's medium and small provinces. The federal government may also coordinate government departments, federal industry associations and other big non-state organizations where the circumstances are favourable, for instance, to influence the participants to reach better consensus and create stronger trust.

A network administrative organization is an independent entity that governs a large interorganizational complex. Such an organization may be an expert, for instance a mediator or process manager. The distinguishing feature is that it is not a member of the interorganizational complex, but rather a service provider. Where the number of participating organizations ranges from moderate to many, with moderately high consensus on their goal, moderate trust, and high need for network-level competencies, then this form of coordination might work better. For instance, a big interorganizational complex with members within and across federal, provincial, and territorial governments, Indigenous peoples, fossil fuel consumers, and environmental NGOs might benefit from this type of coordination. Besides being big networks, as the climate emergency intensifies, the consensus of these actors will likely become stronger, pushing them to create areas of net zero transition expertise.

4. Conclusion

How should we think about Canada's climate governance? I have argued that we should think about it as an interorganizational complex of state and non-state governance. Although my claim has normative elements, my idea of interorganizational complexity is more positive than normative. Building on interorganizational networks, this idea considers not only the role of network actors but also their other pathways such as norm-making, enforcement and other processes, and interactions. State and non-state actors should leverage these plural public and private pathways to enhance Canada's climate governance.

In conceptualizing Canada's climate governance as an interorganizational complex of public and

private pathways, I have used responsive regulation and network governance as models to contextualize what Canada's climate governance currently looks like. Responsive regulation emerged to guide the regulatory state in addressing public demands and adapting to a changing society, while network governance emerged to address the failures of this regulatory state. Responsive regulation mainly helps us to understand Canada's state climate policy, but network governance unveils the public and private aspects of Canada's climate governance. However, neither of these models provides a complete picture of Canada's climate governance.

Responsive regulation shows that Canada's federal government has relied more on industries for self-enforcement but is now moving towards stronger governance of climate change, increasingly deploying coercive enforcement to ensure provinces, territories, and industries align with the net-zero transition. However, responsive regulation does not fully reflect recent social change and other factors that should inform the country's climate governance, including the intermittent rise and fall of the state, diversity of non-state actors and organizations, and the Fourth Industrial Revolution. Central to these challenges is that responsive regulation fails to adequately incorporate the plurality of actors, norm-making and norm enforcement, and other pathways.

Network governance mostly makes up for these gaps by reflecting social change and embracing the plurality of pathways. Essentially, it offers the concept of interorganizational network that helps us to map the connections between the nodes of state and non-state actors. It also reveals that non-state actors build on their plurality to govern climate change not only within but also beyond the confines of the state. However, the concept focuses more on actor connections, leading to short-sightedness on the plurality of pathways, such as norm-making, enforcement, and other processes. To address this gap, I adopt the broader concept of interorganizational complexity and build on theories of governance to spotlight its three key elements, contrasted with those of responsive regulation: polycentrism, interactions, and multilateralism. Pluralism is the common thread across these elements: polycentrism opens the governance's imagination to plural centres for norm-making, enforcement, and other processes; interactions are about the plural actions and reactions that could be harnessed to enhance regulatory complementary in climate governance; and multilateralism helps us to take notice of the plurality of actors and their potential for regulation.

However, a central challenge of Canada's interorganizational climate governance complex is how to coordinate the participating organizations. Addressing this basic challenge would enhance the further evolution of the model to drive the potential impacts, including facilitating better norm-making and harnessing the interactions of other governance pathways to achieve desirable objectives, including driving the net-zero transition in the climate emergency, enhancing collective policymaking that truly involves citizens and reflects their inputs in policy outcomes, reconciling state and indigenous pathways to promote reconciliation, and regulating the excesses of governments and other stakeholders. While leaving a detailed discussion of how to address this challenge to future work, I suggest that the coordination should depend on the type of interorganizational complex. Participant-governed, lead-organization, and network administrative organizations are illustrative. Participant-governed networks could use network members as coordinators. Lead organization-governed networks involve a powerful broker among the members of the network (for instance a large buyer in a network comprising several

smaller buyers and sellers) or a powerful province in a network comprising state actors and other comparatively weaker organizations. Network members could also appoint a network administrative organization (such as a non-network entity such as an expert organization) to govern big organizations.

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6 Modelling Climate Policy Networks

Charlotte Woo

Increasingly, policy networks and collaborative governance are being utilized to respond to environmental challenges and climate change.[1] In this chapter, I will first provide an overview of collaborative governance and its goals. Next, I will compare collaborative governance to policy networks. Finally, I will examine how these systems are being used to create and implement climate policy.

1. Collaborative Governance

The system of collaborative governance involves collaboration between state and non-state organizations such as public, private, and non-profit actors.[2] These actors may be individuals, groups, organizations, nation states, regions, provinces, or similar entities. Although there is no universal definition for collaborative governance, this concept is sometimes described as:

> [A] governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets.[3]

For collaborative governance to be effective, interactions between different actors should be facilitated and goals must be generated by exploring novel ideas, working in various scenarios, and organizing joint research and fact finding initiatives.[4] Unlike traditional forms of management, corporate governance relies heavily on negotiation, as actors must work together to find and implement solutions to challenges.[5] The relationship between these actors may include the exchange of knowledge, advice-seeking, and collaboration.[6]

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1 Naim Kapucu et al, "The State of Network Research in Public Administration" (2017) 49 Admin & Soc'y 1087 at 1088 [Kapucu et al].

2 *Ibid*.

3 Chris Ansell & Alison Gash, "Collaborative Governance in Theory and Practice" (2007) 18 J Pub Admin Res & Theory 543 at 544 [Ansell & Gash].

4 Erik-Hans Klijn & Joop Koppenjan, "Governance Network Theory: Past, Present, and Future" (2012) 40 Pol'y & Pol 187 at 192.

5 *Ibid*.

6 Ansell & Gash, *supra* note 3 at 545-47.

Although a collaborative approach is not new, it has become more prevalent in recent years, especially in the area of environmental protection.[7] In a collaborative governance model, public agencies or institutions typically initiate the forum and include non-state actors as participants.[8] These non-state actors are not merely consulted; rather, they are directly involved in decision-making.[9] Some literature suggests that the goal of collaborative governance is consensus between all parties, even in circumstances where the public body has the ultimate authority to make a decision.[10] Additionally, collaborative governance may involve formally organized meetings.[11] In collaborative governance, parties from various sectors work together to govern, allocate resources, and coordinate responses through consensus-oriented decision-making.[12]

2. **Policy Networks**

The terms "policy network" and "collaborative governance" refer to similar concepts.[13] Although there are no official definitions for either term, both "collaborative governance" and "policy network" refer to decision-making processes that involve various organized bodies, differing from traditional hierarchical systems.[14] Within these networks, organized bodies maintain relationships through influence, attribution, common group membership, or the exchange of resources or information.[15] Both collaborative governance and policy networks may include public agencies and stakeholder groups.[16] Additionally, both systems involve collaborative deliberations and decision-making.[17]

Both policy networks and collaborative governance typically involve several of the following elements:

1. The ability to facilitate effective coordination of action, which supports the development of trust and collaboration;
2. High levels of agreement between actors in the network regarding various goals and actions; and
3. Goals and actions that are specific and adequate to address the intentions of the system of government.[18]

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7 Kapucu et al, *supra* note 1 at 1101.

8 Ansell & Gash, *supra* note 3 at 544-45.

9 *Ibid*.

10 *Ibid* at 546-47.

11 *Ibid* at 544-45.

12 *Ibid* at 545-47.

13 *Ibid* at 547-48.

14 Philip Leifeld & Volker Schneider, "Information Exchange in Policy Networks" (2012) 56 Am J Pol Sci 731 at 731.

15 *Ibid*.

16 Ansell & Gash, *supra* note 3 at 547-48.

17 *Ibid*.

18 Garry Robins et al, "Network Governance and Environmental Management: Conflict and Cooperation" (2011) 89 Pub Admin 1293 at 1295 [Robins et al].

However, these concepts differ in several ways. Collaborative governance involves "an explicit and formal strategy of incorporating stakeholders into multilateral and consensus-oriented decision-making processes."[19] Unlike collaborative governance, government initiation is not necessary for policy networks, as both informal and formal networks are utilized.[20] Even in situations where a policy network is established through centralized actions, informal connections will typically arise around the formal structure. [21] In policy networks, strong connections between actors are necessary to minimize information costs and maximize the credibility of information.[22]

Additionally, researchers typically focus on different issues when studying policy networks and collaborative governance. Policy network research usually examines the connections between traditional policy makers including public agencies, legislative officials, and non-traditional bodies including private parties, interest groups, and non-profits.[23] Unlike policy network research, collaborative governance research typically considers the provision, delivery, or implementation of public programs, goods, and services. [24]

3. **Application**

Both policy networks and collaborative governance models recognize that a common goal should not be the exclusive responsibility of a single organization.[25] These systems utilize collective action, common goals, and relationships between organizations to handle challenges.[26]

Case studies suggest that policy networks can be used to implement and modify climate policy. Specifically, the impacts of policy networks were evident throughout the implementation of a CO_2 law introduced in Switzerland in 2000.[27] The government intended to implement this law in two phases.[28] First, parties in the private sector were invited to sign voluntary agreements to reduce CO_2 emissions.[29] If the voluntary agreements did not result in a 10% emission reduction, then a tax would be introduced in the second phase.[30]

After the program was introduced, a 2002 study indicated that the voluntary agreements would not

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19 Ansell & Gash, *supra* note 3 at 547-48.

20 *Ibid* at 548.

21 Robins et al, *supra* note 18 at 1295.

22 Kapucu et al, *supra* note 1 at 1091.

23 *Ibid*.

24 *Ibid*.

25 *Ibid*.

26 *Ibid* at 1090.

27 Karin Ingold, "Network Structures within Policy Processes: Coalitions, Power, and Brokerage in Swiss Climate Policy" (2011) 39 Policy Stud J 435 at 437.

28 *Ibid*.

29 *Ibid*.

30 *Ibid* at 438.

reduce emissions by 10%.[31] Therefore, a tax should have been introduced marking the start of the second phase.[32] However, a "climate penny" was introduced by the Swiss Petrol Union as an alternative to the introduction of a tax on motor fuels.[33] Under the climate penny project, a tax of one penny would be owed for every litre of gas;[34] subsequently, all proceeds from the tax would be used to finance projects that aimed to reduce CO_2 emissions.[35]

Many representatives of industry, transportation, and energy supported the climate penny program while environmental movements, trade unions, and some federal agencies continued to support an overall tax.[36] In 2004, the Swiss government found a compromise between the two positions: the climate penny was applied to motor fuels and organized by a private independent body, while a CO_2 tax on combustibles would be introduced.[37]

The introduction of the climate penny program demonstrates that decisions related to climate policy often depend on the collective opinions of several bodies, rather than one solitary actor.[38] These decisions result from interactions between various actors in the private and public sectors.[39] This example illustrates the important role that policy networks can have in forming climate policy.

Similarly, a study examining transnational municipal climate networks also found that networks have been effective in the process of creating and implementing climate policy.[40] According to this study, networks play an important role in internal decision-making processes.[41] This study also found that networks have the greatest impact in efforts to mitigate climate change.[42]

4. **Summary**

Policy networks and collaborative governance can enable countries to respond effectively to climate change. As seen in the example from Switzerland, collaborative and goal-driven participation in the creation and implementation of climate policy can effectively introduce new ideas, like the climate penny. This example demonstrates that climate policy does not need to be a process solely created and implemented by the government, as non-governmental bodies, including private and public sector actors, may be influential in the decision-making process. It is likely to be beneficial for Canada to utilize its policy networks to effectively combat climate change.

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31 *Ibid*.

32 *Ibid*.

33 *Ibid*.

34 *Ibid*.

35 *Ibid*.

36 *Ibid*.

37 *Ibid*.

38 *Ibid*.

39 *Ibid*.

40 Henner Busch et al, "Shaping Local Response: The Influence of Transnational Municipal Climate Networks on Urban Climate Governance" (2018) 24 Urb Clim 221 at 229.

41 *Ibid*.

42 *Ibid*.

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PART THREE

Bridging Canadian Climate Governance to Indigenous Ethics

7 Indigenous Law and Canadian Climate Governance

John Borrows

Boozhoo nindinawemaaganidok, niiji anishinaabeg, niiji-bimaadiziig. Bangi eta go ninitaa-anishinaabem idash ninga-gojitoon ji-anishinaabemoyaan. Kegedonce indigoo anishinaabemong, John nindizhinikaaz zhaaganaashiimong. Nigig niin nindoodem. I greet you in Anishinaabemowin, a language of the Great Lakes, and I thank you for your presence today. I am honoured to be with you and speak from the W̱SÁNEĆ- and Lək̓ʷəŋən-speaking peoples' territories in Victoria, British Columbia. I am grateful to work, play, and learn on these lands.

In this chapter, I will speak about bringing Indigenous law and ethics to Canadian climate governance. While recent climatic change is caused by humans,[1] which generates tremendous suffering for those least able to bear its burdens, my hope is that we might activate Indigenous peoples' law and experience to reverse its progression and effects. This topic is near and dear to my heart because it implicates Indigenous law's role in understanding how we deal with ever-present changes around us. When I consider Indigenous perspectives related to climate change, I remember our deep time experience with such changes in our homelands.

My territory is Neyaashiinigmiing, on the Saugeen Peninsula in Ontario. It is sometimes called the Bruce Peninsula, and it lies between Lake Huron and Georgian Bay. The Niagara Escarpment runs through our reserve. The Escarpment formed over 440 million years ago, when what we now call Ontario was at the equator. At that time, the area was a shallow, warm sea teeming with aquatic life. When those beings perished, their spent bodies were layered on the ocean floor. Through vast ages, they travelled on tectonic plates until they reached their current latitude. Today, when you walk around the territory, you find evidence of this earlier time. Fossils are buried in the rocks and are piled loosely at your feet as you walk along the shore.

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[1] Intergovernmental Panel on Climate Change (IPCC), *The Ocean and Cryosphere in a Changing Climate: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2022) at page. 45: "Evidence and understanding of the human causes of climate warming, and of associated ocean and cryosphere changes, has increased over the past 30 years of IPCC assessments (very high confidence). Human activities are estimated to have caused approximately 1.0ºC of global warming above pre-industrial levels (SR15). Areas of concern in earlier IPCC reports, such as the expected acceleration of sea level rise, are now observed (high confidence). Evidence for expected slow-down of AMOC [Atlantic Meridional Overturning Circulation] is emerging in sustained observations and from long-term palaeoclimate reconstructions (medium confidence), and may be related with anthropogenic forcing according to model simulations, although this remains to be properly attributed. Significant sea level rise contributions from Antarctic ice sheet mass loss (very high confidence), which earlier reports did not expect to manifest this century, are already being observed."

We are constantly reminded of the earth's dynamism and dramatic movement through epochs of time in our territories. We also see evidence of the earth's dynamism within a human time scale too. Twelve thousand years ago, our lands were covered with ice shields several kilometres high. The earth's surface moved under their weight in world-altering ways. When the glaciers retreated, the ground rebounded. Melting waters quickly flooded each hollow, forming the Great Lakes as we know them. Our creation stories flow from the challenges experienced during this time, as the climate radically changed. Skywoman and Nanaboozho (a trickster), formed a council with the beaver, loon, otter, and others to determine how to survive the flood. Eventually, a small muskrat pulled soil from under the deep water, which was deposited on a turtle's back to form terrestrial life. Evidence of climate change is woven through our constitutional stories and clearly written on the earth that surrounds us. Anishinaabe governance, laws, and ethics would not exist without these formative experiences.

Unfortunately, the climate's natural variations have been radically disrupted by human action. This has occurred during a period I call colonial time. Our territories have been paved over and planted with cities like Toronto, Chicago, Milwaukee, Duluth, Ottawa, Detroit, Buffalo, Ottawa, and Montréal, as well as places in between. Urban heat sinks change the weather in these cities, in unusual and sometimes life-threatening ways. Indigenous life-ways have also been pushed aside and replaced with political, social, and economic systems that marginalize Indigenous systems of care. Indigenous peoples are prevented from re-establishing our governance, law, and ethics as guiding forces in these spaces. Furthermore, our fields, forests, and lakes have been transformed through agriculture, mining, forestry, recreation, and factories, and the infrastructure designed to facilitate these activities. Irreversible loss and widespread death have followed for many species of plants, insects, birds, and animals, and for (Indigenous) humans. Pesticides, tailings ponds, garbage dumps, the burning of fossil fuels, and the introduction of invasive species have contributed to air, water, and noise pollution that contaminate the primary sources of life in our territories.

All of which is to say that Indigenous peoples have experienced the effects of human-caused climate change and we have been devastated. I have family stories from great-great-great, great-great, and first great-grandparents chronicling the losses we sustained as air, water, and land have been changed by human activity. Within the lives of my own immediate ancestors, scientists in Ontario have chronicled the extirpation of the Passenger Pigeon, Greater Prairie Chicken, Least Shrew, Eastern Elk, Blue Walleye, Gravel Chub, Shortnose Cisco, Black Cisco, Paddlefish, Eastern Tiger Salamander, Spring Salamander, Blanchard's Cricket Frog, Frosted Elfin, Karner Blue, Persius Duskywing, Timber Rattlesnake, Russet-tipped Clubtail, Incurved Grizzled Moss, Macoun's Shining Moss, Dwarf Umbrella-sedge, Yellow-fringed Orchid, Commons's Panic Grass, Wild Rye, and Black Oat-grass. [2] Moreover, many other species are now extinct in local regions, and the list of endangered species grows each year. Our Elders also tell us these changes are accelerating in their intensity. In most ways, we are still living in a colonial time that disrupts and often destroys relationships with our territories.

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[2] For further information see O. Reg. 230/08: Species at Risk Ontario List under Endangered Species Act, 2007, S.O. 2007, c. 6; to see pictures of these species consult the website of the Ontario Ministry of Environment, Conservation and Parks, Species at risk in Ontario at https://www.ontario.ca/page/species-risk-ontario; Carolinian Canada, Nature Rarities of Southwestern Ontario at https://caroliniancanada.ca/sar/nature-rarities#:~:text=Extirpated%20from%20Carolinian%20Canada,loss%20of%20species%20continues%20today.

Changes wrought by vast numbers of people (who relate differently to our land) have changed the air, water and earth's temperature, which influences the reactions of plants, insects, fish, birds and animals to these shifting conditions. It is even possible to note that climate change is visible within our short lifetimes. When I talk with Anishinaabe Elders, they tell me that fish run at unusual times, the sap flows from the trees in unpredictable ways, and the strawberry, blueberry, and wild rice harvests do not follow the cycles existing only 40 or 50 years ago. For these Elders, climate change is a very personal experience.

As Anishinaabe Professors Melissa Nelson and Kyle Whyte remind us, Indigenous peoples have experienced climate change through deep time, human time, colonial time, and in our lifetimes.[3] Professor Whyte also highlights how Indigenous peoples experience climate change through kinship time, which considers the duration, span, and movement of relationships within the natural and human world. In all these experiences, Indigenous peoples have made observations about how to deal with climate change and how to challenge and reverse its adverse effects. They do so through Indigenous measures, standards, principles, criteria, precedent, tradition, signposts, benchmarks, tenets, procedures, conventions, and customs, which is to say that Indigenous peoples have laws to create better climate governance. Law does not only flow from parliaments or legislators, or get interpreted by courts with the assistance of lawyers and enforced by police. Law can also be approached from a functional perspective by considering its operative role and social effect on a society. Indigenous peoples' law, flowing from their experiences with climate change, could be an important factor in climate governance.

We should recognize and revitalize Indigenous legal principles, processes, criteria, measures, indicia, benchmarks, precedents, and guides that are related to the earth. Indigenous law contains intellectual and cultural resources to help us make decisions, regulate our affairs, and resolve disputes in the present day. As we extend this recognition, we must also acknowledge that, while Indigenous law can be environmentally sound, Indigenous peoples can also act in ways that destroy life's very possibilities. As with all humans, appetites can be insatiable, and Indigenous peoples can act in gluttonous, voracious, and immoderate ways. Many of our trickster and wiindigo stories chronicle such misuses and show what happens when we forget the environment is not limitless. These stories also contain lessons for climate governance. Indigenous peoples can act contrary to their norms, ethics, and values, and our laws contain powerful cautions and restraints against such behaviour, which is why we need to apply Indigenous laws that respect and connect to Indigenous experiences with the environment, as opposed to rules that would facilitate water, land, and air use without reference to sustainability.

Indigenous law is the product of complex forces. It develops in moments of both harmony and rupture. Law does not merely arise from agreement; it is also forged in moments of conflict. Indigenous peoples grapple with both agreement and disagreement, in both historic and contemporary settings. It should go without saying that Indigenous peoples do not all see the world in the same way. We strive

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[3] Melissa Nelson, "The hydromythology of the Anishinaabeg: Will Mishipizhu Survive Climate Change or Is He Creating It?" in Jill Doerfler et al, eds, *Centering Anishinaabeg Studies: Understanding the World Through Stories* (Lansing: Michigan State University Press, 2013) 213 at 213-36; Kyle Whyte, "Indigenous Science (Fiction) for the Anthropocene: Ancestral Dystopias and Fantasies of Climate Change Crises" (2018) 1 Envtl Plan E: Nat & Space 224.

for the freedom to be different from other Canadians. We also work to advance the freedom to be different from one another too. Indigenous law exists to help us act with a degree of cohesion in the face of internal difference. It should also function as a check on other Canadian laws to ensure that constitutional balances do not contain ecological overreach. The application of Indigenous peoples' environmental laws, ethics, and perspectives is an important tool for helping us deal with profound climate change questions.

As Indigenous peoples' laws are extended, we must recognize that they come from many sources. Some are rooted in stories about deep time, human time, colonial time, as I have discussed. Some Indigenous laws are considered to be sacred and living (aadizoonakag), while others are more routine (dibaajimowinan), yet nevertheless significant for the principles and processes they contain. Most of our laws are formed through deliberation and operate through discussion, negotiation, persuasion, and debate. Human interpretation is the proximate cause of their application. Other laws are positivistic or declaratory and can be found in legislation, resolutions, codes, and chronicles. In these declarative forms, they often contain "do's and don'ts" and might involve fines, restrictions, incentives, and other consequential factors related to their being upheld or broken. Some Indigenous laws come from customary ways of interacting with one another, which incentivizes behaviour that is productive, such as having good relationships, and disincentivizes conduct that damages our relationships with one another. I have written a book that describes some of these sources, called *Canada's Indigenous Constitution*, published by the University of Toronto Press (2010).[4] The distinctions between the different sources of law outlined above should not be approached too formalistically. Moreover, they are not exhaustive. The practice of Indigenous law usually involves the interaction of many sources, including laws rooted in other legal systems. We should always acknowledge that Indigenous peoples have choices when they formulate law. Furthermore, we must always recognize that Indigenous peoples hold many different views about law's character and practice, within and across categories, which facilitates participation, freedom, agency, and choice.

There is one more source of law not outlined above that I want to focus on. This source flows from reasoning through analogy by looking to the earth (a.k.a. the biosphere) and how it functions in its interactions between plants, animals, fish, insects, water, air, humans, *etc*.

This process of reasoning by looking to the earth for criteria to guide our relationships is called akinomaagewin.[5] Aki is the first syllable, which means earth in Anishinaabe. Nomaage in the middle of the word means "to point towards and take direction from." I learned this word and practice from an Elder from my reserve, Basil Johnston. Akinomaagewin is the word for the process that analogies or distinguishes human obligation and opportunity by reference to the natural world. In this way, the Earth and its constituents can be regarded as a legal archive. Reading this law requires a literacy that would allow us to read the earth through language, experience, stories, deliberation, customs, song, dance, discussion, and observation through long periods of time. It can also be called environmentally derived law. This kind of law looks to the natural world as the precondition for the subsequent work

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4 John Borrows, *Canada's Indigenous Constitution* (Toronto: Toronto University Press, 2010).

5 John Borrows, "Earth Bound" in Michael Asch, John Borrows and Jim Tully, eds., *Resurgence and Reconciliation* (Toronto: University of Toronto Press, 2018) at 51.

and life that humans enjoy. It posits that we cannot be reconciled with one another unless we are also reconciled with the Earth.

One way we reference akinomaagewin is through our seven grandmother or grandfather teachings. In 2019, I published a book called *Law's Indigenous Ethics* from the University of Toronto Press which discusses this process.[6] I developed Anishinaabe legal ethics as constitutional obligations, and these grandmother and grandfather teachings are identified as Zaagi'idwin (love), Debwewin (truth), Nibwaakaawin (wisdom), Manaaji'idiwin (respect), Zoongide'ewin (courage), Gwayakwaadiziwin (honesty), and Dabaadendiziwin (humility). I will briefly focus on one of these words to illustrate what I mean by taking guidance and our laws from the earth.

Zaagi'idwin is our word for love. Elder Basil Johnston taught and wrote that love is related to our word for river mouth, Zaagiin.[7] This river flows through Grey and Bruce Counties in Ontario, and eventually empties into Lake Huron. As the river flows it captures energy from the land through the various tributaries and delivers that microbial life and nutrients through this channel at the mouth of the Zaagiin. If you had visited this site 300 years ago, you would have experienced it as the richest site throughout our territory. Since river mouths convey such high nutrient content, you would have witnessed an exceptionally significant diversity of life. For example, as a result of the microbial life, there would be many insects living in relationship with this diversity. Then, as a result of those insects, many fish would surge in and out of the river feasting on those insects. With the variety of insects and fish, birds would have gathered in profusion, to feast on the fish and insects. All this activity produces death and decay, which feeds the river banks and bottom, thereby producing the perfect conditions for a rich mixture of plant life. As a result of the abundance of fish, insects, plants, and birds, animals gather at river mouths in significant numbers. With all this activity, it should come as no surprise that human communities also regard river mouths as a desirable place to live.

You might ask how the ecology of a river mouth relates to law. In describing Zaagiin, I have given you an example of love. In our current world, love is blocked by metaphorical navigational markers and protected marinas. We need to remove some of the obstacles to love, which are convenient for human development, but which obstruct the broader world's healthy flow.

Love involves gathering beneficial energy from your experience in delivering through defined channels to others, including the more-than-human world. This energy generates the abundance and diversity necessary for the very conditions of life. If you want to practice Anishinaabe law, as I learned it from Basil Johnston, then you should immerse yourself in the river's lessons, to understand how human beings can be more loving to one another and the earth. The idea is to do what the river does, but within a human form.

Another example comes from my great-grandparents who lived like a river, with Zaagidiwin. They collected the goodness surrounding them and delivered it through defined channels to support a wide variety of life around them. My great-grandfather was a chief or council member in our community for

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6 John Borrows, *Law's Indigenous Ethics* (Toronto: Toronto University Press, 2019).

7 John Borrows, "Earth Bound" in Michael Asch, John Borrows and Jim Tully, eds., *Resurgence and Reconciliation* (Toronto: University of Toronto Press, 2018) at 54.

over 50 years. My great-grandmother was a midwife who delivered hundreds of babies. They had their own 11 biological children, and they also adopted and fostered many other children in an Anishinaabe way. They took care of themselves and others with the greatest respect and love.

Anishinaabe law can have many sources and objectives because, as I have stressed, it is ultimately the product of human deliberation. However, if we follow our strands of law, which reason in relation to rivers and other more-than-human forces, they can nurture healthier climates. This approach to constitutionalism is, fortunately, taking hold as Anishinaabe people translate their laws into written form. The natural world and the seven ancestral teachings are prominent in these developments. For example, the preamble to the Anishinabek Nation's Chi-Naaknigewin Constitution references law's Indigenous ethics in the following manner.

> Ngo Dwe Waangizid Anishinaabe. Debenjiged gii'saan anishinaaben akiing giibi dgwon gaadeni mnidoo waadiziwin. Shkode, nibi, aki, noodin, giibi dgosdoonan wii naagdowendmang maanpii shkagmigaang. Debenjiged gii miinaan gechtwaa wendaagog Anishinaaben waa naagdoonjin ninda niizhwaaswi kino maadwinan. Zaagidwin, Debwewin, Mnaadendmowin, Nbwaakaawin, Dbaadendiziwin, Gwekwaadziwin miinwa Aakedhewin. Debenjiged kiimiingona dedbinwe wi naagdowendiwin. Ka mnaadendanaa gaabi zhiwebag miinwaa nango megwaa ezhwebag, miinwa geyaabi waa ni zhiwebag.[8]

Through these commitments, the Anishinaabe people highlight the seven grandmother and grandfather laws and put them into written form. In English, the Constitution reads:

> One Anishinaabe family. Creator placed the Anishinaabe on the earth along with the gift of spirituality. Here on Mother Earth, there were gifts given to the Anishinaabe to look after fire, water, earth, and wind. The Creator also gave the Anishinaabe seven sacred gifts to guide them. They are: Love, Truth, Respect, Wisdom, Humility, Honesty, and Bravery. Creator gave us sovereignty to govern ourselves. We respect and honour the past, present, and future.

In reading these terms, you may notice that the climate is very prominently included as a part of this type of constitutionalism.

It should be acknowledged that the Anishinabek Nation's constitution sets high goals. You might wonder how ideas like love, truth, humility, wisdom, honesty, courage, or respect could be constitutional standards. They may appear to be too vague, too ambiguous, and too broad to do the work of law. It is the case that these principles can be vague, ambiguous, and have high aspirations attached to them. However, you might also remember that the Canadian constitution also contains ambiguity and has lofty goals. In Canada's *Constitution Act 1867* we read about the desire for Peace, Order, and Good Government.[9] In Canada's *Constitution Act 1982*, the Charter purports to 'guarantee' the rights and

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[8] Anishinabek Nation Chi-Naaknigewin at https://www.anishinabek.ca/governance/anishinaabe-chi-naaknigewin/.

[9] *The Constitution Act, 1867*, 30 & 31 Vict, c 3.

freedoms set out in it, such as life, liberty, security, and equality.[10] In considering Canada's broad constitutional objectives, we recognize these are broad aspirations too. Nevertheless, through time, citizens, legislatures, and courts give meaning to these laws in the stories we tell ourselves. They come to life as we interpret these words through cases that come to us wave after wave as people try to hold our governments to account on those principles. Anishinaabe people, in some of their legal activities such as constitutional drafting, are merely trying to do the same thing, and reinforce their underlying commitments to and with the natural world.

I hope you can see the climate governance implications in this strand of Anishinaabe law. If love were understood as flowing from and to the earth, our sacred, customary, deliberative, and declarative laws would reflect these principles. Practicing law by nesting ourselves within the more-than-human world, and promulgating interdependence is one way to strengthen our relationships with our rivers, plants, insects, birds, fish, animals, humans, and other beings. Anishinaabemowin functions through animacy and sees the earth as living, as a relative with whom you can communicate.[11] Anishinaabe people do not hear audible voices, but they have resources to deliberate about what various components of the Earth require by listening to its changes and the interactions of the different features. Language has been developed to facilitate these relationships. Anishaabemowin's nouns are not gendered by male and female, as you might find in French; they are gendered by animacy and inanimacy. Some of the nouns that are animate in the Anishinaabe language would be surprising to English speakers. Anishinaabe teachings, combined with observation, to which is added language, help people to see the Earth as a dynamic living entity that can teach us about its governance. It is also the case that our world is very verb oriented. Verbs are action oriented. 70% of Anishinaabe words are verbs. Thus, when you speak Anishaabemowin, you are heavily involved in conjugation, rather than categorization. There are many words for law itself, and they are all verb words, they indicate what people do and participate in. If we think of law itself as a verb, something we do, something we participate in, something we conjugate, then perhaps we will see there is an opportunity to enhance its participatory elements. The practice of law in relationship to the climate places a premium on governing ourselves in relationship with other life forms.

For example, Indigenous peoples on the western prairies and eastern slope of the Rocky Mountains have entered into treaties with bison, often known as the buffalo. Article one of the *Buffalo Treaty* expresses a commitment to a direct relationship with these beings:

> Recognizing BUFFALO as a practitioner of conservation, WE, collectively, agree to: perpetuate conservation by respecting the interrelationship between us and 'all our relations' including animals, plants, and Mother Earth; to perpetuate and continue our spiritual ceremonies, sacred societies, sacred languages, and sacred bundles to perpetuate and practice as a means to embody the thoughts and beliefs of ecological balance.

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[10] *Canadian Charter of Rights and Freedoms*, Part I of the *Constitution Act, 1982*, being Schedule B to the *Canada Act 1982* (UK), 1982, c 11, s 91(24).

[11] Basil Johnston, Honour Mother Earth: Mino-audiaduah Mizzu-Kummik-Quae (Cape Croker: Kegedonce Press, 2003); Robin Wall Kimmerer, "Learning the Grammar of Animacy (2017) 28 *Anthropology of Consciousness* 128–134.

Indigenous communities in Canada and the United States have legally pledged to work to see the buffalo run again from Yellowstone to the Yukon, "as a wild free-ranging animal and as an important part of the ecological system; to provide a safe space and environment across our historic homelands, on both sides of the United States and the Canadian border, so together WE can have our brother, the BUFFALO, lead us in nurturing our land, plants and other animals to once again realize THE BUFFALO WAYS for our future generations."[12] You can read the treaty online, and if you attend ceremonies related to its promulgation you can hear the songs attached to it and participate in its pipe ceremonies. Buffalo have now been put into the back country of Banff National Park as a result of this treaty, with the hope that there can be a reinvigoration of this landscape.

I hope you are seeing that Indigenous peoples have treaties with the natural world. Basil Johnston taught me that the first treaties the Anishinaabe people had were with the natural world, including the plants, animals, rocks, rivers, fish, deer, moose, caribou, and other more-than-human beings. Mutual obligations exist that all have a place and territory where all can sustain themselves. It would be wrong to see climate governance as being limited to monitoring and adjusting air quality. We will not have a healthier climate without healthy grasslands, trees, animals, birds, and other living beings.

Another example of the holistic possibilities of Indigenous climate governance comes from the Skeetchestn and Tk'emlups people in British Columbia's interior, who used their own laws to decide about whether to allow a gold mine to proceed in their territory.[13] They gathered in clans, with families across different bands, with elders, and youth family Councils. They took account of the water, the fisheries, the fauna, the flora, the sky world, the water world, and health, in their own legal terms. They practiced what Caroline Hilton calls Indigenomics.[14] In so doing, they decided not to pursue a mining project. In other cases, they did allow other development to occur in their territory. Throughout the country, you can find examples of environmental assessments that are either being run by Indigenous peoples, or required by them, when the Crown consults with them about development.

Each of these examples shows Indigenous peoples searching for places where their laws can be revitalized. Potlatch systems built on feasts that place reciprocity at their centre are growing on the west coast. They speak to the environment in strong ways. People dance their laws. Masks, totem poles, button blankets, and other physical representations of the natural world show their relationships with the fish, killer whales, cedar, and other more-than-human beings. Laws are pursued in feast halls which embody the broader climate, as people make decisions about harvesting, land use, water allocation, and a hundred other issues related to the changing world that surrounds them.

The attempt to create laws related to the natural world is good for climate governance. When laws grow from broader ecologic relationships there is a greater incentive to be mindful of life's sources. Of course, mindfulness is not sufficient to create mutual obligations between the human and more-

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[12] The Buffalo Treaty, "The Buffalo: A Treaty of Cooperation, Renewal, and Restoration", online: <https://www.buffalotreaty.com/treaty>.

[13] Stk'emlúpsemc te Secwepemc Nation, "Honouring the Vision of Our Ancestors", online: <https://stkemlups.ca/wp-content/uploads/2013/11/SSN_4Pager-v13-12.02-WEB.pdf> (illustration below drawn from this source).

[14] Carol Anne Hilton, *Indigenomics: Taking a Seat at the Economic Table* (Gabriola Island: New Society Publishers, 2021).

than-human world. Laws must be strengthened through pledges that hold consequences for nations who are non-compliant, particularly important when creating co-governance regimes between peoples with different worldviews. Indigenous peoples have attempted to do so through treaties. Anishinaabe and many Indigenous peoples entered into treaties with the Crown in our early years to try and create a multi-juridical legal engagement. For example, in 1764 Indigenous peoples and the Crown pledged to link arms together and to support one another.[15] A mountain is on the left side of the belt to signal the importance of rooting relationships between nations in the Earth. Other belts contain environmental images, such as rivers, lands, plants, and animals. In 1701, another important treaty memorialized terms that ended a 50-year war between the Haudenosaunee and Anishinaabe.[16] This treaty is represented by a purple circle in the middle of a white belt, and on the middle of the purple circle is a rectangle. This "Dish with One Spoon" treaty places the parties in a shared relationship with the living earth, which teaches and nourishes them. White beads mark the dominant theme of the agreement, which means peace. There are seven rows of white beads that are sewn into these hides, which can represent the seven grandmother and grandfather teachings, but also the seven directions of east, south, west, north, up, down and centre. The belt could be interpreted as incorporating the entire environment in engaging the parties, while taking care to ensure that the treaty is not interpreted as opening the land to all nations beyond the Haudenosaunee and Anishinaabe.[17] In the middle of the belt, as mentioned, is a purple object that represents a bowl, or a dish, which means the earth is a common bowl and we all eat out of the same dish. The small white rectangular object on the middle of the purple bowl in the middle reminds the parties that when they eat out of the earth's bowl they bring a spoon, rather than a knife or fork, which means that we must create conditions that are peaceful.

Though limited to particular parties, the concept underlying this treaty has significant implications for climate governance. We all eat out of one bowl – the biosphere. In sustaining our climate, we must find pathways of peace that include love, humility, respect, and honesty to ensure that we are not threatening one another or our relations.

My own great-great grandfather entered into a treaty dealing land in Ontario. Our traditional territory is bounded by what is now Goderich on the east coast of Lake Huron, from there to Arthur in the middle of the province, and then to Collingwood on the shores of Georgian Bay. When my ancestors made treaties, they put their clan markers on treaty documents to share our land with people coming from other parts of the world. In marking participation as otters, bears, pike, eagles, and other ancestral relatives, we were inviting people from other parts of the world to live in accordance with

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[15] For further discussion of this treaty see Alan Corbiere, *Anishinaabe Treaty-Making in the 18th- and 19th-Century Northern Great Lakes: From Shared Meanings to Epistemological Chasms* (PhD dissertation, York University, 2017), online: <https://core.ac.uk/download/pdf/322837923.pdf>; see also Great Lakes Research Alliance, "Treaty of Niagara", online: <https://grasac.artsci.utoronto.ca/?p=1636>.

[16] See Victor Lytwyn, "A Dish with One Spoon: The Shared Hunting Grounds Agreement in the Great Lakes and St. Lawrence Valley Region," in David Pentland, ed, *Papers of the Twenty-Eighth Algonquian Conference* (Winnipeg: University of Manitoba Press, 1997) 210.

[17] Dean Jacobs & Victor Lytwyn, "Naagan ge bezhig emkwaan: A Dish with One Spoon Reconsidered" (2020) 112 Ont Hist 191.

the Anishinaabe law.[18] We wanted to teach our laws to the settlers so they would see the rivers as places of love, they would see the fish and animals as our teachers, and our kin. As we entered into treaties with one another, we extended a governance pattern that would protect the environment and thus pass along our experiences regarding the land, water, and air's dynamic climate. [19]

I have tried to incorporate the principles discussed within the Indigenous Law/Common Law (JID/JD) program at the University of Victoria Law School, which was co-created with Professor Val Napoleon. In this program, we teach Indigenous law alongside the common law, through comparison and contrast. We teach in the classroom and on the land. I have also taught Anishinaabe law on reserves in Ontario, to students at Western Law School, Windsor Law School, Osgoode Hall Law School, and McGill Law School. The environment and its climate are a central feature of this work. I have also taught Anishinaabe law courses in the city of Toronto, at the University of Toronto law school. The course was listed in the catalogue with the following description: "Anishinaabe laws are a proud part of Toronto's natural landscape; the class will facilitate student understanding of Anishinaabe law by teaching and learning about how law is reflected in natural features within the city. Reference to the sources of law is a vital resource for regulating behaviour and resolving disputes. Students will hear and work with sources of Anishinaabe law found in traditional stories, the environment, treaties, declarations, customs, etcetera."

During this class, we visited the site of an old river buried under what is called Philosophers' Walk, in the heart of the campus in Toronto.[20] We talked about the river as a gathering site. We spoke about all our relationship to rivers in that place. Along the way, we taught law by telling stories about the cedar trees and maple trees, and the plants that were waiting for new life outside of Hart House. We went to the anthropology building and viewed the material evidence of the Haudenosaunee and the Anishinaabe's relationship with the natural world, which drew our attention back to Indigenous climate governance. Afterwards, we visited the Royal Ontario Museum and further discussed this issue by reference to historic clothing, transportation technology, household implements, and ceremonial items. During this course, we also visited Massey College's Chapel Royal, which is a Chapel of the Queen built to honour the Crown's relationship with Anishinaabe people, in the middle of the city. Our wampum belts are housed there, and we discussed the laws we advanced to attend to the more-than-human world as Indigenous peoples and Europeans encountered one another. This course was partially designed to help the students see that you do not require pristine spaces to understand the connection

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[18] *Chippewas of Saugeen First Nation v. Town of South Bruce Peninsula et al*., 2023 ONSC 2056 (CanLII) at paras. 71-75, 96. For parallel arguments see *Restoule v. Canada (Attorney General*), 2018 ONSC 7701 at paras. 412-423. For a general discussion of Anishinaabe perspectives related to treaty formation see Heidi Stark, Respect, Responsibility, and Renewal: The Foundations of Anishinaabe Treaty Making with the United States and Canada (2010) 34 *American Indian Culture and Research Journal* 145.

[19] When our people communicated with governments, they drew themselves as cranes, bears, fish, otters, and muskrats. They made the heart very prominent in their communications, with their hearts are connected to the Chief, who is a crane who voices the ideas of the nation. This is climate governance in pictorial form. See Wisconsin Historical Society, "Symbolic Petition of the Chippewa Chiefs", online: <https://www.wisconsinhistory.org/Records/Image/IM1871≥, citing Henry Rowe Schoolcraft, *The History of the Indian Tribes of the United States, Historical and Statistical Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States* (Philadelphia: Lippincott, Grambo & Co., 1851) at 414-17.

[20] For further discussion of this site see John Borrows, *Recovering Canada: The Resurgence of Indigenous Law* (Toronto: University of Toronto Press, 2002) at ix-xii, 159-62.

between climate governance and Indigenous law. This information is available in urban spaces if you know where to look.

The Supreme Court of Canada has written that a morally and politically defensible conception of Aboriginal rights will incorporate both Indigenous and common law perspectives.[21] This jurisprudence means that Indigenous perspectives on climate governance are necessary for implementing constitutional rights involving Indigenous peoples. This area of law has been described as a bridge between legal cultures.[22] The Court says the purpose of constitutional Aboriginal and treaty rights is reconciliation.[23] It would include Indigenous peoples' relationships to the more-than-human world, reinforcing the point that reconciliation with one another is premised on reconciliation with the earth. In this regard, Indigenous law's climate governance is a key part of Canadian law.

Indigenous peoples across the land already have long experience and laws related to environmental climate change. Climate change has occurred in deep time, human time, colonial time, and in our lifetimes. I have written about how Canadian law can benefit from a constitution that is rooted in the earth.

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21 *R v. Van der Peet*, [1996] 2 SCR 507 at para 42.

22 *Delgamuukw v. British Columbia*, [1997] 3 SCR 1010 at para 81.

23 *Mikisew Cree First Nation v. Canada (Governor General in Council),* 2018 SCC 40 at para 22.

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8 The Multi-narrative Nature of Climate Change Policy

Amelia Harman and Emily Jones

1. Introduction

This chapter introduces Dené history, culture, and values, with attention given to the authors' experiences of being Denésôliné (pronounced as Den-a-saw-cleeh-nay), who are a distinct group of Dené. It offers perspectives on how Indigenous narratives can assist efforts to respond to climate change. By doing so, we attempt to offer direction on how to facilitate a more holistic and inclusive approach to climate governance. This work was largely inspired by John Borrows' conference presentation on Indigenous law and how Indigenous law can help present solutions to climate change.[1] Borrows warns against what others call the "danger of a single story"[2] and emphasizes that it is possible to have "an enlarged vision," where diverse perspectives are engaged with and incorporated into the dominant narrative.

Borrows' work reminds us of the continued strength, resilience, and survival of Indigenous peoples in the face of swiftly evolving social, political, economic, and environmental landscapes. Like the Anishinaabe, climate is a core component of Dené well-being.[3] Although there is a "metaphysical consistency among Indigenous world views,"[4] there is a richness of diversity across Indigenous cultures. The values and knowledge systems across Indigenous cultures are heavily informed by the bioregion in which a distinct Indigenous nation is situated.[5] For example, the values, principles, and experiences of the Denésôliné are heavily informed by their need to survive in the harsh subarctic climate of what is now known as northern Canada.[6] Like those of many Indigenous groups, the values and knowledge systems of the Dené are legitimated and enshrined through oral storytelling.

With the benefit of Borrows' work on this topic, I co-authored this chapter with my grandmother,

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1 John Borrows, "Bridging Canadian Climate Governance to Indigenous Ethics" (Presentation delivered virtually at the Canada Climate Law Initiative Connecting Canada's Climate Policy Conference, 3 March 2021) [unpublished] [Borrows].

2 *Ibid*.

3 *Ibid*.

4 Mirjam BE Held, "Decolonizing Research Paradigms in the Context of Settler Colonialism: An Unsettling, Mutual, and Collaborative Effort" (2019) 18 Intl J Qualitative Methods 1 at 6 [Held].

5 Gregory A Cajete, "Indigenous Science, Climate Change, and Indigenous Community Building: A Framework of Foundational Perspectives for Indigenous Community Resilience and Revitalization" (2020) 12 Sustainability 1 at 2 [Cajete].

6 Brenda Parlee, John D O'Neil & Dené Nation, ""The Dené Way of Life": Perspectives on Health from Canada's North" (2007) 41 J Can Stud 112 at 120 [Parlee, O'Neil & Dené Nation].

Emily Jones, a well-respected Denésôliné elder and matriarch. We reflect on Borrows' warning against the dangers of a single story, the need to value a diversity of perspectives, and the importance of remaining receptive to alternative understandings of the world. A diversity of perspectives is important because it legitimizes solutions through a collective decision-making process and invites ideas which may not have been considered. This is an important consideration in the context of climate change and how we respond to it.

This chapter begins by providing information about the Dené, specifically the Denésôliné. Section two describes Dené principles and values, how these principles and values guide relationships among humans and between humans and the natural world, and current Dené observations and experiences relating to climate change. Section three discusses the importance of Indigenous narratives and the need to respect these narratives and the knowledge systems from which they are derived. It also discusses what this may look like in practice in the policy space. Last, the final chapter discusses the dangers associated with viewing Indigenous narratives from the dominant paradigm and offers direction on how to facilitate a holistic and more inclusive approach to climate governance.

2. Dené People and the Denésôsliné (Chipewyan Dené)

2(a) Dené People

The Dené, also known as Athapaskan peoples, are a distinct linguistic and cultural group spanning the region from Northern Canada and Alaska to the Southwestern United States.[7] In Canada, the Dené are comprised of various Indigenous nations, including but not limited to: the Denésôliné (also referred to as Chipewyan), Tlicho (also referred to as Dogrib), Dinjii Zhuh (also referred to as Gwich'in), South Slavey (also referred to as Deh Cho Dené), North Slavey (also referred to as Sahtú Dené), and Y'atsaot'ine (also referred to as Yellowknives).[8]

2(b) The Denésôliné

The Denésôliné traditionally occupy the northern boreal forest regions of the Northwest Territories, Alberta, Saskatchewan, and Manitoba.[9] In addition to commonly being referred to as "Chipewyan," the Denésôliné are also referred to as "Caribou Eaters," or "et-en-eldili-de."[10] Chipewyan means "pointed toes," a term given to the Denésôliné by the Cree during a period of intense hostility between the two groups "during the fur trade era."[11] The term "Caribou Eaters" was given to the Denésôliné by Settlers

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7 Michael I Asch, "Dené" in The Canadian Encyclopedia, online: <https://www.thecanadianencyclopedia.ca/en/article/dene>.

8 *Ibid*.

9 *Ibid*. See also Eung-Do Cook, "The Patterns of Consonantal Acquisition and Change in Chipewyan (Dëne Suliné)" (2006) Intl J Am Linguistics 236 at 237, n 2.

10 Anne Mease, "History of the Denesuliné (Dene) in Northern Saskatchewan", online: <http://digital.scaa.sk.ca/gallery/northern/content?pg=ex04-1> [Mease]; James GE Smith, "Chipewyan, Cree and Inuit Relations West of Hudson Bay, 1714-1955" (1981) 28 Ethnohistory 133 at 135 [Smith].

11 Mease, *supra* note 10. See Smith, *supra* note 10 at 137-47.

(non-Indigenous peoples) because the barren-ground caribou was the primary survival food for the Denésôliné;[12] the Denésôliné would often travel for multiple days and sometimes weeks to reach the caribou. Many Denésôliné, however, prefer to be referred to as Denésôliné, which means "Human Beings"[13] or "First People," or, simply, as Dené.

2(c) Dené Principles and Values

Dené narratives are derived from a holistic worldview that considers all relations as reciprocal and interdependent. Dené narratives imbue respect and responsibility for the natural world and for one another. While different Dené nations have their own creation stories, the stories share a common theme that the Earth was created by the Creator, and that the Creator put Dené people in Northern Canada for a reason. Dené knowledge systems are also rooted in certain principles and values, including respect, reciprocity, sharing and collaboration, honesty and fairness, and spirituality.[14]

For the Dené, respect involves listening to and taking care of one another. For example, in Dené culture, elders are held in high regard and treated with the utmost respect. It is customary for younger people in the community to assist and care for the elders. It also involves respect for the land, water, air, animals, and plants – that is, the natural world. According to Rene Lamothe of Fort Simpson, Northwest Territories:

> … the love and appreciation that Dené people have for the land can be found, in their tone of voice, a touch, the care for plants, the life of the people, and their knowledge that life as a people stems directly from the land. The land is seen as a mother because she gives life, because she is the provider, the protector, the comforter. She is constant in a changing world, yet changing in regular cycles. She is a story-teller, a listener, a traveller, yet she is still, and when she suffers we all suffer with her; and very often in many parts of the world, whether they believe this or not, many people suffer because they have abused their land. She is a teacher, a teacher who punishes swiftly when we err, yet a benefactress who blesses abundantly when we live with integrity, respect her, and love the life she gives. We cannot stand on her with integrity and respect and claim to love the life she gives and allow her to be ravaged.[15]

Reciprocity is also a central component of Dené knowledge systems. The Dené share reciprocal relationships with one another and with the natural world. Dené elders acknowledge this reciprocity and how the land, water, air, animals, plants, and humans communicate with one another. They emphasize that if you take care of the land, the land will take care of you. For example, the elders said that if you see a bear walking by and it follows you, you are supposed to talk to the bear, look at the bear, and in

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[12] Smith, *supra* note 10 at 135.

[13] Mease, *supra* note 10.

[14] This is not an exhaustive representation.

[15] Mel Watkins, ed, *Dene Nation: The Colony Within* (Toronto: University of Toronto Press, 1977) at 11. See also Larry Chartrand "Applying Dene Law to Genetic Resource Access and Knowledge Issues" in Chidi Oguamanam, ed, *Genetic Resources, Justice and Reconciliation: Canada and Global Access and Benefit Sharing* (Cambridge: Cambridge University Press, 2018) 138 at 139-40.

return, the bear will listen to you and not harm you. The Dené also share a strong relationship with the caribou and are acutely aware of the migratory routes and patterns of the caribou. In particular, the Denésôliné knew that "the caribou would always return to use traditional travel routes, … wintering grounds" and calving grounds.[16] Additionally, "if the caribou [didn't] see people for a long time, they [would] become lonely for humans" and migrate towards the Dené people.[17] Similarly, when the Dené were separated from the caribou for a period of time, they would feel lonely for the caribou.[18] The Dené would also care for the land, and the land would provide medicine for the Dené. Traditionally, rat root, spruce gum, bear grease, Labrador tea, beaver castor, and fish liver were used, among other things, to treat various ailments and illnesses that the Dené people experienced. Dené people use these traditional medicines today.

The traditional Dené way of life is also rooted in strong notions of sharing and collaboration, because survival depended on it.[19] Decisions were made with these values in mind, and respectful consideration was given to the natural world. Decisions were not made primarily out of self-interest. For example, during a caribou hunt, Dené people would work together to communicate caribou movements to one another. In particular, caribou movements "were tracked by communication networks of families and bands, each highly mobile within its own geographical locality."[20] If a hunt was successful, men from each family would get a free share of meat to bring back to their family. Although many Dené people continue to share meat, sharing meat is not as customary as it once was, and payment is sometimes required in exchange for it. Being true to oneself and to others is also important to the Dené. Dené people resolved conflicts in a fair, equitable, and peaceful manner, and disputes were traditionally dealt with using consensus decision-making.

Dené people have a strong spiritual connection to the land and "being out on the land [is] still of profound importance to the Dené people's sense of physical, spiritual, and emotional well-being."[21] Additionally, Dené legends said that "caribou, other animals and people are all related and in ancient times all spoke the same language."[22] Centuries ago, some Dené people were also born with the gift of predicting the future. A Dené person born with this gift said that in the future, there will be something up in the air and it will carry people. Today, it is believed that this story was referring to airplanes in the sky. Spirituality permeates every aspect of Dené life. For instance, when Dené people speak their mother tongue, engage in traditional activities on the land, and eat and cook traditional foods, it is sacred and spiritual for the Dené; it is part of the livelihood that they were born into.

The practice of these principles and values in our family are embodied in the love that we have for the Creator, the natural world, and for one another, which is demonstrated in the photographs below.

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16 A Kendrick & PO Lyver, "Denésoliné (Chipewyan) Knowledge of Barren-Ground Caribou (Rangifer tarandus groenlandicus) Movements" (2005) 58 Arctic 175 at 187 [Kendrick & Lyver]; See Smith, *supra* note 10 at 136.

17 Kendrick & Lyver, *supra* note 16.

18 *Ibid*.

19 Parlee, O'Neil & Dene Nation *supra* note 6 at 120.

20 Kendrick & Lyver, *supra* note 16 at 176.

21 Parlee, O'Neil & Dene Nation, *supra* note 6 at 127.

22 Brenda Parlee et al, "Traditional Knowledge: Barren Ground Caribou" (University of Alberta, 2013) [unpublished] at 4.

Emily Jones (nee Mercredi) and Raymond Jones with caribou meat hanging to dry circa 1960s. (Credit: Emily Jones.)

Emily Jones's father, Louie Martin Mercredi, and mother, Bernadette Mercredi, with Tamara Jones, the daughter of Emily Jones and Raymond Jones, circa early 1970s. (Credit: Emily Jones).

From left to right: Raymond Jones, Bertha Harman (née Jones), Michael Jones, Edward Jones, Dorothy Jones, and Emily Jones fishing in the Cracking Stone Peninsula on Lake Athabasca, south of Uranium City, Saskatchewan, circa 1960s. (Credit: Emily Jones.)

From left to right: Emily Jones, Bertha Harman (nee Jones), Eugene Jones, and Ray Jones, camping near Lake Athabasca, in Northern Saskatchewan, circa early 1970s. (Credit: Emily Jones.)

Emily Jones with five of her eight children, from left to right: Dorothy Jones, Angela Jones, Ray Jones, Michael Jones, and Bertha Harman (nee Jones) circa mid-1960s. (Credit: Emily Jones.)

These Dené principles and values guide relationships among humans and between humans and the natural world. In the context of climate change, these values and principles guide the Dené understanding of how humans should approach the environment and changes to it. Dené values, perspectives, and knowledge systems concerning the environment emanate from the experiences and observations that the Dené people had with the environment, which span multiple generations. When the natural world is occupied in a way that aligns with the Dené way of life and facilitates cultural expression, there is a balance in the natural world, and the natural world will continue to offer animals, water, and medicines to the Dené. Unfortunately, many Dené people, through no fault of their own, are living in a manner that does not correspond with these traditional practices.

2(d) Dené Observations of Environmental and Climate Change

An imbalance occurs when Dené people do not live by traditional values, principles, and ways of life.

This imbalance manifests in detrimental changes to Dené health and lifestyle and to the natural world. When Dené live off the land in a holistic and harmonic balance with the natural world and with one another, Dené people are healthy.

Due to changes in lifestyle and in the environment brought on by human disturbance to Indigenous communities and the natural world, wild animals, such as the caribou, are not as vibrant, healthy, or abundant as they once were. The caribou have been disappearing due to human interference with their migration routes and calving grounds, primarily as a result of resource development. Dené people are also dying from illnesses and diseases such as cancer and diabetes,[23] which rarely occurred in the past. Prior to colonial intervention, Dené people lived long lives and died naturally of old age. Moreover, the Dené language, which was once the primary language among the Dené, is now rarely spoken. This is largely due to the imposition of colonial law and policies, such as the residential school system, which sought to assimilate First Nations, Métis, and Inuit peoples into Euro-Canadian settler society.[24]

Resource development has polluted the land, the plants, the animals, and the water. Wildfires are more frequent and catastrophic; the environment is not as healthy as it once was. The berries are not the same anymore; they are not as abundant as they once were. The water is not as fresh as it once was. Dené people used to drink water straight from the lake, but today, many Indigenous peoples including the Dené, must boil their water just to brush their teeth. Pollution from resource development is seeping into the Athabasca River, and people are finding that some fish in the Athabasca River are sick or deformed, which never happened centuries ago. Pollution is killing the Dené. Moreover, unlike the past, where the Dené relied heavily on wood as a source of heat, the Dené are now heavily dependent on oil and gas for survival. They are caught between two worlds and have spoken about these challenges in the past and voiced their concerns. Despite these unfortunate realities, Dené values and knowledge systems continue to be integral to the Dené way of life and that of other Treaty 8 signatories, and younger generations are trying to revive what has been lost.

3. Treaty 8

3(a) Brief Overview

Despite the decline of the fur trade by the mid-1800s, there remained an influx of settlers westward into Indigenous territory.[25] At the same time, there was interest among the Dominion of Canada to encourage agricultural settlement in the prairies.[26] This interest led to the negotiation and signing by 1877 of the first seven numbered treaties between the Crown and respective Indigenous groups.[27]

In 1879, Indigenous groups north of the Treaty 6 region in Alberta and Saskatchewan and south of

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[23] Parlee, O'Neil & Dene Nation, *supra* note 6 at 24.

[24] National Centre for Truth and Reconciliation, "Residential School History", online: <https://nctr.ca/education/teaching-resources/residential-school-history/>.

[25] Christine Mary Smillie, *The People Left Out of Treaty 8* (University of Saskatchewan, 2005) [unpublished] at 2 [Smillie].

[26] *Ibid* at 1.

[27] Smillie, supra note 25 at 3; see also Indian and Northern Affairs Canada, *Treaty Research Report - Treaty Eight (1899)* (Ottawa: Treaties and Historical Research Centre Indian and Northern Affairs Canada, 1986) at 2-3 [INAC].

the Great Slave Lake region in the Northwest Territories expressed interested in entering into a new treaty with respect to the unceded lands in this region.[28] The federal government, however, was not initially interested in commencing treaty negotiations as this region was not suitable for agricultural development.[29] The federal government relinquished its responsibility to Indigenous groups in this area, claiming that these groups were not parties to any treaty.[30] It was not until 1980, after the discovery of gold in the Klondike region of Yukon and the discovery of petroleum in the Athabasca and Mackenzie Valley regions, that the signing of Treaty 8 was hastened.[31] The federal government established two separate treaty commissions to facilitate the treaty negotiation process. One commission was responsible for dealing with the treaty process relating to the Cree and the Dené, while the second dealt with Métis claims.[32]

Treaty 8 was eventually signed in 1899 near Lesser Slave Lake in Alberta by representatives of the Crown, Cree peoples – who occupied the region of the treaty encompassing Northern Alberta – and the Dené.[33] The Dené signatories consisted of the Chipewyan, who occupied the eastern region of Treaty 8; the Beaver, who occupied the western region; and the Slaveys and Dogribs, who occupied the northern region of the treaty area.[34] There were subsequent Indigenous adherents to the treaty from different posts covered by Treaty 8.[35]

3(b) Rights Provided under Treaty 8 and Canadian Courts

Treaty 8 confers legal obligations on the Crown and on the Indigenous signatories. The treaty, among other things, provides signatories the right to hunt, trap, and fish throughout the lands subject to the treaty.[36] The signatories of Treaty 8 signed the treaty on the promise by the federal government that their hunting, fishing, and trapping rights would be protected.[37] If it was not for these assurances by the federal government, it is very unlikely that the signatories would have signed the treaty.

Aboriginal rights and Treaty rights have since been afforded constitutional protection and have been affirmed by Canadian courts.[38] Despite this, Indigenous peoples in Canada are burdened with having to constantly defend their treaty rights from infringement by the Crown. Treaty 8 is no exception

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28 *Ibid* at 5.

29 *Ibid* at 4.

30 INAC, *supra* note 27 at 2; Smillie, *supra* note 25 at 4.

31 René Fumoleau, *As Long as This Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939* (Calgary: University of Calgary, 2004) at 26 [Fumoleau]; Smillie, *supra* note 25 at 6.

32 INAC, *supra* note 27.

33 *Ibid* at 1.

34 *Ibid*.

35 *Ibid*.

36 Department of Indian Affairs, *Treaty No. 8 Made June 21, 1899 and Adhesions, Reports, etc*. (Ottawa: Queen's Printer and Controller of Stationary, 1996 [1899]); Fumoleau, *supra* note 31 at 69.

37 Fumoleau *supra* note 31 at 26; Smillie, *supra* note 25 at 108.

38 *Constitution Act, 1982*, s 35, being Schedule B to the Canada Act 1982 (UK), 1982, c 11; see *R v. Marshall*, [1999] 3 SCR 456.

and remains subject to much litigation. Importantly, the decisions arising from these claims are a form of narrative that will continue to evolve the landscape surrounding the treatment of climate change and treaty rights in Canada, and the relationship between the two. The recent decision by the British Columbia Supreme Court in *Yahey v. British Columbia* exemplifies this.[39] In *Yahey*, the court ruled that the Province of British Columbia breached its obligation under Treaty 8 because it "permit[ted] the cumulative impacts of industrial development" on the traditional territory of the Blueberry River First Nation (BRFN). The Court found that the actions of the province ultimately diminished the ability of the BRFN to exercise their treaty rights.[40] *Yahey* is the first decision in Canada to recognize that cumulative impacts arising from industrial development authorized by a province can justify a treaty infringement.[41] The impact of *Yahey* is evident, and its precedent-setting decision is permeating provincial borders. In July of 2022, the Duncan First Nation (DFN), a Treaty 8 First Nation in northern Alberta, commenced legal action against the Province of Alberta alleging that the province unjustifiably infringed on its treaty rights by permitting industrial development on treaty territory.[42] The DFN's arguments mirror the successful arguments presented by the BRFN in *Yahey*. These legal narratives and the Dené narratives relating to climate change explored in this chapter will continue to shape the current state of climate change in Dené territory. Not only does climate change challenge western paradigms of understanding the environment, it also "presents an opportunity to demand recognition of their rights and their experience-based knowledge, drawing attention to the value of their traditions and cultural systems."[43]

4. Indigenous Knowledge and Climate Policy

Indigenous people have lived on the land for centuries and have had to adapt to changes in the environment. The knowledge gained from these experiences can assist existing efforts in responding to climate change. The mainstream narrative surrounding climate change has recognized aspects of Indigenous Knowledge; however, additional work needs to be done to ensure that Indigenous Knowledge is incorporated in a manner that respects Indigenous people and the knowledge that they share. To respect the message, one must also respect the messenger.

There is a labelling and marginalization occurring in respect of the recognition and incorporation of Indigenous Knowledge in the dominant narrative surrounding climate change. While labels may assist in the formation of our opinions and perceptions,[44] they can also represent a binary and

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39 *Yahey v. British Columbia*, 2021 BCSC 1287 [*Yahey*].

40 *Ibid* at para 1894.

41 Maureen Killoran et al, "Treaty Infringement Claims for Cumulative Effects Come to Alberta", *Osler* (2 August 2022), online: <https://www.osler.com/en/can-we-help-you-find-something?aspxerrorpath=/en/resources/regulations/2022/treaty-infringement-claims-for-cumulative-effects-come-to-alberta../>.

42 *Ibid*.

43 Amity A Doolittle, "The Politics of Indigeneity: Indigenous Strategies for Inclusion in Climate Change Negotiations" (2010) 8 Conserv & Soc 286 at 287.

44 Candice C Howarth & Amelia G Sharman, "Labeling Opinions in the Climate Debate: A Critical Review" (2015) 6 Wiley Interdiscip Rev: Clim Change 239 at 239.

noncomprehensive portrait of the narratives they seek to illustrate.[45]

Labels have the potential to become buzzwords,[46] which has the effect of alienating the narratives that underscore their true meaning and diminishes their value. The same narratives are then susceptible to being appropriated and being used "tokenistically" to fulfil self-serving goals and interests.[47] This is problematic, especially in the context of climate change research and policy, where processes endorsed as participatory and collaborative in nature "are not in practice."[48] While climate change research has made genuine efforts to incorporate Indigenous perspectives, the devaluation of Indigenous narratives still occurs.

Traditional Ecological Knowledge is a subcategory of Indigenous Knowledge and is defined as

> … a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment … [and] can include diverse kinds of narratives or observations by an [I]ndigenous person or group.[49]

The recognition and integration of Traditional Ecological Knowledge in Western research is not a new phenomenon. What is problematic, is that for decades, Indigenous Knowledge has been examined from the place of "researchers and policy makers"[50] (many of whom are non-Indigenous). Examining Traditional Ecological Knowledge solely from this lens is dangerous because it often endorses a highly technocratic narrative of how citizens should relate to the environment. It is sometimes used to fuel narratives that promote self-serving interests rather than communicating the true meaning of the message. This use has an alienating effect on Traditional Ecological Knowledge, rendering it unsophisticated, and confusing what it is and what it means.

Often, the research process situates Traditional Ecological Knowledge in ways that lack a comprehensive knowledge and understanding of the unique cultures from which the knowledge is derived.[51] It has led to a "cherry-picking" of Traditional Ecological Knowledge whereby information that provides a solution to a research problem is highlighted and integrated into the research.[52] From this perspective, Traditional

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45 *Ibid* at 246.

46 James D Ford et al, "Community-Based Adaptation Research in the Canadian Arctic" (2016) 7 Wiley Interdiscip Rev: Clim Change 175 at 177 [Ford et al]. See also Leanne Simpson, "Aboriginal Peoples and Knowledge: Decolonizing Our Processes" (2001) 21 Can J Native Stud 138 at 138 [Simpson].

47 *Ibid*.

48 *Ibid* at 179.

49 Fikret Berkes, "Traditional Ecological Knowledge Perspective" in Julian T Inglis, ed, *Traditional Ecological Knowledge: Concepts and* Cases (Ottawa: Canadian Museum of Nature and the International Development Research Centre, 1993) 1 at 1-3. See Clarence Alexander et al, "Linking Indigenous and Scientific Knowledge of Climate Change" (2011) 61 BioScience 477.

50 Research and Analysis Directorate, Department of Indian Affairs and Northern Development, *A Community Guide to Protecting Indigenous Knowledge* (Ottawa: Minister of Indian Affairs and Northern Development, 2001) at 1.

51 Simpson, *supra* note 46 at 139-40.

52 *Ibid* at 138-39.

Ecological Knowledge is susceptible to becoming a buzzword and being commodified.[53] When this happens, the knowledge can lose its inherent value and become misrecognized and misunderstood by the lens from which it is translated through. Consequently, Traditional Ecological Knowledge is no longer recognized for its value, as well as its dynamic and innovative nature, and instead, is susceptible to being "appropriated, marginalized and even used against [Indigenous peoples]" to maintain existing policies "and the status quo."[54]

This approach can also hinder one's ability to recognize and appreciate the diversity of Indigenous communities and the unique experiences they hold. It is important to remember that Indigenous narratives cannot be reduced to a "unified grand narrative of human-environment relations."[55]

Although focus was given to Traditional Ecological Knowledge and its incorporation into climate change research and policy development, the same rationale can be applied to "Indigenous ethics" and "Indigenous law." Actors in the climate governance space must be acutely aware of the dangers associated with labels. They must remain cognizant of potential tendencies to co-opt or assimilate information to legitimize a narrative.

4(a) Facilitating Indigenous Engagement and Inclusion in Practice

There are ways in which Traditional Ecological Knowledge can be better included in current forms of policy development and climate governance in a way that recognizes and appreciates the diversity and value that Indigenous Knowledge offers. There is no one-size-fits-all approach; however, the establishment of the Indigenous Advisory Committee (IAC) by the Canadian Energy Regulator (CER) and the CER's efforts to consult with Indigenous groups at the beginning stages of the decision-making process for proposed projects, serve as examples.

After a company has formally notified the CER that it is planning a project, the CER "will identify Indigenous communities whose rights and interests may be impacted by [the proposed] project."[56] It will then contact the potentially affected Indigenous communities to understand how the proposed project will impact "their rights and interests."[57] The CER will also explain the "regulatory process" and how Indigenous communities can participate in the process.[58] The CER will also "provide information on the CER's participant funding program."[59] The purpose of this funding program is to facilitate greater

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[53] *Ibid* at 140.

[54] *Ibid* at 139-40.

[55] Siri Veland, & Amanda H Lynch, "Scaling the Anthropocene: How the Stories We Tell Matter" (2016) 72 Geoforum 1 at 1-5 [Veland & Lynch]. See Richard Howitt, "Decolonizing People, Place and Country: Nurturing Resilience across Time and Space" (2020) 12 Sustainability 1 at 7 [Howitt].

[56] Canada Energy Regulator, "Crown Consultation", online: <https://www.cer-rec.gc.ca/en/consultation-engagement/crown-consultation/#s3>.

[57] *Ibid*.

[58] *Ibid*.

[59] *Ibid*; see also Canada Energy Regulator, "Participant Funding Program", online: <https://www.cer-rec.gc.ca/en/applications-hearings/participate-hearing/participant-funding/> [CER].

participation of the public, particularly of Indigenous people, in the CER public hearing process.[60]

It is also important that Indigenous communities have the opportunity to meaningfully participate in the consultation process in a way that ensures they can properly internalize and assess what is being presented before them. Canadian governments and their administrative agents could offer professional resources, such as educational, financial, administrative, and legal resources to Indigenous communities to help them obtain the capacity required to properly assess the information that is being presented to them.

In 2020, the CER established the IAC for the purpose of enhancing Indigenous involvement "in respect of CER-regulated pipelines, power lines and offshore renewable energy projects as well as abandoned pipelines."[61] Three members of the IAC are nominated by the Assembly of First Nations, the Métis National Council, and the Inuit Tapiriit Kanatami, all of which are Indigenous-led national organizations.[62] Remaining members of the IAC are selected by CER's Board of Directors, which "tak[es] into account Canada's diversity of Indigenous Nations and communities, languages, genders, geographies, skills and expertise."[63] Importantly, the IAC is an integral part of the CER's governance structure.[64]

The CER's approach to facilitating Indigenous engagement and inclusion is not perfect, however, it can serve as a model for how to better facilitate more meaningful Indigenous participation in climate policy-development. It also demonstrates how we can better incorporate Indigenous Knowledge in practice, whereby Indigenous people also have an opportunity to have a seat at the table and be involved in the decision-making process from the very start.

5. Deconstructing Approaches to Climate Change

While existing research has provided innovative solutions to address climate change, it often presumes that there is a single narrative governing our understanding of the environment.[65] Dominant narratives often operate from a linear perspective and "imply (or perhaps simply assume) that only interventions that conform and respond to the linear narratives of progress will shift the narrative and the outcome" of climate change.[66] Addressing climate change solely from a dominant lens is problematic because it could hinder collective efforts to respond to it. The extensive knowledge and experience that Indigenous peoples have in adapting to climate change and other changes in the environment speaks to the immense value that Indigenous peoples have to offer in terms of providing insight about climate

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60 *Ibid*, CER.

61 Canada Energy Regulator, "Indigenous Advisory Committee", online: <https://www.cer-rec.gc.ca/en/about/who-we-are-what-we-do/organization-structure/indigenous-advisory-committee/index.html>.

62 *Ibid*.

63 *Ibid*.

64 *Ibid*.

65 Howitt, *supra* note 55.

66 Veland & Lynch, *supra* note 55 at 4. See Howitt, *supra* note 55.

change.[67] While Indigenous resilience and survival challenges dominant narratives "of their extinction, disappearance, absorption, inferiority, or irrelevance,"[68] one must be aware that threats to Indigenous survival are still present and are heightened "under various forms of colonial governance."[69]

What is required is a critical analysis – or a decolonization – of the dominant lens from which climate change is viewed. We must be cautious of dominant approaches to climate change as they often run contrary to Indigenous worldviews and have tendencies to commodify the environment – for example, by "simplifying the definitions and uses of forest."[70] Indigenous understandings of the environment do not focus solely on human-environment interactions. Unlike Western knowledge, Indigenous narratives are highly contextual and bioregional specific.[71] They do not focus on material objectivity, nor do they engage an "either-or logic."[72] Moreover, Indigenous Knowledge is not solely about understandings of the environment – it is about "human and non-human entities,"[73] the natural world, principles, values, processes, and worldviews, and it is deeply rooted in spirituality. Indigenous Knowledge can only be understood in respectful reference to these components.[74] This will help inform our understanding of climate change, and it will allow actors in the climate governance space to "be open the possibilities to consider everyday practices to engage with the territory and political action to face climate change in a more holistic way."[75]

Authentic and effective climate governance does not merely involve a consideration and incorporation of Indigenous and other marginalized narratives. A holistic approach to climate action involves equitable and meaningful collaboration and participation by Indigenous peoples in climate policy discussions from the very start. It also requires actors to be acutely aware of dominant perspectives and engage in a critical reflection of those perspectives. More importantly, it involves "acknowledging the legitimacy of Indigenous and other previously marginalized knowledges"[76] and wisdom. Indigenous knowledge systems hold immense value "for understanding and adapting our human communities to changes in our natural world."[77] Actors in the climate governance space must be cautious of placing too much credence in a single perspective, or understandings of climate change and responses to it could lead to false findings and negative climate outcomes.[78]

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67 Borrows, *supra* note 1.

68 Howitt, *supra* note 55 at 6.

69 *Ibid*.

70 *Ibid* at 133.

71 Cajete, *supra* note 5.

72 *Ibid*.

73 Simpson, *supra* note 46 at 143.

74 *Ibid*.

75 *Ibid*.

76 See Teresa McDowell & Pilar Hernandez, "Decolonizing Academia: Intersectionality, Participation, and Accountability in Family Therapy and Counseling" (2010) 22 J Fem Fam Therapy 93. See Held, *supra* note 4 at 11.

77 Dominique M David-Chavez & Michael C Gavin, "A Global Assessment of Indigenous Community Engagement in Climate Research" (2018) 13 Envtl Res Lett 13 at 14.

78 Ford et al, *supra* note 46 at 179.

6. Conclusion

This chapter has introduced Dené history, culture, and values, with attention given to the authors' experiences of being Denésôliné. In light of Borrows' discussion of Indigenous ethics and Indigenous law and the implication of each in how we respond to climate change, this chapter discusses the immeasurable value of Indigenous narratives, as well as the values, knowledge systems, and cultural structures that lay beneath such narratives. It warns against tendencies of oversimplifying or ghettoizing[79] Indigenous narratives, misunderstanding the meaning of Indigenous Knowledge, and placing too much focus on a singular perspective. Reconciliation between Indigenous and non-Indigenous peoples is not achievable unless we collectively reconcile with the earth.[80] In order for climate governance to be participatory and collaborative in practice, engagement cannot be viewed as a procedural imperative, but instead, as "an ongoing [ethical] process of dialogue and engagement" [81] that is founded on mutual trust, honesty, and respect. This approach provides an equitable space where diverse actors can work together to find ways to respond to climate change collectively and positively.

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[79] Borrows, *supra* note 1.

[80] Asch, Michael I et al, *Resurgence and Reconciliation* (Toronto: University of Toronto Press, 2018) at 266. See also Borrows, *supra* note 1.

[81] Ford et al, *supra* note 46 at 179.

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PART FOUR

Canada's Climate Policy Network in Practice

9 The Cusps of Canada's Climate Policy Network

Rachel Samson

In my previous role as Research Director for Clean Growth at Canada's Canadian Institute for Climate Choices (now the Canadian Climate Institute), I was asked to write about my practical experience with the climate policy network in Canada. Since that time, I have changed roles and am now the Vice President of Research at the Institute for Research on Public Policy.

My diverse professional experience spanning government, consulting, and think tanks has shaped my perspectives on Canada's climate policy network. I worked for 15 years with the federal government, mainly on climate and energy policy. I worked in six different federal departments: Natural Resources Canada, the Privy Council Office, Finance Canada, the Treasury Board Secretariat, the Canadian Environmental Assessment Agency, and Environment Canada.[1] My time in the public service spanned three different Prime Ministers – two Liberal and one Conservative. After leaving the government in 2014, I spent five years as an independent consultant, mainly working with the Organization for Economic Cooperation and Development (OECD) on green growth research and environmental performance reviews of OECD countries. One of the reviews I worked on was of Canada.

I will focus on my perceptions regarding Canada's climate policy network on the pros and cons of interactions between government and academia and between government and industry. I will start with two examples of my experiences in these respective areas.

In terms of government interactions with academia, I will draw on my experience at Environment Canada. In the early 2010s, I was the director of a group that led the creation of an Academic Engagement Strategy for policy and economics for the department. While public servants regularly collaborated with academics on science, there was less interaction on policy analysis. Our strategy therefore targeted greater interaction with social scientists on policy-relevant research. The strategy had three different components:

1. a speaker series, which brought in leading thinkers on environmental policy issues to present to staff;
2. a research network, which brought together policy advisors and academic social science

[1] The Canadian Environmental Assessment Agency is now the Impact Assessment Agency of Canada, and Environment Canada is now Environment and Climate Change Canada.

researchers to improve knowledge-sharing;[2] and

3. a visiting scholar initiative, which provided an opportunity for academics to work within the department for up to a year. Andrew Leach (currently Professor, Department of Economics and Faculty of Law, University of Alberta) was our first visiting scholar under the initiative at Environment Canada.

With respect to government interaction with industry, I will draw on one of my early experiences in the federal government. In the late 1990s, right after Canada signed the *Kyoto Protocol*, the Chrétien government launched the National Climate Change Process. The process included a series of sector and issue tables that brought together representatives from industry, provincial governments, non-government organizations, and academia. The initiative lasted almost two years and covered a wide range of challenging issues and analytical questions. It culminated in detailed reports for each table that outlined policy options to meet the Kyoto targets. I worked as part of the secretariat supporting the Electricity Industry Issues Table.[3]

These experiences provided some insights into the pros and cons of greater government collaboration with academia and industry (Figure 1). An important benefit of governments working more closely with academia is the improvement of policy development and decision-making, with a greater depth to the evidence and analysis used to provide advice. From an academic perspective, collaboration can mean more policy-relevant research. It can also provide a practical application for research if governments use it to inform decisions.

Figure 1: The Pros and Cons of Government Collaboration

	Pros	Cons
Government—Academia	Evidence-based policy	Academic rabbit holes
	Policy-relevant research	Messy research problems
Government—Industry	Innovative policy	Regulatory capture
	Intra & inter-industry collaboration	Endless process

On the con side, being too involved with academics can lead public servants down deep rabbit holes. There is always a need for more research, more analysis, and more data to answer policy questions.

[2] The Economics and Environmental Policy Research Network (EEPRN) is hosted by the University of Ottawa's Institute of the Environment in partnership with Environment and Climate Change Canada (ECCC) and the Smart Prosperity Institute (SPI).

[3] National Climate Change Secretariat (Canada), "Electricity Industry Issues Table Options Paper", online: <https://publications.gc.ca/site/eng/413992/publication.html>.

There is, however, a point of diminishing returns in terms of making decisions and moving forward. The pace of government decision-making is also often too fast to wait for additional research or data gathering. I have heard from an academic perspective that real-world policy problems are messy, and do not always make for a strong, publishable paper within a specific discipline. This mismatch between timing and scoping can be a big challenge for effective collaboration.

There are also benefits to greater government collaboration with industry. When it works well, governments can develop innovative policy ideas that support both industry success and the achievement of climate policy objectives. The output-based pricing system developed in Alberta – now used federally – is a good example of policy innovation.[4] It was developed as a compromise solution to carbon pricing after various federal regulatory proposals had failed to secure sufficient government support, largely due to private sector opposition and concern regarding the economic impact of regulation.

Governments can also play an important convening role in bringing together and promoting industry collaboration, both within an industry and between industries. For example, governments could connect some of the larger emitters with emerging clean technology firms, to mutual benefit. For example, a steel producer looking to shift from coal to hydrogen might be looking for a reliable supplier. Or a mining company may be looking to shift to electric drills and vehicles.

However, there can also be negative aspects of government–industry collaboration. Historically, government processes with industry have focused on large incumbent players. While those interactions are important, they can lead to favouring incremental policy approaches, as opposed to thinking about some of the bigger and bolder things that might result in greater benefits to new entrants or smaller companies. I heard from an industry perspective that government processes are not always efficient or productive. They can take significant time and effort. Often, only large incumbent companies have the resources to be deeply involved. This can reinforce government tendencies to favour the status quo.

Looking forward, these insights can inform consideration of the types of policy networks needed to achieve Canada's policy objectives. In 2021, the Canadian Climate Institute published a report that explored different pathways to reach net zero greenhouse gas emissions by 2050 (Figure 2).[5]

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[4] Government of Canada, "Output-Based Pricing System", online: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system.html>.

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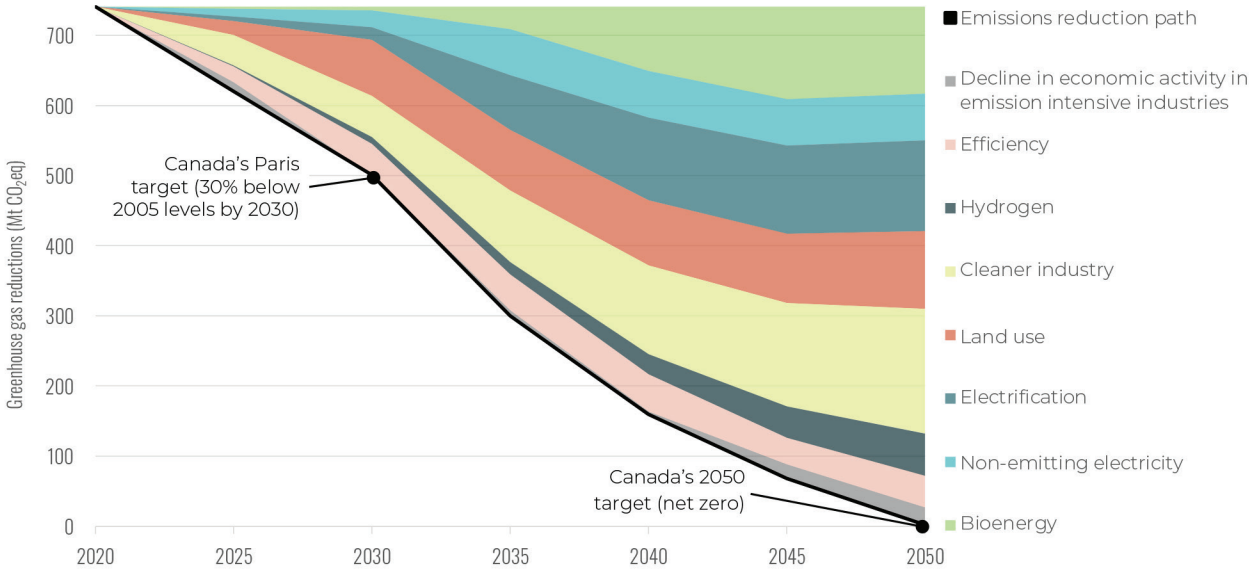

Figure 2: One of the Potential Pathways for Canada to Reach Net Zero by 2050

Source: Canadian Climate Institute, "Canada's Net Zero Future", online: <https://climateinstitute.ca/reports/canadas-net-zero-future/>.

The report showed that transition to net zero will require significant change across Canada's economy and society. As governments develop transition plans, they need to think more broadly about who needs to be involved in the conversation. Civil society could also do a better job of convening and supporting inclusive dialogues. For example, Indigenous peoples have historically been left out of policy discussions and need to be included in plans that will impact their well-being, livelihoods, and traditional lands. Youth also need to be involved, since they will be the ones to bear not only the brunt of climate change but also the implications of economic restructuring in terms of employment and government fiscal capacity.

We should also not forget the adaptation side of the equation. As we focus on reducing emissions, we are also inevitably going to be dealing with a changing climate (Figure 3).[6] There will be increased risks of wildfires and floods, more intense heatwaves that impact health, and other effects that require greater effort to protect people and assets. As we think about policy networks, we should also think about how to integrate adaptation considerations more effectively into net zero transition planning.

[6] Canadian Climate Institute, "Tip of the Iceberg", online: <https://climateinstitute.ca/reports/tip-of-the-iceberg/>.

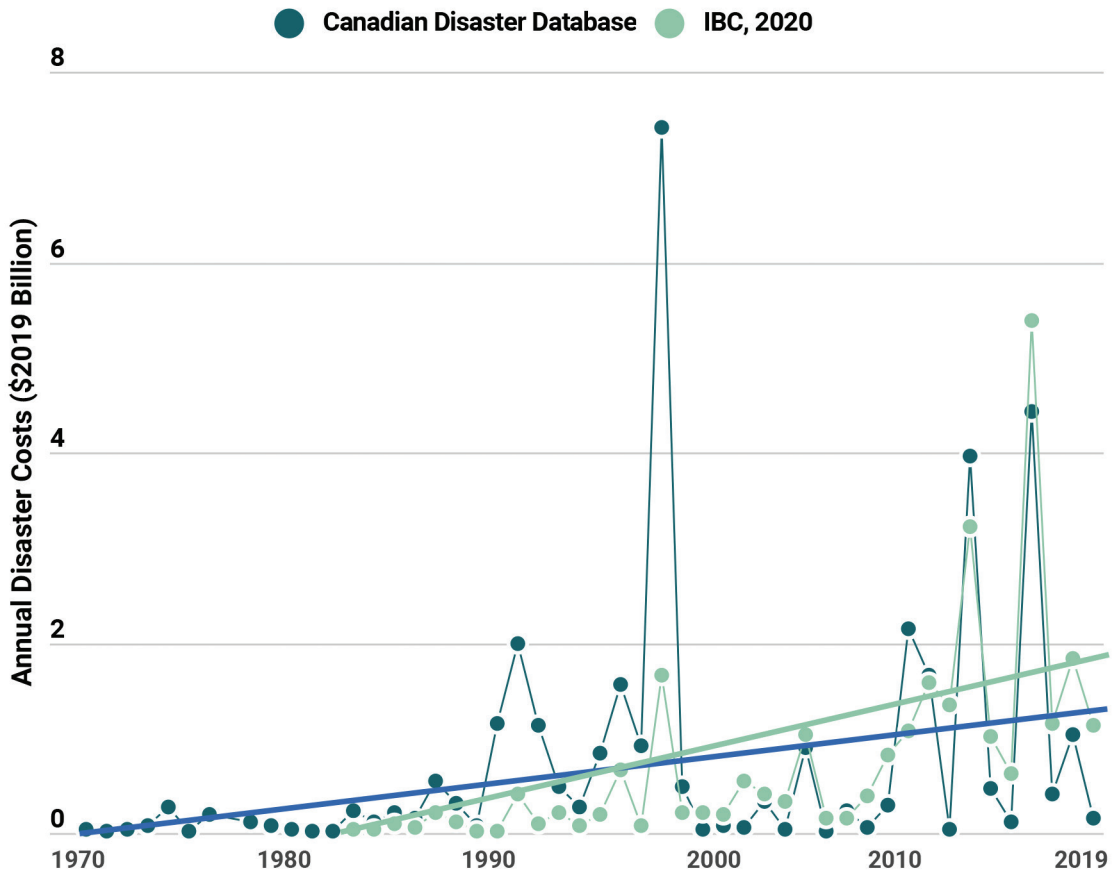

Figure 3: Annual Disaster Costs between 1970 and 2019

Source: Canadian Climate Institute, "Tip of the Iceberg", online: <https://climateinstitute.ca/reports/tip-of-the-iceberg/>.

In 2020, the Canadian Climate Institute published a paper, titled *11 Ways to Measure Clean Growth*, that outlined a set of shared climate, economic, and well-being objectives that could help guide transition planning (Figure 4).[7] Thinking about potential areas of synergy and conflict between objectives can help to define important policy questions.

For example:

- How do we reduce emissions while growing the economy?
- How do we improve resilience to a changing climate, while protecting the most vulnerable in society?

Questions that focus on solving shared objectives can lead us to more productive places than conversations that pit objectives against each other.

[7] Canadian Climate Institute, "11 Ways to Measure Clean Growth", online: <https://climatechoices.ca/reports/clean-growth/>.

Figure 4: Measuring Progress towards Clean Growth

Source: Canadian Climate Institute, "11 Ways to Measure Clean Growth", online: <reports/clean-growth />.

The report grouped the 11 clean growth indicators shown in Figure 4 into goals, catalysts, and foundations for transition. The goals are to achieve economic growth while both reducing emissions and improving resilience to a changing climate. The catalysts are things that will help achieve the goals: technology development, technology adoption, low-carbon and resilient trade and competitiveness, and low-carbon and resilient infrastructure investment.

Foundations are issues that could positively or negatively impact well-being outcomes. Job growth, affordable energy, protecting those vulnerable to a changing climate, improving air quality, and protecting and conserving ecosystems will reinforce and enable progress while helping to ensure that transition builds a better future for all Canadians.

This type of breakdown of shared objectives can inform approaches taken to improve Canada's climate policy network. Thinking about climate change as one big challenge can be overwhelming. Viewing it as multiple challenges can help to identify the actors needed to overcome barriers and accelerate progress.

The Canadian Climate Institute has three multi-disciplinary expert panels that guide its research under the policy streams of mitigation, clean growth, and adaptation. For each report that the Institute publishes, it also engages with industry, Indigenous organizations, and provincial and federal governments to get early feedback on analysis and recommendations. Organizations like the Climate Institute can help overcome some of the downsides of government-led collaboration by integrating a wide range of perspectives and knowledge into policy research, analysis, and advice.

References and Further Reading

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10 Corporate Commitment to the Climate Imperative: The Case of Suncor

Arlene Strom

The Cree word "wahkotowin" denotes the interconnected nature of relationships, communities, and natural systems and can be a powerful anchor for how we work, live, and relate to one another. This mindset is critical if we want to collectively use our strengths, our capacity, and resources to help provide energy for all, while also addressing the climate imperative and participating in the energy transition.

Below is my reflection on the power of interconnection – the power of collaboration and respect. I learned early in my career from great leaders like Rick George, the long serving chief executive officer of Suncor Energy Inc., that learning occurs through meaningful and respectful engagement. Furthermore, I am convinced that trusting relationships lead to new insights, sometimes new ambition and action, and are an imperative if we are to make progress on complex global challenges like climate change.

1. Relationships Formed through Deep Engagement Matter

Deep and meaningful engagement can help set the foundation for a strong relationship. It helps to uncover shared interests, common ground, and sometimes, an unexpected, shared vision. In other situations, meaningful engagement only uncovers a better understanding of perspectives and a shared humanity. The value of relationships is not always readily apparent and may manifest over time.

Shortly after the 2009 Suncor/Petro-Canada merger, I attended my first annual general meeting (AGM) as Vice President of Communications and Stakeholder and Aboriginal Relations. At the time, Bruce Cox was leading Greenpeace Canada and was planning to attend our AGM. We did not know what to expect, because about six months earlier, Greenpeace had staged a protest, chaining themselves to some of our extraction equipment. We had begun an action against Greenpeace and certain individual activists that had been part of this civil disobedience.

Our chief executive officer (CEO) at the time, Rick George, asked me to set up a meeting with Bruce Cox around the AGM. Rick never side-stepped a meeting with a stakeholder, and I learned an important lesson through that engagement. The two leaders met, and Rick opened the conversation by saying "Bruce, I bet that 90% of our hopes for our country, for our communities, for our families – are hopes we share in common." I cannot tell you what Bruce thought, but Rick surprised me with his desire to engage and to listen. In that conversation, some very difficult issues were discussed and there were

disagreements. But that conversation led to other conversations, and dare I say – I learned from the experience.

Eventually we dropped the lawsuit, but more significant was the pattern of engagement with Greenpeace that followed. A couple of times per year, we would meet to share perspectives, answer questions about what was changing, and consider what was important. We gained a better understanding of one another's ambitions and even discussed areas where we might possibly have shared ambitions. I cannot measure the success of those interactions with any substantive or traditional metric, but I believe those meetings were seeds that began to germinate and potentially even helped in an indirect way to inform our purpose "to provide trusted energy that enhances peoples' lives while caring for each other and the earth."[1]

There are numerous other examples where engagement and relationship-building have delivered an easier-to-measure outcome. But because the engagement between Rick and Bruce was so unexpected for me, the lesson was particularly powerful. Rick's philosophy of engagement still resonates with me: "we" cannot possibly have all the good ideas. In a way, at Suncor we have embedded that philosophy in our values – emphasizing that curiosity and lifelong learning are important values at our company.

What we learn through engagement informs our strategy, our ambitions, our sustainability goals, our greenhouse gas (GHG) goals, our climate reporting, our equity partnerships with Indigenous communities, our collaborative partnerships through the Suncor Energy Foundation, and our collaboration with our industry peers and government.

2. It Is Not Always the Usual Suspects Who You Need

Around 2014, we were approached by one of our shareholders, Northwest & Ethical Investments (NEI), who were planning to put forward a shareholder resolution encouraging us to enhance our climate disclosure. Because we had a long-standing relationship and engagement with this shareholder, we were open to what they were proposing. NEI had been a constructive participant in many of our annual stakeholder sessions facilitated by Ceres, an organization that works with investors, companies, and the capital market to encourage action on various sustainability issues. We believed they wanted us to be successful and to continuously improve our sustainability performance. With that strong foundation, and even though they were not one of our largest shareholders, we worked together, and Suncor management was able to recommend support of the resolution they proposed. The resolution was subsequently adopted by over 95% of the shareholders who voted on it.

The following year, we released a report on climate risk and resilience, incorporating scenario analysis and stress-testing our strategy against those scenarios. Scenarios describe potential events long into the future. Importantly, scenarios must be plausible based on current data, trends, and milestones. They are not predictions of the future or expressions of a desired future; instead, they are tools to assess impact on our business if we stay the course with a defined strategy and if a plausible scenario occurs.

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[1] Suncor, "Our Purpose and Values", online: <https://www.suncor.com/en-ca/who-we-are/purpose-and-values>.

By enhancing the scenario analysis that we are already doing and communicating our assessment of the impact on our business in various scenarios, we can help investors and other stakeholders better assess whether they have confidence in our long-term sustainability. We currently continue to release a climate report alongside our Report on Sustainability and utilize these tools in our ongoing strategic discussions.

This successful enhancement in our disclosure occurred after a decade or more of deep engagement with NEI Investments. We understood their motivations and trusted their advice. Because we took this step to publish a climate report, our subsequent leadership actions seemed natural: we became the first Canadian energy company to sign on in support of the recommendations from the Task Force on Climate-Related Financial Disclosures. We also elevated carbon risk (or climate risk) to a principal risk, reviewed regularly by our company's Board of Directors. In the past five years, many others have followed. However, we made changes and learned lessons early because of a trusted relationship and long-term engagement with a relatively small shareholder.

3. **Sometimes, the Usual Suspects Are Just Who You Need**

Engagement is not just an exercise in understanding the perspectives of those with varied interests. Significant and important collaborations can sometimes only occur with industry peers. When several oil sands companies came together to form Canada's Oil Sands Innovation Alliance in 2012, their mantra was that we could not afford to compete on environmental performance. By committing to work collectively, historic rivals began to share intellectual property and technology solutions. This important collaborative work continues today, and all participants have benefited from our alliance.

Another example of such collaboration is Evok Innovations. In 2016, Suncor and Cenovus co-founded this BC clean tech venture capital firm with the support of the BC Cleantech CEO Alliance. Cenovus and Suncor have each invested CAD 50 million into this organization focused on accelerating the energy transition by bringing together British Columbia's clean tech industry and Alberta's oil and gas sector. The collaboration works to advance new technologies that help address the most pressing environmental and economic challenges facing the oil and gas sector.

Suncor is also focused on reducing emissions in our base business. Over the past decade, we have invested significantly in projects and technologies to lower our base business GHG emissions. For example, we deployed leading technologies at our Fort Hills mine that not only improve product value but enhance overall efficiency. The resulting emissions intensity is similar to the typical barrel refined in North America, on a full life-cycle basis.[2] Another example, our newest 800-megawatt cogeneration facility which is expected to be online by 2025, will make Suncor Alberta's third-largest power producer, representing annual emissions benefits equivalent to more than one million cars coming off the roads, while delivering an estimated 20% investment return.

Most recently, six companies, representing 95% of Canadian oil sands production, have come together

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[2] Kevin Birn et al, "The Right Measure: A Guidebook to Crude Oil Life-Cycle GHG Emissions Estimation", *S&P Global* (March 2022), online: <https://www.spglobal.com/commodityinsights/en/ci/Info/1020/right-measure.html?utm_campaign=PC021983&utm_medium=banner&utm_source=PR>.

to form the "Pathways" collaboration. These companies are working together towards achieving a pathway to net zero emissions by 2050. About half of the emissions reductions required (over 30 Mt) are planned to come from a foundational project, a major carbon capture and storage system and transportation line. The proposed line will gather captured carbon dioxide from more than 20 oil sands facilities and move it to a proposed hub in the Cold Lake area of Alberta for storage.

Alberta is one of the best jurisdictions in the world to implement this technology due to the province's geological characteristics. Compared to the carbon capture, utilization, and storage (CCUS) projects that have been announced to date, this will be, by far, the largest. Industry collaboration will help ensure its success.

Additional reductions in GHG emissions are planned to come from other emerging technologies, such as: direct air capture and switching to lower-carbon fuels (hydrogen, electricity), and plans are being developed for three phases along the path to net zero.

The Pathways initiative began with a collective acknowledgment that the oil sands industry must be ambitious, must develop a plan to get to net zero, and must begin executing the plan. The CEOs of these companies meet weekly, in an enormous demonstration of the importance of this initiative and of their commitment to its success. After only a few years of collaboration, this initiative is well underway. Key to this collaboration has also been collaboration with provincial and federal governments.

4. **Collaborating with Governments**

In addition to collaborating with industry, it is essential for governments to develop enabling policies, fiscal programs, and regulations to provide certainty for long-term, large-scale investment in decarbonization. Public/private collaboration on major carbon capture projects (for example) exists in Europe and the US. This type of collaboration will also enable Canada to achieve its net zero goal by 2050.

In April of 2022, the federal government announced a time limited, 50% investment tax credit for carbon capture. Although evaluation of the policy is still early, this type of incentive is what is required to ensure that Canada can reach its climate goals, and that its resource industry will be able to contribute to the achievement of those goals.

The provincial government is also committed to this goal and will be key in leasing the pore space needed to complete the carbon capture projects and to encourage investment in emerging technologies.

An example of another successful government collaboration has been the renewable fuel facility that will process forest biomass, in addition to non-recyclable and non-compostable waste, into biofuels in Varennes, Québec. The partnership includes the government of Québec, Enerkem, Shell, Proman, and Suncor, with support from Infrastructure Canada.

Government collaboration and investment in new and emerging technologies is not new, but rather has been an important element in speeding the development and implementation of new technologies. Recall that government investment was a big part of the development and implementation of microchips – think cell phones!

5. Good Governance

Facilitating the right strategic conversations at the Board level is part of good governance. One of the ways that the Board and management do that is through utilizing multiple long-term scenarios to test the resilience of current business strategies. At regular designated strategy sessions, the Board of Directors considers current milestones and signposts to assess the plausibility of various scenarios and their potential impact on strategy and allocation of capital. We recently supplemented three scenarios – all focused on reducing emissions – with an additional 2 °C scenario.

At our Board strategy session, we not only review signposts and milestones that inform the scenarios, but hear from stakeholders and experts with different perspectives, and adjust or affirm strategy to remain resilient over the long term. These discussions help to inform near term capital allocation decisions and long-term plans and ambitions.

6. Checkbox Engagement (One and Done) Is Not Enough

About a year ago, the Chair of our Board of Directors, the Chair of our Board's Governance Committee, and the Chair of our Board's Environment, Health and Safety, and Sustainable Development Committee all met with representatives from a group of shareholders to talk about climate risk and our actions taken to mitigate risk to date. Topics ranged across various issues, but one discussion item included how we might strengthen the connection between climate performance and executive pay. The meeting involved questions from our board members and questions from the shareholder representatives, all in the spirit of mutual learning and identifying opportunities for performance enhancement.

Over the past year, further engagement with other stakeholders occurred and with the Board's encouragement, Suncor announced a new incentive plan that rewards allocation of capital to projects that will contribute to Suncor's meeting its 2030 goal of reducing GHG emissions by 10 Mt. New metrics will be developed over time, incentivizing and rewarding performance, on the journey to net zero. On that journey, engagement with shareholders and other stakeholders will be critical in shaping not only our goals but also how we achieve them.

7. Listen to Your Customer

Suncor is the proud owner of Petro-Canada. We have an opportunity to listen to our customers and grow our connections with end-users through ever-expanding low carbon products and services. In 2019, we built Canada's first coast-to-coast electric highway. Spanning 6,300 km, from Halifax, Nova Scotia to Victoria, British Columbia, there are Petro-Canada EV fast chargers located every 250 km or less, and all are in close proximity to the TransCanada Highway. Providing cleaner energy choices for customers and helping them lower their GHG emissions is an important strategic lever for our relationships with our customers.

8. **Focus on Action and Building New Relationships**

My 19 years at Suncor have changed me as a person primarily because of learning through relationships. I am more convinced than ever that deep collaboration, based on respectful relationships, must be the foundation for making progress on significant challenges. I am committed to anchoring the work and the actions that we take in "wahkotowin" – respecting the interconnected nature of our humanity and the communities and natural systems that sustain us.

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11 From the Ivory Tower to the Halls of Power

Andrew Leach

While my career has been anchored in academia, I have benefitted from two significant opportunities to leave its confines to work on policy formation: I was the first Visiting Scholar at Environment Canada from 2012 to 2013, and I helped shape Alberta's Climate Leadership Plan as chair of an advisory panel to then–Minister of the Environment Shannon Phillips in 2015.[1] Before, between, and since these extended leaves, I have advised governments of all stripes, in multiple provinces, as they have wrestled with the challenges of climate change and the policies to combat it. While my experiences are far from unique, I hope that there is benefit in sharing some aspects of my interactions with Canada's climate policy network, and my thoughts on how and when I think collaborative processes involving parts of this network have and will work well, as well as the circumstances under which I think they have or will not.

My career has been shaped by engagement with climate and energy policy. My initial job was Assistant Professor at HEC Montréal, the University of Montréal's affiliated business school, where I taught energy and environmental economics courses, but with a lot of focus on electricity and Québec policies and politics. In 2006, I moved to Alberta. For those of you that were not in Alberta at that time, it was basically the peak of the first oil sands boom or at least at the peak of the growth rate during the boom. If you need a frame of reference, the Tim Hortons was paying signing and retention bonuses. I was asked to teach energy markets in an environment where almost everybody had been living in an immersion program on the subject for many years. I was thrown into the middle of it and told to teach them something. That meant I had to learn a lot, and very quickly.

I spent a lot of time at conferences, in meetings, and on site tours, and I did a lot of learning in public, on social media and through my blog. I was writing a lot, in academic papers, blog posts, Twitter posts, and op-eds.[2] If there was an energy policy fight, I wanted to be a part of it. I wanted to read everything being written about it. I wanted to argue about it. I wanted to engage my students in it. More writing opened more doors to site visits, tours, conferences, and more learning opportunities. Being in the energy immersion program, so to speak, that a booming Alberta offered was an incredible experience. My learning was enhanced through policy work. For example, I did some work for the National

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[1] Andrew Leach et al, "Climate Leadership: Report to Minister", online: <https://open.alberta.ca/publications/climate-leadership-2015> [Leach et al].

[2] Twitter, "@andrew_leach", online: <https://twitter.com/andrew_leach>; Andrew Leach, "When It Comes to Carbon Pricing, You Have to Take the Good with the Oil Sands", *Rescuing the Frog* (31 January 2011), online: <http://andrewleach.ca/oilsands/when-it-comes-to-carbon-pricing-you-have-to-take-the-good-with-the-oil-sands/>.

Roundtable on the Environment and the Economy (NRTEE) related to their *Achieving 2050* report.[3] Later I worked more extensively on audits related to the *Kyoto Protocol Implementation Act*.[4] Also, of course, I taught students in energy and environmental management. I learned a lot from them as well.

I took a break from Alberta in 2012-2013 and spent a year on sabbatical in Ottawa at Environment Canada working on the sector-by-sector regulatory approach of the government of Prime Minster Harper.[5] Despite the fact that no concrete policies emerged from my work, my time at Environment Canada remains one of the most valuable experiences of my academic and policy career.

In 2015, I had the opportunity to build climate policy for former Premier Rachel Notley's NDP government through the Climate Leadership Panel in Alberta. That led to the imposition of an economy-wide carbon tax in Alberta,[6] made me one of the most hated people in Alberta for a time, and exposed me to a type of peer review that you never see in academia. A typical academic paper might attract a few dozen readers, most of them expert in that specific area, and, you get to revise a paper after it has gone through peer review. A policy document like the *Climate Leadership Plan* gets reviewed most thoroughly after the final version is released to the public; and everyone from experts interested in parsing each sentence to find a hint of support for their particular wishes to the general public thinking about these policies seriously for perhaps the first time is going to read it.[7] Perhaps more than anything, in that process, I learned the importance and skill of writing for a diverse audience while maintaining the precision needed for experts – a lesson I learned by watching the members of our team who did that important translation work.[8] We made some mistakes and learned from them, which is perhaps all one can ask.

While many aspects of the Climate Leadership Plan were repealed or discontinued by the government of Jason Kenney, some aspects remain. Importantly, the industrial emissions pricing regime we built on the foundations of the existing *Specified Gas Emitters Regulation*, eventually legislated as the *Carbon Competitiveness Incentive Regulation*, remains largely intact.[9] The Kenney government preserved many of our recommendations in the *Technology and Innovation Emissions Reduction Regulation*,[10]

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[3] National Roundtable on the Environment and the Economy, "Achieving 2050 - a Carbon Pricing Policy for Canada", online: <https://publications.gc.ca/site/eng/345573/publication.html?wbdisable=true> [National Roundtable on the Environment and the Economy].

[4] *Kyoto Protocol Implementation Act*, SC 2007, c 30 [KPIA]. See, for example, National Roundtable on the Environment and the Economy, "2011 Response of the NRTEE to its Obligations under the Kyoto Protocol Implementation Act", online: <http://nrt-trn.ca/governance/kyoto-protocol-implementation-act/kpia-2011-index>.

[5] Canada, House of Commons, Debates (Hansard), 41st Parl, 2nd Sess, Vol. 147, No. 158 (9 December 2014) at 1450 (Rt Hon Stephen Harper).

[6] *Climate Leadership Act*, 2016, SA 2016, c 169 [CLA].

[7] One particular example involved the use of the terms renewable generating capacity and renewable generation in ways that suggested different policy designs in different parts of our report. See, for example, Leach et al, *supra* note 1 at 6 and 15, in which our intended reference to 30% of electricity generation was more clear on page 6 than on page 15.

[8] I should note here that Amanda Krumins did the majority of the editing and much of the writing for the Climate Leadership Panel report, and I am very much in debt to her for such excellent work.

[9] *Specified Gas Emitters Regulation*, 2007, Alta Reg 139/2007 [SGER]; *Carbon Competitiveness Incentive Regulation*, 2017, Alta Reg 255-2017 [CCIR].

[10] *Technology Innovation and Emissions Reduction Regulation*, 2019, Alta Reg 133-2019 [TIER].

and the basic design elements are present in the federal *Greenhouse Gas Pollution Pricing Act*.[11] The renewable electricity procurement process demonstrated that renewable power could work in Alberta at shockingly low prices, spurring a series of private power purchase agreements even as the province distanced itself from the procurement of power.[12] In addition, the coal phase-out is occurring faster than even the most ambitious of regulatory timelines. Government estimates now see Alberta turning off its last coal plant as early as 2023, while the Climate Leadership Plan had proposed a 2030 phase-out.

This chapter is not intended to be an annotated curriculum vitae or a regulatory history, but rather, a comment on my interactions with, and impression of, Canada's climate policy network. Through my experiences, I have come to think that there are times when leveraging these networks to bring together people to engage and find solutions works really well, and other times when it does not. For this chapter, I ask, what makes those processes work when they do, and what circumstances lead them to become strained or ineffective? I believe that there are three necessary conditions for success: clarity of purpose, existence of a challenge function, and transparency. I would add to these conditions that a diversity of viewpoints in the network itself is a necessary, but not sufficient, condition for a successful engagement.

For an example of the importance of "clarity of purpose", we can look back at the process that led first to the signing and subsequently to the ratification of the *Kyoto Protocol*,[13] through the issue tables formed to guide implementation.[14] As we will see, this was a process with little clarity of purpose or direction at all.

First, for context, recall the oscillation of Canada's climate change targets from the 1980s through to the ratification of the *Kyoto Protocol*. Prime Minister Mulroney's initial climate commitment, later adopted by the Chrétien Liberals as their first commitment, was to a 20% reduction from 1988 levels by 2005.[15] Mulroney, in the intervening years, softened his government's commitment to stabilizing GHG emissions at 1990 levels by 2000.[16] As Simpson et al wrote of the new Liberal target, "five years and millions of tonnes of additional emissions later, [it] promised to accomplish in 12 years what the Conservatives eventually realized could not be done in 17."[17] The Liberals, too, would soften their commitments, pledging a stabilization of emissions at 1990 levels by the year 2000 in the National Action Program on Climate Change.[18] This goal was further weakened through federal–provincial negotiations in the weeks preceding the Kyoto meetings, with a target to stabilize emissions

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[11] *Greenhouse Gas Pollution Pricing Act*, SC 2018, c 12, s 186 [GGPPA].

[12] Sara Hastings-Simon et al, "Alberta's Renewable Electricity Program: Design, Results, and Lessons Learned" (2022) 171 Energy Pol'y 113266.

[13] *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 18 December 1997, 2303 UNTS 162 (entered into force 16 February 2005) [*Kyoto Protocol*].

[14] Jeffrey Simpson et al, *Hot Air: Meeting Canada's Climate Change Challenge* (Toronto: McClelland & Stewart, 2011) at 68 [Simpson et al].

[15] *Ibid* at 60.

[16] *Ibid* at 57.

[17] *Ibid* at 60.

[18] *Ibid* at 67.

by approximately 2010,[19] a target for which the date was changed to 2007 in just over two weeks.[20] With the Kyoto meetings already started, Canada adjusted its position to a commitment for a 3% reduction below 1990 levels.[21] This commitment changed again, to the 6% reduction from 1990 levels, on average, between 2008 and 2012 to which Canada finally committed at Kyoto.[22]

It is safe to say that, by December 1997, no one knew how Canada would meet its commitments. Canada's climate policy was a free endpoint problem – we had done little to date beyond voluntary actions, and little was cast-in-stone as to where we were headed.[23] It was a choose-your-own-adventure. We could, to an extent, draw on the experience of the acid rain policies and the reduction in chlorofluorocarbons (CFCs), but setting a national greenhouse gas (GHG) emissions target was a very different policy problem.

To inform Canada's implementation, the government established the National Climate Change Process, a public consultation effort which would engage over 450 experts and 225 stakeholders through 16 issue tables,[24] which the government described as the most "open, inclusive, and comprehensive process" anywhere in the world for the purpose.[25] The two-year process offered a series of recommendations on carbon pricing and regulatory initiatives that were never implemented. As Simpson et al write, "the futility of these consultations accorded with the Chrétien government's lack of genuine commitment and produced overall policy confusion."[26]

In contrast to the Kyoto issue tables, the NRTEE *Achieving 2050* process had a clear commitment from the Harper government to a long-term target and engaged in a more directed process informed by modelling, although it had no specific climax event like a UN negotiation. The *Achieving 2050* process began with a national target and the process looked at how we could meet this target, rather than combining a discussion of both the ends and the means. But there was no guarantee that the advice would be followed, and no specific date at which a final decision was required. In the end, the recommendations in the *Achieving 2050* report also went largely unimplemented, although the Harper government continued to advance interest in carbon pricing and/or flexible regulations through early 2013.[27]

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19 Douglas Macdonald & Heather A Smith, "Promises Made, Promises Broken: Questioning Canada's Commitments to Climate Change" (1999) 55 Intl J 107 at 114.

20 *Ibid*.

21 *Ibid*.

22 *Ibid*.

23 Guardrails were placed on the road through two promises made by Prime Minister Chrétien at the time. First, the prime minister stated that "no region [would be] asked to bear an unreasonable burden," and all the first ministers agreed that a comprehensive study would need to be made of the implementation plan before ratification. See Kathryn Harrison, "The Struggle of Ideas and Self-Interest in Canadian Climate Policy" in Kathryn Harrison & Lisa McIntosh Sundstrom, eds, *Global Commons, Domestic Decisions: The Comparative Politics of Climate Change* (Cambridge: The MIT Press, 2010) 169 at 179 [Harrison]; Simpson et al, *supra* note 14 at 68.

24 Harrison, *ibid* at 179 and Barry G Rabe, "Moral Super-Power or Policy Laggard", online: <https://www.cpsa-acsp.ca/papers-2005/Rabe.pdf> at 4 both quote one participant describing this process as an "Air Canada subsidy program."

25 Government of Canada, "Action Plan 2000 on Climate Change", online: <https://publications.gc.ca/collections/Collection/M22-135-2000E.pdf> at 2.

26 Simpson et al, *supra* note 14 at 70.

27 National Roundtable on the Environment and the Economy, *supra* note 3.

The 2015 Climate Leadership Panel process in Alberta shared some elements of both processes. Alberta had seen several climate targets and commitments prior to 2015. The Climate Leadership Panel did not begin with a clear target for emissions reductions, but we had a clear purpose, clear timelines, and clear metrics that we had to meet. The metrics were not a GHG emissions outcome *per se*, but rather, political and social objectives. Still, they were concrete, at least compared to the open-ended problem of how we deal with climate change as a relatively small part of an open global economy, with very different interests from different people around the table. We knew we had to deliver recommendations by early Fall 2015, and the Paris meetings presented a deadline for action on the part of the government. The election of Prime Minister Trudeau's government accelerated these decisions points somewhat, as the prime minister held a first ministers' meeting in advance of the Paris climate talks.[28] Clarity of purpose is key. When we are talking about bringing people together, we have to ask, "what is this gathering's goal?" If those convening the gathering or activating the network cannot write that goal down in a couple of sentences, I would suggest the process needs more planning.

The second thing that I have learned, partly from my time in Environment Canada, was the importance of transparency in any kind of formalized process. I feel we were well served by prioritizing transparency for the Climate Leadership Panel in Alberta. Transparency should not just be the case for government processes, but for network engagements in general. My most concrete takeaway from Alberta's process is the importance of people putting their cards on the table, so to speak, for all to see and having both a mechanism to share this information and assurance that no back doors will be opened for those not willing to play by the rules. The Chatham House Rule,[29] in some cases, provides too much protection for stakeholders who are not willing to be accountable for what they say about a policy problem or a proposed solution, and conveners should be more cautious about how it is invoked. It is often a middle ground that offers satisfaction to nobody.

What do I mean by that? In Alberta we had a simple rule for the Climate Leadership Panel, which was, "You can submit anything that you want, but it is going to be posted publicly on the internet, via a public Google Drive."[30] Similarly, stakeholders had opportunities to make presentations to the panel, but they were asked to do so in front of a room full of other stakeholders, some of whom were likely not to be receptive to their point of view.[31] In this way, everything was known to be both on the record and open for discussion, and subject to challenge in the open as well. What that meant in practical terms was that we did not have to deal with people making one presentation to decision-makers, including us, one presentation to non-governmental organizations (NGOs), and one presentation to the media, each saying subtly or starkly different things. An easy way to undermine a policy collaboration is for it to become clear that one or more parties are not being forthcoming in their engagement. Similarly,

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28 Prime Minister's Office, "Prime Minister Hosts First Ministers' Meeting", online: <https://pm.gc.ca/en/news/news-releases/2015/11/23/prime-minister-hosts-first-ministers-meeting>.

29 Chatham House, "Chatham House Rule", online: <https://www.chathamhouse.org/about-us/chatham-house-rule>.

30 The repository remains available today: Various Contributors, "Alberta's Climate Change Advisory Panel - Google Drive", online: <bit.ly/3FzglqK>. The complete process record is available via Government of Alberta, "Climate Change Advisory Panel", online: <https://www.alberta.ca/climate-leadership-discussion.aspx>.

31 Government of Alberta, "Climate Leadership Discussions: Technical Engagement Summary", online: <https://open.alberta.ca/publications/climate-leadership-discussions-technical-engagement-summary>.

if you are willing only to let it be acknowledged that *someone* advocated for a particular position or raised a particular challenge, but not to own the position yourself, it is not clear that it will necessarily lead to substantive dialogue.

One of the foundations for a successful network engagement is trust, and that we all trust that the messages being conveyed in the network engagement are those that we would each say in another context about the same policy problem, not tailored messages for the purpose of this gathering. Transparency in deliverables, data analysis, and the like is a way of holding everybody to account for that. When people would tell me, during the Alberta process, that "I could give you much better information if you would sign a nondisclosure agreement," or put another way, "if you would let me provide you this information behind closed doors, you will do better analysis," my stock response was, and still is, "absolutely – as long as you will sign an agreement not to comment on the results." No one took me up on this. The reason I always use that is because it says "I do not want to be on an uneven playing field with you. I do not want you to be able to go out publicly and say something that contradicts what you said to me behind closed doors unless I can counter those statements." In that context, a non-disclosure agreement does not lead to better analysis – it handcuffs those with the actual information and prevents them from contradicting false statements made by those who have provided them.

The last element of a good engagement is to subject people to a challenge function. A good process will make people uncomfortable, and this also ensures that it will only welcome people who are willing to move their position or defend it effectively. When you have people who are assigned a particular party line that they have to defend, they cannot really play an effective role in a discussion designed around a move-to-consensus. Rather, if you are going to run that type of a meeting, you need people at a high enough level that they can make a decision that will move the dial. Whether that is an NGO position, a corporate position, or a government position, having people in the rooms who have a mandate to move the dial is crucial. This baseline requirement places the onus on organizers to match the level of discussion with the level of people in the room. If you are filling your room with spokespeople, do not expect a negotiation so do not run one. The people will not have a mandate to negotiate, only to express an established position. You are running an information session. Conversely, if you are filling the room with decision-makers, you must make room for negotiation, rather than simply a back-and-forth statement of positions. In addition, make sure that you are putting people in rooms at the same levels. Evaluate whether people are able to engage on a level with each other and are able to do so honestly. If one side has decision-makers expecting a negotiation of sorts, while the other side has spokespeople, a meeting will never go well.

With these three elements in mind, it is worth thinking a bit more about who is in the room or in the broader network. A successful network must have diversity – diversity of views, diversity of experience, and diversity of training. Each of us, at least as academics, spend most of our lives in the bubbles of our disciplines. We tend to think we have a good grasp of the work of those scholars adjacent to us. As economists, we think we understand a bit of political science, a bit of the law, and, at least for some of us, a bit of engineering and science. We tend to think we know enough.

Over the 2019-2020 academic year, I had the chance to go back to school to pursue a Master's degree in law. I learned a lot about the law, and I also learned how little we, as economists, are (or at least I, as

an economist, was) willing to accept the sufficiency of knowledge from a related discipline. I realized how important the understanding and expertise of those experts outside of our usual discipline is to a full assessment of a policy problem like climate change.

In 2021, we saw the Supreme Court of Canada decision on the constitutionality of the federal *Greenhouse Gas Pollution Pricing Act*.[32] Through the lens of an economist, that decision defines the constraints on policy design that apply to the next generation of academic economists, policy advisors, and corporate risk officers. It defines what can, and what cannot, be done federally and defines the boundaries of policy design at that level. It changes the advice, the choice set, and the risks. It also will not be the last decision of this sort – many of the limits on policy design remain untested in the courts, and you cannot have a discussion of what we *should* do without someone in the room to tell you what we *can* do.

The same is true for specialists in political science and geopolitics. When you combine the Supreme Court *GGPPA References* decision with the past three federal elections and the growing global consensus around climate action, it is easy to assume that you have got a major reset of the policy landscape and, as an economist, to start advising on policy for the next few decades. You might conclude that Canada is no longer deciding whether to act, or deciding whether it should prepare for a world acting on climate change – you could take those facts for granted. You need someone in the room to tell you why that is wrong, and to challenge your assumptions. It is true that, for now, the conversation has shifted from how Canada should act and how global action will affect us, but that is not the only possible endpoint. With our Paris and Glasgow targets[33] and our 2050 net zero emissions goals, we have clear(er) endpoints. This gives that clarity of purpose that I talked about. But these should not go unchallenged, and our networks must welcome those stakeholders who do not see this path laid out before us as clearly as others might.

Now the question is, can we bring people together? I still think that the NRTEE's *Achieving 2050* process stands out for me as a high-water mark for this type of engagement.[34] It was a good example of bringing parties with disparate interests together in a transparent way around a common goal without quite having the same pressure that was on us, for example, in Alberta with the Climate Leadership Panel and timelines and such. The process also provided the background of expertise and modelling and a built-in challenge function because of who was in the rooms. I think, if we can duplicate an engagement process like that one, and use it to engage the next generation of academics and policy-interested citizens, we will be much better off.

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[32] *References re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 [*GGPPA References*].

[33] Government of Canada, "Canada's Intended Nationally Determined Contribution (INDC)", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Canada First/INDC - Canada - English.pdf>; Government of Canada, "Canada's 2021 Nationally Determined Contribution (NDC)", online: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Canada%20First/Canada%27s%20Enhanced%20NDC%20Submission1_FINAL%20EN.pdf>.

[34] See National Roundtable on the Environment and the Economy, *supra*.

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12 The Importance of Canada's Climate Policy Network in View of the Escalating Climate Crisis and Potential Backsliding International Policy

Nicholas P. Ettinger

Of the themes that emerged from the session "Canada's Climate Policy Network in Practice," the idea that the success of collaboration across the climate policy network requires "clarity of purpose" was particularly resonant. Such success can be measured by the achievement of milestones towards the overarching objectives of Canadian climate policy. Those objectives broadly include, without being limited to: 1) Canada doing its part to limit global warming in accordance with international climate agreements, 2) mitigating and adapting to the impacts of climate change, and 3) supplanting the transitioning economy with green growth.[1]

Approaching individual policy efforts with a clear purpose will help optimize the incremental steps necessary to achieving those overarching goals. In the face of the ever-present potential for backsliding climate and energy policy in Canada and abroad, "clarity of purpose" should also be couched from the perspective of the rapidly escalating climate crisis that ultimately motivates policy efforts at all levels. This chapter aims to bring clarity to the urgent purpose with which Canada's climate policy network must continue to coordinate and implement bold policies by situating the discussion in the present state of Earth's climate system and by considering recent developments in domestic and international climate policy.

1. The State of Earth's Climate and the Urgency of Policy Efforts

To put anthropogenic climate change in perspective, the global average surface temperature cooled at a rate of -0.15 °C per 1000 years during the two millennia prior to the 20th century, and the planet had not seen temperature fluctuations greater than 1 °C for more than 10,000 years before the Industrial Revolution.[2] Those 10,000 years of reliable temperatures stabilized global sea levels, weather, and the seasons as we know them, which enabled the dawn and expansion of civilization. Less than 200 years since the advent of the industrial age, however, the global average surface temperature has

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[1] See, e.g., Environment and Climate Change Canada, "2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy", online: <https://publications.gc.ca/collections/collection_2022/eccc/En4-460-2022-eng.pdf> [Environment and Climate Change Canada].

[2] Darrell Kaufman et al, "Holocene Global Mean Surface Temperature, a Multi-Method Reconstruction Approach" (2020) 7 Sci Data 201.

risen by 1.09 °C – a fact that the Intergovernmental Panel on Climate Change (IPCC) now attributes unequivocally to human activity.[3] Between the release of the IPCC's landmark special report on the implications of global warming of 1.5 °C following the *Paris Agreement* and its 2021 update, the reported moving global average surface temperature increased by a further 0.22 °C.[4]

Though a 1.09 °C increase may seem underwhelming in view of Earth's 4.5-billion-year history, the unprecedented rate of global warming is the driver of and proxy for far more alarming environmental changes. For example, human-induced global warming is the principal driver of the global retreat of glaciers and the precipitous decline in the extent of Arctic sea ice, both of which are contributing to rising sea levels, disruption of thermohaline ocean circulation, and further global warming as the sun's energy is more readily absorbed by the continents and oceans.[5] The excess anthropogenic carbon dioxide and methane that the oceans are absorbing is progressively acidifying the shallow oceans – an otherwise exceedingly rare phenomenon in geologic time, and responsible for some of the most devastating mass extinctions in Earth's history.[6] Numerous other contributors to Earth's most severe mass extinctions – including ocean warming, eutrophication, and deoxygenation – are occurring today and are progressively worsening as a result of anthropogenic influences. The startling difference is that the environmental changes responsible for the present mass extinction have developed, and continue to develop, at an unprecedentedly fast rate relative to any time in Earth's history.[7]

The summer of 2021 that followed the conference provided a harrowing and poignant reminder of anthropogenic climate change for Canadians as record-breaking heatwaves, devastating fires, and drought ravaged the country. The day before the village of Lytton, British Columbia burned to the ground in a wildfire in late June 2021, it set the national temperature record at 49.6 °C – an event virtually impossible without human-induced climate change.[8] Canada's experience in the summer of 2021 was reflected by similar heatwaves across the Northern Hemisphere, severe droughts in the western United States, cataclysmic floods in Germany and China, and disastrous fires in California, Turkey, Greece, and Siberia. Whereas scientific bodies had previously shied away from attributing extreme weather events to anthropogenic climate change, shortly after the conclusion of the conference the IPCC reported that extreme heatwaves, heavy precipitation, severe droughts, and intense and more

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[3] Intergovernmental Panel on Climate Change, "Climate Change 2021: The Physical Science Basis", online: <https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf> [IPCC 2021] at 5.

[4] As between the 10-year moving averages for the decades 2006-2015 and 2011-2020; Intergovernmental Panel on Climate Change, "Global Warming of 1.5 °C: An IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty", online: <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf> at 4; *Ibid*.

[5] IPCC 2021, *supra* note 3 at 5.

[6] Bärbel Hönisch et al, "The Geological Record of Ocean Acidification" (2012) 335 Science 1058; Nicholas P Ettinger et al, "Ocean Acidification and Photic-Zone Anoxia at the Toarcian Oceanic Anoxic Event: Insights from the Adriatic Carbonate Platform" (2021) 68 Sedimentology 63; Hana Jurikova et al, "Permian–Triassic Mass Extinction Pulses Driven by Major Marine Carbon Cycle Perturbations" (2020) 13 Nat Geosci 745.

[7] The exception being the bolide impact and cascade of environmental changes that killed the dinosaurs at the end of the Cretaceous Period.

[8] Sjoukje Y Philip et al, *Rapid Attribution Analysis of the Extraordinary Heatwave on the Pacific Coast of the US and Canada in June 2021* (De Bilt: World Weather Attribution, 2021).

frequent hurricanes are predominantly driven by human-induced climate change, with a confidence level ranging from "likely" to "virtually certain."[9] In addition to the loss of human life associated with extreme weather events, the direct monetary cost of such disasters amounted to 5%-6% of Canada's annual GDP growth from 2010-2020.[10] The exponentially increasing "social cost of carbon" dwarfs those numbers and will have economic ramifications for centuries to come.[11]

In her presentation at our conference, Rachel Samson stated that, "as we focus on reducing emissions, we are going to be dealing with the changing climate," alluding to the fact that adverse climate change will continue and extreme weather events will worsen for decades to come, notwithstanding ongoing efforts to reduce greenhouse gas emissions. IPCC 2021 reported that even under the most conservative emissions scenarios, the global average surface temperature will continue to rise until at least mid-century.[12] This is in large part because Earth's natural sinks for carbon – the continents and oceans – have absorbed the majority of carbon emissions since the onset of the industrial age and, as they have become increasingly saturated, they are no longer able to effectively buffer additional inputs of carbon dioxide and methane into the atmosphere.[13] This reality animates the urgency of adaptation and building resilience to the increasingly harsh environmental conditions resulting from Earth's critically strained climate system.

The guarantee of progressively worse global warming for decades to come also speaks to the limitations of climate agreements to date in reining in greenhouse gas emissions. By the time Canada ratified the *Paris Agreement* in 2015, for example, it had missed its 2000 Rio Earth Summit emissions reduction target and its 2012 *Kyoto Protocol* target,[14] and was on its way to missing (and eventually did miss) its 2020 *Copenhagen Accord* target.[15] Canada was not alone in this regard. Following a long string of intergovernmental conferences and agreements implementing the *United Nations Framework Convention on Climate Change* (*UNFCCC*) since the 1990s and despite considerable success in some jurisdictions, the world was barely further along in global emission reductions in 2021.[16]

Under the *Paris Agreement*, 196 countries agreed to constrain global warming to 2.0 °C from pre-industrial levels and to pursue efforts to limit that increase to 1.5 °C. For Canada, this entails incredibly ambitious emissions reduction targets relative to previous agreements.[17] At the risk of

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9 IPCC 2021, *supra* note 3 at 5.

10 Insured losses for catastrophic weather events totaled over CAD 18 billion between 2010 and 2019, almost double the costs of the previous three decades combined; Dave Sawyer et al, *Tip of the Iceberg: Navigating the Known and Unknown Costs of Climate Change for Canada* (Canadian Institute for Climate Choices, 2020) at 10.

11 National Academies of Sciences, Engineering, and Medicine, *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide* (Washington: The National Academies Press, 2017).

12 IPPC 2021, *supra* note 3 at 14.

13 56% of CO_2 emissions per year have been absorbed by the continents and oceans over the past six decades; *Ibid* at 19.

14 Canada withdrew from the Kyoto Protocol in 2011 after it was clear it would fail to meet its 2012 target.

15 Office of the Auditor General of Canada, *Perspectives on Climate Change Action in Canada—A Collaborative Report from Auditors General* (Ottawa: Government of Canada, 2018) [Government of Canada].

16 See, e.g., William Nordhaus, "The Climate Club: How to Fix a Failing Global Effort", *Foreign Affairs* (May/June 2020), online: <https://pcfraz.org/resources/Documents/The%20Climate%20Club%20_%20Foreign%20Affairs.pdf>.

17 Government of Canada, *supra* note 15 at Exhibit 11.

repeating the failures of the *Rio*, *Kyoto*, and *Copenhagen* agreements, it bears remembering that global efforts have thus far failed to rein in emissions or implement policies commensurate with the *Paris Agreement*'s goals of mitigating a runaway scenario and the worst effects of climate change. Afterall, if the *Paris Agreement*'s goal of limiting global warming to well below 2 °C is met, it will still fall short of preventing the degree of global warming associated with unprecedented environmental, socioeconomic, and health-related damages. Even the *Paris Agreement*'s aspirational 1.5 °C target foreshadows a harsh climate future without significant additional mitigating measures. And despite the encouraging commitments flowing from the *Paris Agreement*, actual emissions have yet to respond in kind, as current policies are still projected to yield 2.6-2.9 C of warming by the end of the century.[18]

2. Canadian Climate Policy Developments

For Canada's part, federal climate law and policy has developed rapidly since the adoption of the *Paris Agreement* in 2015. For example, in 2016, Canada's first climate action plan – the Pan-Canadian Framework on Clean Growth and Climate Change (Pan-Canadian Framework) – was developed by the federal government in collaboration with the provinces, territories, and Indigenous peoples.[19] A central focus of the framework is the implementation of carbon pricing and other regulatory measures to achieve emissions reductions commensurate with Canada's obligations under the *Paris Agreement*.

The Pan-Canadian Framework led to new and amended regulations under the *Canadian Environmental Protection Act, 1999*[20] for the direct regulation of emissions from vehicles, as well as coal- and natural gas–fired power generators.[21] It also paved the way for the federal *Greenhouse Gas Pollution Pricing Act*, passed in 2018 and discussed below.[22] Further, with the passage of the *Impact Assessment Act* in 2019, assessments of proposed projects within federal jurisdiction now entail a broadened scope of review, including "the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change."[23] And, in 2021, the *Canadian Net-Zero Emissions Accountability Act* was enacted to enshrine Canada's pledge to achieve net zero emissions by 2050 and ensure government "accountability and immediate and ambitious action in relation to achieving those targets."[24]

A momentous judicial development in Canada's climate policy landscape that will help the country

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18 Climate Action Tracker, "2100 Warming Projections", online: <https://climateactiontracker.org/global/temperatures/>; *Emissions Gap Report 2022: The Closing Window—Climate Crisis Calls for Rapid Transformation of Societies* (Nairobi: United Nations Environment Programme, 2022).

19 Environment and Climate Change Canada, "Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy", online: <https://publications.gc.ca/collections/collection_2017/eccc/En4-294-2016-eng.pdf>.

20 SC 1999 c 33.

21 See, e.g., *Regulations Amending the Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations*, SOR/2018-263; *Regulations Limiting Carbon Dioxide Emissions from Natural Gas–Fired Generation of Electricity*, SOR/2018-261; and amendments to the *Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations*, SOR/2013-24.

22 SC 2018, c 12, s 186 [*GGPPA*].

23 SC 2019, c 28, s 1, at s 22(1)(i).

24 SC 2021, c 22, s 4.

meet its Paris obligations came shortly after the conclusion of the conference. In March 2021, the Supreme Court of Canada ruled that the federal government has jurisdiction to set minimum national standards for the price of greenhouse gas emissions to incentivize emission reductions, as a matter of national concern.[25] Hence, the federal *Greenhouse Gas Pollution Pricing Act*,[26] which imposes a backstop carbon pricing system where a province or territory falls short of nationally determined standards, was found to be a constitutionally valid tool for fighting anthropogenic climate change.[27]

In defining nation-wide carbon pricing as a matter of national concern within the federal government's jurisdiction to make laws for the "Peace, Order, and good Government" of Canada,[28] the Supreme Court cited the country's historic failure to make meaningful emissions reductions in line with its pledges, which it implicitly attributed to the disconnectedness of interprovincial climate policy.[29] The imposition of a minimum national standard for carbon pricing helps harmonize the interprovincial patchwork, bringing much needed clarity to one of the overarching purposes of Canadian climate policy: reaching net zero emissions by 2050 to limit global warming to 1.5 C. Further, a minimum national standard theoretically enables provincial governments and other actors within the climate policy network to focus independent efforts on the multitude of other challenges that make up the more granular problem of climate change. Maintaining economic growth while reducing emissions, ensuring access to affordable energy, building climate resilience, and ecosystem management are but a few examples discussed during the conference that require ancillary efforts across Canada's climate policy network. The Supreme Court's decision helps to quell the distracting debate over carbon pricing and bring clarity of purpose to those ancillary efforts.

Flowing from the constitutional validity of a nationally determined price on carbon, the Trudeau government's promise to incrementally increase that price to CAD 170/t by 2030 signalled to heavy-emitting industries that their profitability may soon erode without significant emissions abatement.[30] That price signal has resonated particularly with the oil and gas industry, whose upstream emissions from power and heat consumption have increased significantly in association with the 190% increase in bitumen extraction and upgrading from 2005 to 2020.[31] While the oil sands and the broader oil and gas industry have made substantial strides in reducing the emissions intensity of operations to date,[32] oil sands extraction and processing remain among the most carbon-intensive crude oil operations

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25 *Reference re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 [Reference re GGPPA (SCC)].

26 GGPPA, *supra* note 22.

27 Reference re GGPPA (SCC), *supra* note 25 at para 207.

28 *Ibid* at para 4.

29 "Illustrative of the collective action problem of climate change, between 2005 and 2016, the decreases in GHG emissions in Ontario … were mostly offset by increases in emissions in … Alberta and Saskatchewan"; *ibid* at para 24.

30 See Environment and Climate Change Canada, *supra* note 1 at 46; and commentary by Professor David Wright: David V Wright, "Canada's 2030 Federal Emissions Reduction Plan: A Smorgasbord of Ambition, Action, Shortcomings, and Plans to Plan" (2022) 10 Energy Regul Q 1.

31 Environment and Climate Change Canada, *National Inventory Report 1990-2020: Greenhouse Gas Sources and Sinks in Canada, Executive Summary* (Ottawa: Environment and Climate Change Canada, 2022) at 8.

32 Government of Alberta, "Budget 2021: Fiscal Plan - Protecting Lives and Livelihoods, 2021-24", online: <https://open.alberta.ca/dataset/6f47f49d-d79e-4298-9450-08a61a6c57b2/resource/ec1d42ee-ecca-48a9-b450-6b18352b58d3/download/budget-2021-fiscal-plan-2021-24.pdf> at 12.

globally.[33] An increasing price on carbon will dovetail with Alberta's *Oil Sands Emissions Limit Act* – which was enacted in 2016 to implement a cap on emissions from the oil sands sector of 100 Mt of carbon dioxide equivalent per year[34] – as well as the anticipated federal legislation implementing a more stringent emissions cap on the oil and gas sector at large.[35]

To help address the hard-to-abate emissions from upstream oil and gas and other industrial sectors, shortly after the Supreme Court's March 2021 decision upholding the *Greenhouse Gas Pollution Pricing Act*, the federal government proposed an Investment Tax Credit for Carbon Capture, Utilization, and Storage (CCUS tax credit) that would subsidize investments in carbon capture and sequestration (CCS) projects. The next month, the Alberta government announced it would host a competitive bid process for the development of utility-scale CCS "hubs" where millions of tonnes of carbon dioxide captured from industrial emissions will be gathered, transported, and permanently sequestered in deep subsurface reservoirs.

Within weeks of Alberta's announcing the tender process for CCS hubs, a coalition of companies representing 95% of oil sands production announced their intention to connect hard-to-abate emissions captured from the oil sands sector in northeast Alberta to a CCS hub near Cold Lake via a carbon dioxide trunkline.[36] Other projects will involve the capture of hard-to-abate emissions from petrochemical facilities, fertilizer manufacturing, cement production, and power generation. The numerous CCS hub proposals that emerged in 2022 arguably would not have materialized without a nationally determined price on carbon and a tax credit for CCS, the combined effect of which will be to significantly de-risk the multibillion-dollar upfront investments necessary for the multi-decade projects.

Canada's *Greenhouse Gas Pollution Pricing Act* and its backstop carbon pricing regime are nonetheless susceptible to diminution or revision in future legal battles over this monumental piece of economic policy emerge. Citing disparities in carbon pricing regimes elsewhere in the world, for example, future governments could undo or relax carbon pricing domestically based on the argument that it is not worth jeopardizing our high-emitting economic engine when Canada's emissions are a drop in the global bucket. One need only look to the dissolution of Australia's national carbon-pricing scheme through the repeal of the *Clean Energy Act 2011* under the Abbott administration to appreciate the vulnerability of Canada's national carbon-pricing system to being repealed with a shift in the makeup of the House of Commons.

Optimistically, the emerging international climate policy tool of carbon border adjustments has the potential to address the problem of disparity in carbon pricing stringency between countries. An increasing number of countries are seriously considering implementing carbon border adjustments where tariffs would be applied to goods that have not been subject to stringent enough carbon pricing

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[33] Carnegie Endowment for International Peace "Oil Climate Index", online: <http://oci.carnegieendowment.org/#total-emissions?ratioSelect=perBarrel>.

[34] SA 2016, c O-7.5.

[35] Government of Canada, "Oil and Gas Emissions Cap", online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/oil-gas-emissions-cap.html>.

[36] Pathways Alliance, "Press Release: Oil Sands Pathways Alliance Outlines Three-Phase Plan to Achieve Goal of Net Zero Emissions", online: <https://www.oilsandspathways.ca/pressrelease_oct21/>.

in their jurisdiction of origin, with the possibility of forming international coalitions (*i.e.*, "climate clubs")[37] subject to minimum pricing standards.[38] Such pressure from international trade partners to conform to a particular standard of carbon pricing may undermine future domestic efforts to undo national carbon pricing or may weigh in favour of reinstatement if a future government does repeal the current system under the *Greenhouse Gas Pollution Pricing Act*.

In any event, the prospects for the longevity of a minimum national standard for carbon pricing in Canada were significantly improved by the foregoing Supreme Court ruling in which the Chief Justice dispatched with the strawman "drop in the bucket" argument:

> I reject the notion that because climate change is 'an inherently global problem', each individual province's GHG emissions cause no 'measurable harm' or do not have 'tangible impacts on other provinces'…. Each province's emissions are clearly measurable and contribute to climate change. The underlying logic of this argument would apply equally to all individual sources of emissions everywhere, so it must fail.[39]

Another remarkable development that has bolstered the toolbox of climate policy is the affordability of renewable energy. The development curve of the past decade was significantly accelerated by various policy efforts, particularly the Obama administration's investments in green energy and European subsidies for renewables.[40] From 2009 to 2019 the price of electricity from solar decreased by 89% and that from wind decreased by 70%, such that electricity from newly built solar and wind facilities are increasingly becoming cheaper sources of electricity than their nuclear and fossil fuel counterparts.[41] Consequently, solar and wind contributed 68% of new generating capacity in Canada over the last decade,[42] despite subsidies for renewables in Canada ranking lowest among G20 countries compared to public financing for oil and gas.[43]

As comparatively nascent industries, additional efficiencies realized for renewable generation and energy storage should drive increased disparity between the costs of renewable and fossil fuel–sourced power. This, coupled with strong carbon-price signalling, will help accelerate decreased reliance on oil, gas, and coal-fired power generation. Still, strong, and consistent law and policy in jurisdictions like Canada, the European Union (EU), UK, and US, consistent with the principle of "common but

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37 William Nordhaus, "Climate Clubs: Overcoming Free-Riding in International Climate Policy" (2015) 105 Am Econ Rev 1339.

38 Government of Canada, "Exploring Border Carbon Adjustments for Canada", online: <https://www.canada.ca/en/department-finance/programs/consultations/2021/border-carbon-adjustments/exploring-border-carbon-adjustments-canada.html>; Felix Bierbrauer et al, *A CO_2 Border Adjustment as a Building Block of a Climate Club* (Kiel: Kiel Institute for the World Economy, 2021).

39 *Reference re GGPPA (SCC)*, *supra* note 25 at para 188.

40 See, e.g., Paul Krugman, "Who Created the Renewable-Energy Miracle?", *The New York Times* (17 August 2021),online: <https://www.nytimes.com/2021/08/17/opinion/us-obama-renewable-energy.html>.

41 See Max Roser, "Why Did Renewables Become so Cheap So Fast? And What Can We Do to Use This Global Opportunity for Green Growth?", online: <https://ourworldindata.org/cheap-renewables-growth>.

42 Canadian Renewable Energy Association, "By the Numbers - Canadian Renewable Energy Association", online: <https://renewablesassociation.ca/by-the-numbers/>.

43 Bronwen Tucker et al, *Past Last Call: G20 Public Finance Institutions Are Still Bankrolling Fossil Fuels* (Washington: Oil Change International & Friends of the Earth US, 2021) at Table A-1.

differentiated responsibilities" embedded in *UNFCCC* and the *Paris Agreement*,[44] are critical to driving continued growth of affordable renewables globally.

While the aggregate effect of the competitiveness of renewable power generation, the potential for carbon border adjustments administered by "climate clubs," a national standard for carbon pricing, and the other policy developments discussed above lends meaningful support to Canada's prospects of reaching net zero emissions by 2050, there remain significant additional challenges that require the coordination of Canada's climate policy network. Adapting to climate change impacts and maintaining economic growth through this era of transition will be of constant concern going forward. In fact, the two are interconnected given that the impacts of climate change can extend to all sectors of Canada's economy, from agriculture, fisheries, and energy to supply chain management, public infrastructure, and healthcare.[45] One need only look at the loss of life and the tens of billions of dollars in costs associated with the heatwaves and forest fires that swept western Canada in 2021 to grasp the present level of unpreparedness.[46] Further, the strength of progress to-date has and will continue to be tested as global energy markets navigate the turmoil caused by Russia's invasion of Ukraine, giving rise to the risk that climate and energy policy will backslide.

3. EU and US Climate Policy Developments

Negotiations toward the Glasgow Climate Pact struck at the United Nations Climate Change Conference of the Parties in late 2021 were largely led by ambitious pledges from the European Union. The Glasgow Pact recognized that limiting global warming to 1.5 °C requires reducing global emissions 45% by 2030 relative to 2010 levels,[47] which will depend on developed states like the EU, the United Kingdom, the United States, and Canada continuing to reduce their reliance on energy from fossil fuels in favour of renewable and low-carbon energy. For example, the EU's new 2030 Climate Target Plan aims to reduce the aggregate emissions of member states by 55% from 1990 levels this decade.[48]

The developed world's leadership is an essential condition to achieving the *Paris Agreement*'s goal of limiting global warming to 2 °C – the *Paris Agreement* embodies the overarching premise of *UNFCCC* that the developed economies responsible for the majority of historical emissions should undertake

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[44] *United Nations Framework Convention on Climate Change*, 1992 Article 3, Principle 1: "[t]he Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof" [UNFCCC].

[45] See, e.g., Donald S Lemmen et al, *Canada in a Changing Climate: National Issues Report – Sector Impacts and Adaption* (Ottawa: Natural Resources Canada, 2021).

[46] See, e.g., Simon Little, "B.C. Heat Wave Likely Responsible for Many of 486 Sudden Deaths in Last 5 Days: Coroner", *Global News* (30 June 2021), online: <https://globalnews.ca/news/7994313/bc-486-heat-wave-deaths/>; The Canadian Press, "Billions in Losses, Thousands Could Die If Wildfire Response Unchanged: Report", *CTV News* (29 July 2021), online: <https://bc.ctvnews.ca/billions-in-losses-thousands-could-die-if-wildfire-response-unchanged-report-1.5528155>.

[47] *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement on Its Third Session, Held in Glasgow from 31 October to 13 November 2021* (United Nations Framework Convention on Climate Change, 2021) at 4.

[48] European Commission, "2030 Climate Target Plan", online: <https://ec.europa.eu/clima/eu-action/european-green-deal/2030-climate-target-plan_en>.

the financial risk of reducing their absolute emissions while maintaining economic growth so that the resulting innovation can enable the subsequent rapid decarbonization of developing economies that now account for the lion's share of global emissions.[49] This essential premise is now at risk of unravelling as Russia's invasion of Ukraine has jeopardized Europe's energy security.

The invasion has laid bare the dangerous consequences of Europe's overreliance on geopolitical adversaries for vital energy resources. In particular, Germany's post-Fukushima decommissioning of its nuclear power inventory left it dependent on Russia for more than half of its natural gas imports, half of its coal, and a third of its heating oil.[50] The overreliance on natural gas in particular left the largest European economy incapable of cutting off those imports to deter Russian aggression in 2022, because doing so would have caused a massive rise in energy prices, potentially cratering domestic industries, causing spiralling unemployment and a deep recession.[51] Western-led sanctions against Russia nevertheless sent energy prices soaring and, buoyed by the profits of high prices, Russia itself restricted the supply of natural gas to Europe in 2022 in retaliation. The restricted supply was compounded by the sabotage of an underwater stretch of the Nord Stream pipeline in the Baltic Sea in September 2022, which carries natural gas from Russia to Europe via Germany. Consequently, Europe's long-term transition to renewable energy sources was set back by a dire scramble to plug energy supply gaps with fossil fuel sources to make it through summer heatwaves and a long winter. This included reviving domestic coal mines and coal-fired power plants, and spending billions on regasification terminals to increase imports of liquefied natural gas from the US and other partners.

The International Energy Agency forecast that Europe's coal revival would send global demand for the fossil fuel to nearly nine billion tonnes, where it last peaked in 2013.[52] Massive investments in liquefied natural gas infrastructure and the EU's recent classification of the use of natural gas as an "environmentally sustainable economic activity" are likely to prolong the reliance on natural gas, lest those investments result in stranded assets.[53] The combined effect of the increased uptake of coal and natural gas will be to delay the deep emissions cuts necessary for the EU to reach its target of reducing emissions by 55% by 2030 compared to 1990 levels, which increases the risk that those cuts will not be realized. The EU can still theoretically reach its targets despite this temporary regression if it undertakes deep emissions cuts later this decade. Delaying the transition in developed states like the EU nevertheless risks postponing the transfer of technology, financing, and other innovations to high-emitting developing countries so that they too can undertake deep emissions cuts later this decade.

At the same time as the EU is at risk of backsliding on the implementation of its climate policy, the US Supreme Court issued a landmark ruling in *West Virginia v. Environmental Protection Agency*,

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49 *UNFCCC*, *supra* note 44 Article III, Principle 1; Article IV, Commitments 2(a), 3 & 4.

50 Melissa Eddy, "Why Germany Can't Just Pull the Plug on Russian Energy", *The New York Times* (5 April 2022), online: <https://www.nytimes.com/2022/04/05/business/germany-russia-oil-gas-coal.html>.

51 *Ibid*.

52 International Energy Agency, "Coal Market Update – July 2022 – Analysis", online: <https://www.iea.org/reports/coal-market-update-july-2022>.

53 European Commission, "EU Taxonomy: Complementary Climate Delegated Act", online: <https://ec.europa.eu/commission/presscorner/detail/en/ip_22_711>.

which circumscribes the Environmental Protection Agency's (EPA) ability to regulate greenhouse gas emissions from power plants.[54] In a decision out of step with the urgency of the climate crisis, the Court held that the EPA does not have jurisdiction under the US *Clean Air Act*[55] to implement so-called "beyond-the-fence-line" reductions by establishing overarching emissions limits for power plants as contemplated under the Obama Administration's original Clean Power Plan.[56] Instead, the EPA's regulation of emissions under the *Clean Air Act* is largely limited to implementing "technology-based" standards on a plant-specific basis.[57] Whereas the market-driven approach of a beyond-the-fence-line emissions cap incentivizes technological innovation and fuel switching toward cleaner sources (*e.g.*, coal to natural gas or renewables), the technology-based approach to individual power plants constrains the EPA to imposing expensive technologies such as carbon capture on existing power plants to regulate emissions.[58] Consequently, future emissions regulation under the *Clean Air Act* may be inflexible to fuel switching and unnecessarily expensive.

The deadlock in the politically polarized US Congress also compounds the Supreme Court's untimely decision. The ability of Congress to amend or enact new legislation enabling the broad regulation of greenhouse gases by an administrative agency like the EPA is unlikely. Nevertheless, Congress' enactment of the *Inflation Reduction Act* – a monumental USD 370 billion climate and energy-focused spending bill offers renewed optimism for the US' ability to meet its nationally determined contributions under the *Paris Agreement* despite the Supreme Court's *West Virginia v. EPA* decision.[59] While the package was dressed down to two-thirds of the amount of spending on climate-related measures initially envisioned and only passed in the Senate by a razor-thin margin, it immediately re-established the US as a leader on climate action. The *Inflation Reduction Act* is designed to reduce US carbon emissions approximately 40% by 2030, which would reposition the US to meet its nationally determined contributions under the *Paris Agreement*.

4. The Ever-Present Potential for Backsliding

Despite clear messaging from eminent authorities such as the IPCC that aggressive action is necessary to stave off the worst effects of climate change, political intransigence remains a threat to meaningful progress. The Abbott administration's repeal of Australia's carbon pricing scheme under the *Clean Energy Act 2011* upon coming into power; Germany's phaseout of nuclear power following the Fukushima disaster, paving the way for the comeback of coal in the current energy crisis; the US withdrawal from the *Paris Agreement* under the Trump administration; and India's successful push to change the language of the Glasgow Pact calling for the "phasedown of unabated coal power" instead of "phaseout" are but a few examples.

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54 *West Virginia v. Environmental Protection Agency*, [2022] WL 2347278 [*West Virginia v. Environmental Protection Agency*].

55 *Clean Air Act*, 42 USC § 7401 (1970), s 111.

56 *West Virginia v. Environmental Protection Agency*, *supra* note 54 at 29–30.

57 *Ibid* at 4.

58 *West Virginia v. Environmental Protection Agency*, *supra* note 54, Kagan J, dissenting opinion at 24-25.

59 *Inflation Reduction Act of 2022*, PL 117-69.

The lauded US *Inflation Reduction Act* is likely here to stay for the foreseeable future given the difficulty of getting a repealing bill through a deadlocked Congress and the required presidential sign-off. Conversely, legislation in Canada is likely more susceptible to being rolled back by a simple majority or plurality in Parliament. As a result, the national carbon pricing scheme in Canada should not be taken for granted, as the *Greenhouse Gas Pollution Pricing Act* and its regulations are susceptible to being amended or repealed with a shift in the balance of power in Parliament.

As seen through the revival of coal and other fossil fuels amidst the energy crisis instigated by Russia's invasion of Ukraine, backsliding climate policy arising from geopolitical upheaval may always be a risk. The reality is that *UNFCCC* and the international climate agreements subsumed thereunder require strong coordination among signatories. As one or more high-emitting advanced economies backslide, the goals of the agreement – such as the *Paris Agreement*'s objective of limiting global warming to 2 °C – become less attainable. For these reasons, in the face of potential backsliding, Canada must be vigilant its efforts to uphold its nationally determined contributions under the *Paris Agreement*.

5. Outlook for Canada's Climate Policy Network in Practice

In view of the ever-present potential for backsliding policy in Canada and abroad, the work of Canada's climate policy network is even more important. Canada has one of the highest carbon dioxide emissions per capita[60] and is the world's ninth-largest greenhouse gas emitter on a total emissions basis.[61] Canada also has the ninth-largest economy in the world and one of the highest gross domestic products per capita.[62] If the Canadian economy cannot rapidly decarbonize this decade, the likelihood of high-emitting developing countries doing so may be slim. Conversely, if the likes of Canada, the US, and the EU can execute strong policies that maintain a pathway to meeting their nationally determined contributions under the *Paris Agreement* despite potential backsliding elsewhere, it will send a strong message to the world that affordable pathways to decarbonization for high-emitting industrialized economies do exist.

Canada should seize the opportunity to lead in this regard alongside its international partners, especially as US climate policy leaps ahead with the implementation of the *Inflation Reduction Act*. Significant innovation will continue to arise from the decarbonization of advanced economies such as Canada's and must be exported to developing economies so that they too can efficiently decarbonize. There remains precious little time to initiate that deep decarbonization in the near term. The longer that meaningful steps toward decarbonization are delayed in Canada and other advanced economies, the less likely the world at large will be able to decarbonize to avert a harrowing climate future.

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60 2018 numbers: World Bank, "CO_2 Emissions (Metric Tons per Capita) - Canada", online: <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?most_recent_value_desc=true&locations=CA>.

61 2018 numbers: World Bank, "Total Greenhouse Gas Emissions (kt of CO2 Equivalent)", online: <https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE?most_recent_value_desc=true>.

62 The World Bank, "Canada Data", online: <https://data.worldbank.org/country/CA>.

Canada's climate policy network cannot afford to pat itself on the back for the encouraging developments discussed above given the vulnerability of many of those developments to being rolled back and the significantly greater action required to maintain a viable pathway to achieving the *Paris Agreement* objectives. For Canada, significant work remains, for example, to achieve the full implementation of the Emissions Reduction Plan and full compliance with the *Canadian Net-Zero Emissions Accountability Act*. Many other proposed initiatives also require diligent implementation. These initiatives include ensuring that the best form of legislation is enacted to implement the CCUS tax credit proposed in the federal government's 2022 budget. It will greenlight multibillion-dollar investments in CCS that have the potential to significantly reduce national emissions and generate further innovation and cost reductions for CCS, as well as reputable reporting standards that can be exported to other parts of the world.[63]

Canada must also carefully phase-out emissions-intensive baseload power and build new, innovative renewable generation and energy storage systems. This will likely require significant political capital to implement – and perhaps strategic litigation to uphold – the regulatory instruments designed to achieve the net zero electricity system envisioned by the proposed "Clean Electricity Standard."[64] Further, on a forward-looking basis, the climate policy network should continue to work with international partners like the EU on implementing the most effective form of carbon border adjustment mechanism.

On the need to maintain economic growth while the energy sector and broader economy transition to net zero, significant challenges await Canada's climate policy network. For example, the electrification of the transportation sector will require significant increases in grid capacity to accommodate new locations and times of high vehicle charging demand.[65] Not only will low-emission power generation need to replace high-emission sources to reach net zero while meeting the current demand, but capacity will also have to grow substantially to supply the demand vacated by hydrocarbon-powered vehicles. In addition to investments in battery-electric charging infrastructure, billions will have to be spent on upgrading power transmission and distribution grids.[66]

As the energy transition drives on, economic policies will have to aid the replacement of jobs for skilled workers, government revenues from oil and gas royalties, and the 20% or so of Canada's manufacturing sector tied to the oil and gas industry. With government royalties surging in response to the current commodity price supercycle, now is the time to lean into diversifying Canada's energy industry. Finally, building climate resilience to maintain the generous quality of life Canadians have become accustomed to will require numerous auxiliary efforts across the entire policy network, from government to industry, academia, and the public at large.

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[63] A recent review of historical CCS projects reveals a discrepancy between reported carbon dioxide storage project capacity and actual volumes stored: Yuting Zhang et al, "An Estimate of the Amount of Geological CO2 Storage over the Period of 1996–2020" (2022) 9 Envtl Sci Tech Lett 693.

[64] See Environment and Climate Change Canada, *A Clean Electricity Standard in Support of a Net-Zero Electricity Sector: Discussion Paper* (Ottawa: Environment and Climate Change Canada, 2022).

[65] See, e.g., Anshuman Sahoo et al, *The Costs of Revving Up the Grid for Electric Vehicles* (Boston: Boston Consulting Group, 2019).

[66] *Ibid*.

All of which is to say that Canada's climate policy network will remain critically important for decades to come, and its connectedness may be determinative of our ability to successfully navigate the energy transition while adapting to climate change. Through reflecting on the current state of our climate, and the risks associated with potential backsliding climate policy, actors across Canada's climate policy network can approach our domestic climate policy with the urgency and clarity of purpose needed to achieve the overarching objectives of Canadian climate policy introduced at the beginning of this chapter: 1) Canada doing its part to limit global warming in accordance with international climate agreements, 2) mitigating and adapting to the impacts of climate change, and 3) supplanting the transitioning economy with green growth.

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Conclusion

Janis Sarra

A strength of publishing these papers in one volume is the diversity of perspectives, representing not only seasoned policymakers, scholars, and industry leaders but also, importantly, intergenerational voices. There is broad consensus both in Canada and globally that there is need for effective policies to manage the impacts of climate change and begin a just transition to a net-zero-emissions, circular economy. Yet as the papers in this collection reveal, there are many paths to developing and implementing such policies, and the early-career contributors impart a particularly deep sense of urgency in the need for ambitious and timely climate action.

The central conclusion the diverse perspectives in this volume share is that absent effective policy that results in meaningful decarbonization, we will encounter tipping points beyond which the impacts to ecosystems are irreversible, creating an existential threat to humanity.[1] Scientists have overwhelmingly concluded that there is an increasingly short time to alter the trajectory of global warming, without which we will have amplified risks of drought, wildfires, sustained heatwaves, sea level rise and coastal flooding, and extreme poverty for hundreds of millions of people, resulting in permanent harms.[2] Severe impacts on natural and human systems from global warming have already been observed.[3]

Dr. Margot Hurlbert's paper observes that the failure of the current social contract to provide security from climate disaster means that the window of opportunity for making significant change is rapidly narrowing.[4] She points out that the world's remaining carbon budget, the amount of greenhouse gas (GHG) emissions that can be released into the atmosphere over time, may be depleted as early as 2028.[5] Former Governor of the Bank of Canada Mark Carney recently made a similar observation, noting that we have collectively left it too late and there is now only a very narrow timeframe to tackle climate

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1 Janis Sarra, *From Ideas to Action, Governance Paths to Net Zero* (Oxford: Oxford University Press, 2020) at 37-38 [Sarra].

2 Intergovernmental Panel on Climate Change, "Global Warming of 1.5 °C. An IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty", online: <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf> [IPCC 2019). See also Intergovernmental Panel on Climate Change, "Climate Change Widespread, Rapid, and Intensifying", online: <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>.

3 Will Steffen et al*,* "Planetary Boundaries: Guiding Human Development on a Changing Planet", online: <https://www.stockholmresilience.org/publications/publications/2016-04-15-planetary-boundaries-guiding-human-development-on-a-changing-planet.html>; Sarra, *supra* note 1 at 49-50.

4 Margot Hurlbert, "Mapping the GHG Governance Landscape: Directions for Climate Policy", chapter 1 of this volume, citing IPCC 2019, *supra* note 2.

5 *Ibid.*

change, which needs energy and innovation, including standards that will create a comprehensive baseline to generate the financing that can transition economies.[6]

My conclusion is organized differently from the ordering of chapters. I want to draw out four key insights that resonate across the perspectives shared: meaningful and integrated partnership in policymaking with Indigenous peoples; the need for intergenerational representation and diversity of views at the policymaking table; the imperative of transparency in designing effective climate policy; and the urgent need for greater cooperation between governments at all levels in Canada, and between Canadian and foreign governments, to ensure that science-based climate policy begins shifting our current trajectory, both domestically and globally.

1. **Indigenous Partnership in Policymaking**

I commence with the contributions from the three Indigenous scholars/elders, because their reflections should inform all the other insights in this volume. While land acknowledgments have become frequent at public events and are important to begin a very long path towards reconciliation, as policymakers, business leaders, members of civil society, and Indigenous communities and governments we have not yet come to shared understandings of what the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)[7] and the legislation embracing that declaration federally and in British Columbia[8] mean for meaningful dialogue and partnership in policymaking. Dr. John Borrows observes that Anishinaabe and other Indigenous peoples have had to grapple with the devastating consequences of human-caused climate change for more than 400 years, including urban heat sinks, marginalization of environmental care, and irreversible loss of many species of plants, insects, birds, animals, and Indigenous humans.[9] Borrows notes that Indigenous peoples have laws to create better climate governance, flowing from their experiences, formed through discussion and deliberation regarding complex forces, and resulting in treaties with nature. He observes that the application of Indigenous peoples' environmental laws, ethics, and perspectives is an important tool for helping us deal with profound climate change questions. He draws on the powerful language of the Anishinaabe Constitution, where the sacred gifts of the Creator, including love, truth, respect, and wisdom, guide decisions; and states that "practicing law by nesting ourselves within the more-than-human world, and promulgating interdependence is one way to strengthen our relationships with our rivers, plants, insects, birds, fish, animals, humans, and other beings."[10] Borrows urges that "mutual obligations exist that all have a place and territory where all can sustain themselves…. We will not have a healthier

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6 Mark Carney, Remarks to ISSB Symposium (17 February 2023) [Carney].

7 United Nations, "United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)", online: <https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf>.

8 *United Nations Declaration on the Rights of Indigenous Peoples Act,* SC 2021, c 14; and *Declaration on the Rights of Indigenous Peoples Act,* SBC 2019, c 44. See also Terri-Lynn William-Davidson & Janis Sarra, "Haida Law of gina 'waadluxan gud ad kwaagiida and Indigenous Rights in Conservation Finance", online: <http://ccli.ubc.ca/wp-content/uploads/2021/04/Haida-law-of-gina-'waadluxan-gud-ad-kwaagiida-and-Indigenous-rights-in-conservation-finance.pdf>.

9 John Borrows, "Indigenous Law and Canadian Climate Governance", chapter 7 of this volume.

10 *Ibid.*

climate without healthy grasslands, trees, animals, birds, and other living beings."[11]

The chapter co-authored by Emily Jones, respected Denésôliné elder and matriarch, and her granddaughter Amelia Harman is a particularly poignant example of what we can learn from Indigenous peoples in designing climate policy.[12] They reflect on the need to value diversity of perspectives to enhance collective decision-making processes by inviting new ideas and approaches, stressing the importance of remaining receptive to alternative understandings of the world. The Dené share reciprocal relationships and values with one another and with the land, water, air, animals, and plants – "if you take care of the land, the land will take care of you."[13] Elder Jones and Harman suggest that the mainstream narrative surrounding climate change has recognized aspects of Indigenous knowledge; however, there is "a labelling and marginalization occurring in respect of the recognition and incorporation of Indigenous Knowledge in the dominant narrative surrounding climate change" and a "cherry-picking" of traditional ecological knowledge, which can lack a comprehensive understanding and is susceptible to becoming a buzzword and being commodified.[14] They cogently observe that reconciliation between Indigenous and non-Indigenous peoples is not achievable unless we collectively reconcile with the Earth.[15] In order for climate governance to be participatory and collaborative in practice, engagement must be an ongoing ethical process of dialogue and engagement founded on mutual trust, honesty, and respect.[16] Importantly, they suggest that a holistic approach to climate action involves equitable and meaningful collaboration and participation by Indigenous peoples in climate policy discussions from the very start; and requires actors to be acutely aware of dominant perspectives and engage in a critical reflection of those perspectives, "acknowledging the legitimacy of Indigenous and other previously marginalized knowledges" and wisdom.[17] Indigenous knowledge systems hold immense value "for understanding and adapting our human communities to changes in our natural world."[18] These intergenerational insights are very powerful when thinking about policy process design.

2. The Need for Intergenerational Representation and Diversity of Views at the Policymaking Table

Failing to address the threat of climate change is already having severe and devastating impacts throughout Canada, such as forest fires, degradation of soil and water resources, atmospheric rivers, and increased frequency and severity of heatwaves. Both acute and chronic impacts will be borne

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11 *Ibid.*

12 Amelia Harman & Emily Jones, "The Multi-narrative Nature of Climate Change Policy", chapter 8 of this volume.

13 *Ibid.*

14 *Ibid*, citing Leanne Simpson, "Aboriginal Peoples and Knowledge: Decolonizing Our Processes" (2001) 21 Can J Native Stud 138 at 138-40.

15 *Ibid,* citing Michael Asch et al*, Resurgence and Reconciliation* (Toronto: University of Toronto Press, 2018).

16 *Ibid.*

17 *Ibid,* citing Teresa McDowell & Pilar Hernandez, "Decolonizing Academia: Intersectionality, Participation, and Accountability in Family Therapy and Counseling" (2010) 22 J Fem Fam Therapy 93.

18 *Ibid.*

disproportionately by future generations of Canadians.[19] Yet our policy processes largely fail to ensure the interests of today's youth and future generations are represented at the decision table.

For decades, pension policy in Canada has recognized the importance of intergenerational considerations, because pension plans provide both for current income for retirees and a future income for people working today; thus, decisions must be made with a view to intergenerational interests – pensioners, workers closer to pensionable age, right through to early career and mid-career pension plan members. The duties of pension fiduciaries include a duty to hold an "even hand" in dealing with beneficiaries and recognize the need for short, medium, and long term planning in oversight of investments and the ability to meet the 'intergenerational pension promise.' Climate policy should also be approached giving priority to intergenerational interests. As noted in the introduction, the younger contributors to this volume are particularly vocal about the urgent need to create credible and ambitious climate policy now, to protect existing and future generations.

Rachel Sampson's paper suggests that as governments develop transition plans, they need to think more broadly about who needs to be involved in the conversation. She argues that youth need to be involved, since they will be the ones that bear the brunt of climate change and the implications of economic restructuring in terms of employment.[20]

There is also considerable evidence that climate change imposes disproportionately negative effects on low-income people, racialized people, children, older citizens, Indigenous and northern communities.[21] It is therefore critically important that policy processes ensure these interests and voices are part of the decision process. Professor Temitope Onifade's paper proposes that we conceptualize Canada's climate governance as an interorganizational complex of state and non-state governance, involving a continuum of regulation, market action, litigation, and self-governance capacity of broader social groups.[22] He suggests that responsive regulation is a pragmatic policy model for Canada, where state and non-state actors, including industries and non-governmental organizations (NGO) are part of a regulatory continuum in their policy interactions. He cites, as an example, features of the Pan-Canadian Framework on Clean Growth and Climate Change 2016, which recognizes the diversity of provincial and territorial economies and the need for fair and flexible approaches to ensure international competitiveness.[23] By incorporating a plurality of actors and their values, Onifade suggests that an interorganizational complexity approach has the potential to address the two fundamental challenges of responsive regulation in Canada's climate governance: the limitation of the state and internal conflicts of law. Plurality puts public interest groups and other civil society actors in a position to leverage

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[19] *References re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11 at para 2; Intergovernmental Panel on Climate Change, "Climate Change 2022, Mitigation of Climate Change", online: <https://www.ipcc.ch/report/ar6/wg3/>.

[20] Rachel Samson, "The Cusps of Canada's Climate Policy Network", chapter 9 of this volume.

[21] Health Canada, "Health of Canadians in a Changing Climate", online: <https://changingclimate.ca/site/assets/uploads/sites/5/2021/10/0-OVERVIEW-EN.pdf≥.

[22] Temitope Tunbi Onifade, "A Model of Climate Governance: Canada's Interorganizational Complex", chapter 5 in this volume, citing Robert Baldwin et al*, A Reader on Regulation* (Oxford: Oxford University Press, 1998).

[23] *Ibid*, citing Government of Canada, "Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy", online: <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html>.

their independent processes and comparative strengths to complement state regulatory objectives and influence government and private decisions without falling prone to regulatory capture by more powerful interests.

Arlene Strom offers important insights from the corporate boardroom on the question of recognizing and working with a diversity of interests, particularly in the relationship between corporate officers and external stakeholders.[24] She offers a striking example of seeking points of mutual interest, sharing the story of Suncor's chief executive officer (CEO) asking her to set up a meeting with the leader of Greenpeace prior to the company's annual general meeting and as a lawsuit by the company was pending against Greenpeace for its members chaining themselves to some extraction equipment. The CEO commenced the conversation by saying "I bet that 90% of our hopes for our country, for our communities, for our families – are hopes we share in common."[25] From there commenced a dialogue on difficult issues, involving disagreements. Strom notes that eventually Suncor dropped the lawsuit, but more significant was the pattern of continuing engagement with Greenpeace several times a year for many years, discussing concerns and trying to find points of commonality. Strom's insight is that while you cannot measure the success of such interactions with traditional metrics, they are seeds that can germinate into responsive corporate climate policies.[26] Her belief is that deep collaboration, based on respectful relationships, must be the foundation for making policy progress on significant climate challenges.

3. **Transparency and Resilience**

Mark Carney recently observed that we have undervalued "climate resilience" in favour of "efficiency," and regulation is now needed to ensure transition planning is building climate resilience, noting that we need mandatory standards because voluntary guidance has not garnered sufficient change.[27] In developing new accounting standards, the International Sustainability Standards Board (ISSB) of the International Financial Reporting Standards (IFRS) Foundation has emphasized the need for companies and other entities to disclose their resilience to climate-related changes or uncertainties, using climate-related scenario analysis that requires directors and officers to consider "all reasonable and supportable information available at the reporting date without undue cost or effort."[28] The ISSB is making a good faith effort to broadly consult and incorporate diverse ideas into the new standards. Given that the ISSB was only formed in late 2022, issued its exposure drafts on climate and sustainability almost

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[24] Arlene Strom, "Corporate Commitment to the Climate Imperative: The Case of Suncor", chapter 10 of this volume.

[25] *Ibid.*

[26] *Ibid,* citing Suncor, "Our Purpose and Values", online: <https://www.suncor.com/en-ca/who-we-are/purpose-and-values>.

[27] Carney, *supra* note 6.

[28] International Sustainability Standards Board, "ISSB Update, January 2023", online: <https://www.ifrs.org/news-and-events/updates/issb/2023/issb-update-january-2023/>.

immediately,[29] and has announced plans to have final standards in place by June 2023, its progress to date belies the argument that transparency in policymaking or consideration of diversity of interests can slow it down or make it ineffective.

Dr. Andrew Leach's paper reflects on what makes policy processes work when they do and what circumstances lead them to become strained or ineffective.[30] He suggest that there are three necessary conditions for success: clarity of purpose, existence of a challenge function, and transparency. In bringing together policymakers, industry stakeholders, NGO, and financial service providers, clarity of purpose is key, Leach observing that "if those convening the gathering or activating the network cannot write that goal down in a couple of sentences," the process needs more planning.[31] His work with both the federal and Alberta governments taught him that transparency must be prioritized in any kind of formalized policy process with policy positions being public, assuring that no "back doors" are opened for those stakeholders not willing to play by the rules. He notes that the "Chatham House Rule,"[32] while it can facilitate candid discussion, "provides too much protection for stakeholders who are not willing to be accountable for what they say about a policy problem or a proposed solution," and thus "conveners should be more cautious about how it is invoked." In Alberta, the Climate Leadership Panel of Premier Rachel Notley's government had a basic rule that stakeholders could submit anything, but it was going to be posted publicly on the internet. Stakeholders had opportunities to make presentations to the panel, but they were asked to do so in front of a room full of other stakeholders, some of whom were likely not to be receptive to their point of view.[33] In this way, everything was both on the record, open for discussion, and subject to challenge. What that meant in practical terms was that people could not make one presentation to decisionmakers, another to NGO, and yet another to the media, each saying subtly or starkly different things.[34] Transparency in policy dialogue enhances potential for decisions that truly build climate resilience.

4. **Multi-Government Collaboration**

Canada is a federal system, with rights carefully assigned to the federal, provincial, or territorial governments pursuant to the constitutional divisions of power. Given this regulatory framework, policymaking can vary regionally, and where there is need for a national approach, policymaking can be slow and unwieldy as governments frequently do not agree. Yet the severity of climate-related risks and impacts means there is urgent need for much greater cooperation between governments at

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29 International Sustainability Standards Board, "IFRS S2 Climate-Related Disclosures", online: <https://www.ifrs.org/content/dam/ifrs/project/climate-related-disclosures/issb-exposure-draft-2022-2-climate-related-disclosures.pdf>; International Sustainability Standards Board, "IFRS S1 General Requirements for Disclosure of Sustainability-Related Financial Information", online: <https://www.ifrs.org/projects/work-plan/general-sustainability-related-disclosures/>.

30 Andrew Leach, "From the Ivory Tower to the Halls of Power", chapter 11 of this volume.

31 *Ibid.*

32 *Ibid,* citing Chatham House, "Chatham House Rule", online: <https://www.chathamhouse.org/about-us/chatham-house-rule>.

33 *Ibid,* citing Government of Alberta, "Climate Leadership Discussions: Technical Engagement Summary", online: <https://open.alberta.ca/publications/climate-leadership-discussions-technical-engagement-summary>.

34 *Ibid.*

all levels in Canada, and between Canadian and foreign governments, to work towards science-based policy solutions.

Laura Glover's paper points out that we need not have a uniform approach to climate policy for every province and territory, but that there is urgency in developing a strong policy framework in which all jurisdictions in Canada scale up commitments and act immediately to limit warming and facilitate a low-carbon economy.[35]

An important aspect of multi-government collaboration is to guard against political swings in government that undo careful science-based climate policy work. Nicholas Ettinger notes that Canada's *Greenhouse Gas Pollution Pricing Act*[36] and its backstop carbon pricing regime are susceptible to diminution or revision as future legal battles regarding this economic policy emerge; he is concerned that future governments could undo carbon pricing domestically based on an argument "that it is not worth jeopardizing our high-emitting economic engine."[37] Ettinger writes that despite clear evidence from scientists that "aggressive action is necessary to stave off the worst effects of climate change, political intransigence remains a threat to meaningful progress."[38] He urges Canada to exercise leadership in decarbonization and innovation because "there remains precious little time to initiate that deep decarbonization in the near term" to prevent a devastating climate future.

Dr. Fenner Stewart points to United Nations' reports that we are still nowhere near the scale and pace of emission reductions required to achieve a 1.5 °C world, let alone net zero.[39] He writes that policymakers are key to steering the transition, but must work in tandem with civil society, the private sector, and the international community. He suggests that the mantra that "every fraction of a degree matters" urges the global community to keep the average global temperature as low as possible.[40] Charlotte Woo reinforces this observation, pointing out that the introduction of the climate penny program in Switzerland demonstrates that decisions related to climate policy often depend on the collective opinions of several bodies, rather than one solitary actor.[41]

Dame Céline Bak's contribution drives home the need for Canadian policymakers to learn from policy

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35 Laura Glover, "All Hands on Deck: Assessing Canada's Current Federal and Provincial Climate Policy", chapter 3 of this volume.

36 *Greenhouse Gas Pollution Pricing Act,* SC 2018, c 12.

37 Nicholas P Ettinger, "Re-clarifying the Purpose for Maintaining Bold Canadian Climate Policy", chapter 12 of this volume.

38 *Ibid.*

39 Fenner Stewart, "The Problem, Solution, and Public Governance of Climate Change", chapter 4 of this volume, citing UNFCCC, "Climate Plans Remain Insufficient: More Ambitious Action Needed Now", online: <https://unfccc.int/news/climate-plans-remain-insufficient-more-ambitious-action-needed-now>.

40 Stewart, citing Joana Setzer & Michal Nachmany, "National Governance: The State's Role in Steering Polycentric Governance" in Andrew Jordan et al, eds, *Governing Climate Change: Polycentricity in Action?* (Cambridge: Cambridge University Press, 2018) 47; UNFCCC, "Voices from COP27. Jim Skea: Every Fraction of a Degree of Warming Matters", online: <https://www.un.org/en/climatechange/voices-from-cop27/jim-skea>; Nina Chestney, "Every Fraction of a Degree Counts, UN says, as 2.8C Warming Looms", *Reuters* (27 October 2022), online: <https://www.reuters.com/business/environment/cop27-world-faces-28c-rise-after-woefully-inadequate-climate-pledges-un-says-2022-10-27/>; UNEP, *The Closing Window*, *ibid* at 30, 45, & 54-55.

41 Charlotte Woo, "Modelling Climate Policy Networks", chapter 6 of this volume.

developments internationally.[42] Offering insights from her work in the European Union, she cites the revised emissions reductions commitments to a 55% reduction from a 1990 baseline by 2030[43] and the EUR 723 billion Recovery and Resilience Facility as exemplars of bold policy action aimed at just transitions.[44]

Prime Minister Trudeau has urged that the key factor to building a strong economy in the 21st century is taking real climate action.[45] To do so requires a "whole economy approach' where regional differences are set aside to the extent possible to build climate resilient policies. In February 2023, the federal government announced its just transition plan, with a sustainable jobs strategy that will create jobs compatible with Canada's path to a net zero emissions and climate resilient future.[46] The government announced that it is committed to delivering the "Sustainable Jobs Plan" through a worker- and people-centred approach to the net zero future that is equitable, fair and inclusive.[47] The plan states that it "requires all levels of government to work together with workers and unions, Indigenous groups, industry, experts, civil society and communities to create the enabling conditions for sustainable job creation and economic prosperity across Canada."[48] "Sustainable job" is defined as any job that is compatible with Canada's path to a net zero emissions and climate resilient future, requiring decent, well-paying, high-quality jobs that can support workers and their families over time and includes such elements as fair income, job security, social protection, and social dialogue.[49] It is this kind of collaboration that we require across the economy.

There is need for bold policy action that allows Canada to meet its commitment to create a net zero economy where companies can no longer externalize the costs of climate onto other businesses and the public. Climate change disproportionately affects the elderly, young children, northern and Indigenous communities and the socially disadvantaged, and failure to adopt and implement effective policy now will impose huge, inequitable costs in respect of human health, infrastructure, value chains, and biodiversity in the future.

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42 Céline Bak "Landing a Precautionary Approach to 1.5 °C at the Intersection of Civil Society, Policy, and Business within Canada's Climate Policy Network", chapter 2 of this volume.

43 *Ibid,* citing European Commission Climate Action, "Paris Agreement", online: <https://climate.ec.europa.eu/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en>.

44 *Ibid,* citing European Commission "Recovery Plan for Europe", online: <https://ec.europa.eu/economy_finance/articles/eu_economic_situation/article13502_en.htm#:~:text=The%20recovery%20plan%20is%20the%20Commission%27s%20response%20to,-jobs%20and%20help%20the%20unemployed%20back%20into%20work.>.

45 Prime Minister of Canada Justin Trudeau, "Delivering Clean Air and a Strong Economy for Canadians" (29 March 2022), online: <https://pm.gc.ca/en/news/news-releases/2022/03/29/delivering-clean-air-and-strong-economy-canadians>.

46 Mia Rabson, "Federal Government Releases 'Just Transition' Plan to Shift to Clean Energy Economy", *The Canadian Press* (17 February 2023), online:<https://globalnews.ca/news/9494850/just-transition-legislation-liberal-federal-government/>; Government of Canada, "Sustainable Jobs Plan", online: <https://www.canada.ca/en/services/jobs/training/initiatives/sustainable-jobs/plan.html> [Sustainable Jobs Plan]: "In 2015, the International Labour Organization (ILO) adopted guidelines, negotiated between governments, employers, and their organisations, as well as workers and their trade unions, regarding the term "just transition." It describes it as a process "towards an environmentally sustainable economy," focused on "to the goals of decent work for all, social inclusion and the eradication of poverty", *ibid.*

47 Sustainable Jobs Plan, *ibid.*

48 *Ibid.*

49 *Ibid.*

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Dame Céline Bak leads Deloitte's National FSI ESG practice as a partner in Deloitte's Risk Advisory practice. She works with clients to build the path from compliance and reporting to growing shareholder and stakeholder value through greater competitiveness and differentiation. To these clients, she brings 30 years of international experience in more than 25 countries. Her work has spanned management consulting to Fortune 500 companies, investment in scaling up innovative sustainability and emissions reduction solutions, development of national legal frameworks and international regulations, as well as advice for civil society, philanthropists, and governments.

In 2018, she was knighted as a Chevalier of the Ordre national du Mérite by French President Emmanuel Macron for mobilizing the private sector in the run-up to the *Paris Agreement* and for establishing the platform for the private sector to play a pivotal role in limiting warming to 1.5 °C. This was the foundation of the Race to Zero.

For her clients she structures business opportunities aligned with the full ambition of the *Paris Agreement* and other relevant frameworks and how to prosecute these by converting corporate goals and ambitions into business opportunities.

John Borrows

Dr. John Borrows BA, MA, JD, LLM (Toronto), PhD (Osgoode Hall Law School), LLD (Hons., Dalhousie, York, SFU, Queen's & Law Society of Ontario), DHL (Toronto), FRSC, OC, is the Canada Research Chair in Indigenous Law at the University of Victoria Law School, in British Columbia (on leave), and Loveland Chair in Indigenous Law at the University of Toronto Law School. His publications include, *Recovering Canada: The Resurgence of Indigenous Law* (Donald Smiley Award best book in Canadian Political Science, 2002), *Canada's Indigenous Constitution* (Canadian Law and Society Best Book Award 2011), *Drawing Out Law: A Spirit's Guide* (2010), *Freedom and Indigenous Constitutionalism* (Donald Smiley Award best book in Canadian Political Science, 2016), *The Right Relationship* (with Michael Coyle, ed), *Resurgence and Reconciliation* (with Michael Asch, Jim Tully, eds), *Law's Indigenous Ethics* (2020 Best subsequent Book Award from Native American and Indigenous Studies Association, 2020 W. Wes Pue Best book award from the Canadian Law and Society Association). He is the 2017 Killam Prize winner in Social Sciences and the 2019 Molson Prize Winner from the Canada Council for the Arts, the 2020 Governor General's Innovation Award winner, and the 2021 Canadian Bar Association President's Award winner. He was appointed as an Officer of the Order of Canada in 2020. John is a member of the Chippewa of the Nawash First Nation, in Ontario, Canada.

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Laura Glover is currently an articling student at a full-service law firm in Calgary. Prior to beginning her articles, Laura received her JD from the University of Calgary in 2022, and BA in Psychology from the University of Victoria. Laura's legal interests are focused chiefly on natural resources law, environmental law, energy law, and Indigenous law.

Amelia Harman

Amelia Harman is Chipewyan Dené and North Slave Métis. She was born and raised in the Northwest Territories according to traditional Métis and Dené values and remains deeply connected to her culture. She is actively involved in the Indigenous community. She holds a JD and an MPP from the University of Calgary. Amelia is finishing her articles in Calgary, Alberta.

Margot Hurlbert

Dr. Margot Hurlbert is the Canada Research Chair in Climate Change, Energy and Sustainability Policy at the Johnson-Shoyama Graduate School of Public Policy at the University of Regina, Canada. Margot's scholarship concerns climate change, energy, Indigenous peoples, water, droughts, floods, water governance, and sustainability.

Margot has led and participated in many academic and industry funded research projects, serves on the editorial boards of international journals, and is a Senior Research Fellow of the Earth Systems Governance Project. Margot was Coordinating Lead Author of a chapter of the Special Report of the Intergovernmental Panel on Climate Change (IPCC) on "Climate Change on Land" (2019) and a Review Editor and Contributing Author for the IPCC's AR6 (WGI and WGII) (2021/2022). She also works on Future Earth's Earth Commission Working Group on Transformations (2019-2022) and is Principal Investigator of a project investigating the gap in water adaptation in Canada and South America.

Emily Jones

Emily Jones is a well-respected Denésôliné elder and matriarch. Jones was born in 1940 in Fond-du-Lac, Saskatchewan and speaks fluent Denésôliné and English. She was raised in a Dené traditional lifestyle and continues to maintain that lifestyle. Despite the challenges that she faced as a result of attending Indian Day school, she upgraded her education at the age of 44 after raising her children. She

worked as a radio announcer broadcasting in Denésôliné at the Missinipi Broadcasting Corporation for five years and at CBC North Radio for 15 years. Jones also provided Dené translation services to support residential school survivors. She currently provides interpretation services to the Saskatchewan courts and to the Saskatchewan Research Council. Jones enjoys beading, handcrafting traditional moccasins and mukluks, and spending time with her children and grandchildren.

Andrew Leach

Dr. Andrew Leach is an energy and environmental economist and a Professor at the University of Alberta, with a joint appointment in the Department of Economics (Arts) and the Faculty of Law. He has a PhD in Economics from Queen's University, and a BSc (Environmental Sciences) and MA (Economics) from the University of Guelph and recently completed an LLM (Constitutional Law) from the Faculty of Law at the University of Alberta. His research spans energy and environmental economics with a particular interest in climate change policies and the law. Outside of work hours, his free time is spent with his two kids, Will and Caroline, as well as cycling and arguing on Twitter.

Temitope Tunbi Onifade

Professor Temitope Onifade is a low-carbon transition law expert, full-time faculty member and a pathway lead for the South West Doctoral Training Partnership at the University of Bristol Law School. He is also a Vanier Scholar finishing off his PhD at the University of British Columbia. His current research focuses on the regulation, governance and justice aspects of climate change and low-carbon transition impacts, low-carbon transition technologies and social systems, and sustainable public and private finance. Supported by over 40 awards and grants worth around CAD 600,000, his work has been used and cited by numerous intergovernmental organizations, governments, and businesses.

Rachel Samson

Rachel Samson is the Vice President of Research at the Institute for Research on Public Policy (IRPP). Previous to her current role, she was Clean Growth Research Director at the Canadian Climate Institute where she led the development of the report 'Sink or Swim: Transforming Canada's Economy for a Global Low-Carbon Future.' Rachel also spent 15 years as an economist and executive with the federal government, and five years as a consultant working with clients such as the Organisation for Economic Co-operation and Development (OECD) on green growth, climate change and biodiversity policy research.

Janis Sarra

Dr. Janis Sarra is Professor of Law at the University of British Columbia (UBC) Allard School of Law and founding Director of the National Centre for Business Law. She served as UBC Presidential Distinguished Professor from 2014 to 2019, an appointment by the President recognizing a faculty member that has made outstanding contributions as a scholar and academic leader. Prior to this appointment, Dr. Sarra served as Director of the Wall Institute for Advanced Studies and Associate

Dean of the Allard School of Law. Dr. Sarra is the Principal Co-investigator of the Canada Climate Law Initiative, a research collaboration between UBC and York University, and Canadian investigator of the Commonwealth Climate and Law Initiative, founded at Oxford University. Dr. Sarra's research and teaching interests are in the areas of corporate finance, climate-related financial risk and corporate governance, banking law, securities law, contracts, commercial insolvency law, and law and economics. She has published 10 books and more than 100 refereed articles. Dr. Sarra's contributions to public policy development include: member of the Canadian delegation of the United Nations Commission on International Trade Law (UNCITRAL) Working Group V, Vienna and New York; Expert Member of the International Institute for the Unification of Private Law Working Group on Bank Resolution (Rome and Basel); and numerous Canadian research initiatives. Recent publications include *From Ideas to Action: Governance Paths to Net Zero* (Oxford University Press, 2020); *Predatory Lending and the Destruction of the African-American Dream*, with Cheryl Wade (Cambridge University Press, 2020); *Banking on a Net-Zero Future: Effective Climate Governance for Canadian Banks,* with contributions from Norie Campbell (CCLI, 2022); *Haida Law of gina 'waadluxan gud ad kwaagiida and Indigenous Rights in Conservation Finance*, co-authored with Terri-Lynn William-Davidson (CCLI, 2021); and *Life, Health, Property, Casualty: The Duties of Insurance Company Directors in Respect of Climate Change* (CCLI, 2021).

Fenner Stewart

Dr. Fenner Stewart is an associate professor at the University of Calgary and a Research Fellow in Energy and Environment, The School of Public Policy. Fenner has been cited by the Supreme Court of Canada (2019) and the Supreme Court of Ohio (2022, 2020, 2016). He has won multiple awards for his teacher (2016, 2019, 2021) and scholarship (2018). His research focus is on legal issues emanating from multilevel governance arrangements within the energy space. Multilevel governance refers to the way in which decision-making power is distributed among different levels of government, as well as between government and other actors in society. Topics from his recent publications and current research include division of powers issues, climate governance networks, ESG regulation, and the regulation of asset retirement obligations.

Arlene Strom

Arlene Strom has been with Suncor Energy for 18 years. Since January 2019, Arlene has been in the role of Chief Legal Officer and General Counsel for Suncor. Prior to taking on this role, Arlene led various portfolios including Sustainability, and Indigenous and Government Relations. Arlene is the chair for the Suncor Energy Foundation and also Suncor's Inclusion and Diversity Council.

Arlene chairs the board of the Alberta Lieutenant Governor's Arts Awards Foundation and is a member of the University of Calgary Management Advisory Council for the Haskayne School of Business.

Arlene has a BA in Business Administration from Trinity Western University, an MA in Public Policy from University of British Columbia, and an LLB from University of British Columbia.

Charlotte Woo

Charlotte Woo obtained her JD from the University of Calgary in 2022. While in law school, Charlotte was a research assistant in the field of energy and environmental law. Charlotte is currently an articling student at a full-service business law firm in Calgary.